

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

1. Priority Corridor Northern Seas Offshore Grid ('NSOG')

Construction of the first interconnection between Belgium and United Kingdom:

No	TYNDP reference	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
1.1	74-443	Cluster Belgium — United Kingdom between Zeebrugge and Canterbury [currently known as "NEMO" project], including the following PCIs: 1.1.1 Interconnection between Zeebrugge (BE) and the vicinity of Richborough (UK)	1.1.1 Gezelle (BE) – Richborough (UK)	1.1.1 Nemo Link Limited	1.1.1 New DC sea link including 140 km of DC subsea cable with 1000 MW capacity between Richborough and Gezelle (vicinity of Zeebrugge) (offshore + onshore)	1.1.1 Under construction	1.1.1 technical commissioning 2018 with operation in 2019
	74-449	1.1.2 Internal line between the vicinity of Richborough and Canterbury (UK)	1.1.2 Vicinity of Richborough to Canterbury (UK)	1.1.2 National Grid Electricity Transmission plc (UK)	1.1.2 New 400kV substation in Richborough and new 400kV AC double circuit OHL between Richborough and Canterbury (onshore)	1.1.2 Permitting	1.1.2 2018
	N/A	1.1.3 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

1.2	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
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Increase of the transmission capacity between Denmark, Germany and the Netherlands:

1.3	183-1018	Cluster Denmark—Germany between Endrup and Brunsbüttel including the following PCIs: 1.3.1 Interconnection between Endrup (DK) and Niebüll (DE)	1.3.1 Endrup (DK) to Niebüll (DE)	1.3.1 TenneT TSO GmbH (DE) Energinet.dk (DK)	1.3 New 380 kV AC lines (OHL) of about 200 km and with 3000 MVA capacity in Germany and about 80 km in Denmark and new 380 kV-substations for integration of the available and further forecasted onshore wind in Schleswig-Holstein.	1.3.1 Under consideration	1.3.1 2022
	209-67	1.3.2 Internal line between Brunsbüttel and Niebüll (DE)	1.3.2 Brunsbüttel (DE) and Niebüll (DE)	1.3.2 TenneT TSO GmbH (DE)			
1.4		Cluster Denmark—Germany between Kassø and Dollern including the following PCIs:					

	39-144	1.4.1 Interconnection between Kassø (DK) and Audorf (DE)	1.4.1 Kassø (DK) to Audorf (DE)	1.4.1 TenneT TSO GmbH (DE) Energinet.dk (DK)	1.4.1 Upgrade of existing 220kV AC line to 400 kV thus building a new 400kV route from Denmark to Germany.	1.4.1 Permitting	1.4.1 2020
	209-148	1.4.2 Internal line between Audorf and Hamburg/Nord (DE)	1.4.2 Audorf to Hamburg/Nord (DE)	1.4.2 TenneT TSO GmbH (DE)	1.4.2 New 400kV AC double circuit line (OHL) mainly in the trace of an existing 220kV line between Audorf and Hamburg/Nord, including 2 new 400/220kV transformers in substation Audorf.	1.4.2 Under construction	1.4.2 2017
	209-147	1.4.3 Internal line between Hamburg/Nord and Dollern (DE)	1.4.3 Hamburg/Nord (DE) and Dollern (DE)	1.4.3 TenneT TSO GmbH (DE)	1.4.3 New 400kV AC double circuit line (OHL) between Dollern and Hamburg/Nord, including 2 new 400/220kV transformers in substation Hamburg/Nord (of 50Hertz Transmission) and new 400kV switchgear in Kummerfeld.	1.4.3 Under construction	1.4.3 2016
1.5	71-427	Denmark — Netherlands interconnection between Endrup (DK) and Eemshaven (NL) [currently known as "COBRACable"]	Endrup (DK) to Eemshaven (NL)	TenneT TSO B.V. (NL) Energinet.dk (DK)	A new offshore HVDC 320 kV link of approximately 350 km and with a capacity of 700 MW between Denmark West and the Netherlands. This interconnection will technically be prepared to enable a connection of a potential future offshore wind farm.	Permitting	2019

Increase of the transmission capacity between France, Ireland and United Kingdom

1.6	107-810	France — Ireland interconnection between La Martyre (FR) and Great Island or Knockraha (IE) [currently known as "Celtic Interconnector"]	Brittany, most probably La Martyre (FR) to future 400 kV substation at Great Island or Knockraha (IE)	EirGrid plc (IE) Réseau de Transport d'Electricité / RTE (FR)	A new 320 kV – 500 kV (depending on the technology, to be fixed at a later stage in detailed design studies) HVDC subsea connection of approximately 600 km and with a capacity of around 700 MW between Ireland and France (offshore).	Under consideration	2025
1.7	153-987	Cluster France — United Kingdom interconnections, including one or more of the following PCIs: 1.7.1 France—United Kingdom interconnection between Cotentin (FR) and the vicinity of Exeter (UK) [currently known as FAB project]	1.7.1 Cotentin (FR) to the vicinity of Exeter (UK)	1.7.1 FABLink Ltd, a joint venture of Transmission Investment (UK) and Alderney Renewable Energy; Réseau de Transport d'Electricité / RTE (FR)	1.7.1 A 225 km HVDC link between France and Great Britain via the island of Alderney, with a capacity of between 1000 and 1400 MW - exact value still to be determined (onshore and offshore).	1.7.1 Planned, but not yet in permitting	1.7.1 2020-2022
	25-62	1.7.2 France — United Kingdom interconnection between Tourbe (FR) and Chilling (UK) [currently known as "IFA2" project]	1.7.2 Caen area, most likely Tourbe (FR) to Chilling (UK)	1.7.2 National Grid Interconnector Holdings Limited (UK) Réseau de	1.7.2 New subsea 320 kV – 390kV HVDC link with a capacity of around 1000 MW (depending on technology to be fixed at a later stage in detailed specification and competitive procurement processes) between the UK and France (offshore).	1.7.2 Permitting	1.7.2 2020

	172-1005	1.7.3 France — United Kingdom interconnection between Coquelles (FR) and Folkestone (UK) [currently known as "ElecLink" project]	1.7.3 Coquelles (FR) to Folkestone (UK)	Transport d'Electricité/RTE (FR) 1.7.3 ElecLink Limited	1.7.3 A new 51 km 320 kV DC electricity interconnector with a capacity of 1000 MW between Coquelles and Folkestone, via the Channel Tunnel (onshore and offshore).	1.7.3 Permitting	1.7.3 2018
1.8	37-142	Germany — Norway interconnection between Wilster (DE) and Tonstad (NO) [currently known as "NordLink"]	Tonstad / Ertsmyra substation (NO) to Wilster (DE)	Statnett SF (NO) TenneT TSO GmbH, KfW (DE)	A new HVDC subsea cable of 525 kV, 514 km and with a capacity of 1400 MW between Southern Norway and Northern Germany ((total length onshore and offshore 623 km)).	Under construction	2020
1.9	185-1020,1021*	Cluster connecting Ireland to United Kingdom, including one or more of the following PCIs: 1.9.1 Ireland — United Kingdom interconnection between Wexford (IE) and Pembroke, Wales (UK) [currently known as "Greenlink"]	1.9.1 Wexford (IE) to Pembroke, Wales (UK)	1.9.1 Greenwire Transmission and Greenlink (owned in turn by Element Power and partners)	1.9.1 A 320KV subsea cable of 172KM and with a capacity of 500-700 MW between the south of Ireland and Wales.	1.9.1 Planned, but not yet in permitting	1.9.1 2021
	189-1024,1025,1026,1027	1.9.2 Ireland — United Kingdom interconnection between Coolkeeragh — Coleraine hubs (IE) and Hunterston station, Islay, Argyll and Location C Offshore Wind Farms (UK) [currently known as "ISLES"]	1.9.2 Ireland, United Kingdom	1.9.2 Scottish Government, Energy Directorate, Irish Government, Dept. of Communications, Energy & Natural Resources, Dept. of Enterprise Trade & Investment, Northern Ireland	1.9.2 An offshore interconnected electricity grid based on renewable resources (wind, wave and tidal) consisting of HVDC interconnectors in the northern area (offshore).	1.9.2 Under consideration	1.9.2 2030
	N/A	1.9.3 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
	N/A	1.9.4 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
	N/A	1.9.5 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
	N/A	1.9.6 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

1.10	110-424 190-1033	Norway — United Kingdom interconnection	Norway to United Kingdom	Statnett SF (NO) National Grid Interconnector Holdings Limited (UK) NorthConnect KS	One or more new HVDC interconnection with a capacity of 1400 MW between Norway and the United Kingdom.	Under construction (110-424) Permitting (190-1033)	2021 (110-424) 2022 (190-1033)
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1.11	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
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1.12	151	Compressed air energy storage in United Kingdom—Larne	Location: Larne, Northern Ireland (UK) Connection point to transmission network: Ballylumford	Gaelectric Energy Storage Ltd	Compressed Air Energy Storage using caverns / chambers to be created in bedded salt deposits with an annual storage capacity of 1,426 GWh.	Planned, but not yet in permitting	2021
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1.13	214-1082	Interconnection between Iceland and United Kingdom [currently known as "Ice Link"]	Iceland to UK	National Grid Interconnector Holdings Limited (UK) Landsnet hf (IC) Landsvirkjun (IC)	A new HVDC subsea cable of approximately 1000 km and with a capacity of approximately 800-1200 MW between the UK and Iceland (onshore and offshore), Further details of technology and voltage to be fixed at a later stage.	Under consideration	2030
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1.14	167-998	Interconnection between Revsing (DK) and Bicker Fen (UK) [currently known as "Viking Link"]	Revsing (DK) to Bicker Fen (UK)	National Grid Interconnector Holdings Limited (UK) Energinet.dk (DK)	A new HVDC subsea cable of 500 kV, approximately 740 km and with a capacity of up to 1400 MW between the UK and Denmark (onshore and offshore).	Planned but not yet in permitting	2022
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* The project was reconfigured after the submission of the draft TYNDP 2014 to ACER for its opinion (TYNDP reference: 185-1020, 1021)

2. Priority corridor North-South electricity interconnections in Western Europe ('NSI West Electricity')

No	TYNDP reference	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
2.1	47-219	Austria internal line between Westtirol and Zell-Ziller (AT) to increase capacity at the Austrian/German border	Westtirol (AT) to Zell/Ziller (AT)	Austrian Power Grid AG (AT)	Upgrade of the existing 220 kV AC line (OHL) of 104 km between Westtirol (AT) and Zell/Ziller (AT) (onshore) and erection of additional 380/220kV transformers in both substations.	Planned, but not yet in permitting	2022

Increase of the transmission capacity between Belgium and Germany – construction of the first interconnection between both countries:

2.2		Cluster Belgium — Germany between Lixhe and Oberzier [ALEGrO project] including the following PCIs:	Lixhe, Liège area (BE) to Oberzier, Aachen / Düren region (DE)				
	92-146	2.2.1 Interconnection between Lixhe (BE) and Oberzier (DE)		2.2.1 Elia System Operator SA (BE), Amprion GmbH (DE)	2.2.1 Connection between Lixhe (BE) and Oberzier (DE) including a new 100 km HVDC underground cable (voltage: ±320kV) and the extension of existing 380 kV substations.	2.2.1 Permitting	2.2.1 2019
	92-1048	2.2.2 Internal line between Lixhe and Herderen (BE)		2.2.2 Elia System Operator SA (BE)	2.2.2 A new 380 kV AC circuit between Lixhe and Herderen (BE), (10 km).	2.2.2 Permitting	2.2.2 2017
	92-1045	2.2.3 New substation in Zutendaal (BE)		2.2.3 Elia System Operator SA (BE)	2.2.3 Construction of a 380 kV substation in Lixhe including two 380/220 kV transformers (2017) and one 380/150 kV transformer (2019)	2.2.3 Under construction	2.2.3 2017
2.3	N/A 40-650	Cluster Belgium — Luxembourg capacity increase at the Belgian/Luxembourgian border, including the following PCIs: 2.3.1 No longer considered a PCI 2.3.2 Interconnection between Aubange (BE) and Bascharage/Schifflange (LU)	N/A 2.3.2 Aubange (BE) to Bascharage/Schifflange (LU)	N/A 2.3.2 Elia Sysyem operator SA (BE), Creos Luxembourg S.A. (LU)	N/A 2.3.2 After the implementation of a first interconnection between Belgium and Luxembourg, an additional new interconnection between Creos grid in LU and ELIA grid in BE via a 16km AC double circuit 225 kV underground cable with a capacity of 1,000 MVA (onshore).	2.3.2 Planned, but not yet in permitting	N/A 2.3.2 2022
2.4	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
2.5	21-55	Cluster France — Italy between Grande Ile and Piossasco, including the following PCIs: 2.5.1 Interconnection between Grande Ile (FR) and Piossasco (IT) [currently known as Savoie-Piemont project] 2.5.2 No longer considered a PCI	2.5.1 Grande Ile (FR) to Piossasco (IT), via Frejus motorway tunnel	2.5.1 Terna - Rete Elettrica Nazionale SpA (IT), RTE - Réseau de Transport d'Electricité (FR)	2.5.1 New 190 km HVDC (VSC) interconnection between Grande Ile (FR) and Piossasco (IT) via an approximately 320 kV underground cable and converter stations at both ends (two poles, each of them for a maximum of 600 MW power capacity). The cables will be laid in the security gallery of the Frejus motorway tunnel and mainly along the existing motorways (onshore).	2.5.1 Construction – both sides Public consultation for route optimization on Italian side	2.5.1 2019 N/A
2.6	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

2.7	16-38	France — Spain interconnection between Aquitaine (FR) and the Basque country (ES) [currently known as "Biscay Gulf" project]	Aquitaine (FR) to the Basque Country (ES)	RTE - Réseau de Transport d'Electricité (FR), REE - Red Eléctrica de España S.A. (ES)	New 320 kV or 500 kV (voltage tbd) HVDC subsea cable interconnection of approximately 360 km with a capacity of 2000 MW (tbc) between Aquitaine and the Basque country, via the the Biscay Gulf (offshore).	Planned, but not yet in permitting	2022
2.8	184-594	Coordinated installation and operation of a phase-shift transformer in Arkale (ES) to increase capacity of the interconnection between Argia (FR) and Arkale (ES)	Arkale (ES)	REE - Red Eléctrica de España: S.A. (ES)	New Phase Shifter Transformer (PST) in Arkale 220 kV substation, with affection to control the flows on the 220 kV interconnection line between Arkale (ES) and Argia (FR). Coordinated installation and operation between the 2 countries affected will be required.	Planned, but not yet in permitting	2017

Cluster North-South-West corridor in Germany to increase the transmission capacity and to integrate renewable energy:

2.9	134-660	Germany internal line between Osterath and Philippsburg (DE) to increase capacity at Western borders	Osterath to Philippsburg (DE)	Amprion GmbH (DE) TransnetBW GmbH (DE)	New +/- 380 HVDC lines (OHL) with a length of 40 km and 300 km of existing routes with new technology and with a total capacity of 2000 MW from Osterath to Philippsburg to integrate new wind generation especially from North/Baltic Sea towards Central-South for consumption and storage (onshore).	Planned, but not yet in permitting	2019
2.10	164-664	Germany internal line between Brunsbüttel-Großgartach and Wilster-Grafenrheinfeld (DE) to increase capacity at Northern and Southern borders	Brunsbüttel (DE) to Großgartach (DE) and Wilster (DE) to area Grafenrheinfeld (DE)	TenneT TSO GmbH (DE) TransnetBW GmbH (DE)	New DC lines with a total capacity of 4 GW, with every line having a length according to the line of sight of approx. 450 and 550 km, to integrate new wind generation from northern Germany towards southern Germany and southern Europe for consumption and storage (onshore).	Planned, but not yet in permitting; currently ongoing amendment of the German energy law aiming at preference for underground cabling	2022

2.11	N/A 198-985	Cluster Germany – Austria - Switzerland capacity increase in Lake Constance area including the following PCIs: 2.11.1 No longer considered a PCI 2.11.2 Internal line in the region of point Rommelsbach to Herbertingen (DE)	South Germany to Switzerland and Austria	N/A 2.11.2 Amprion GmbH (DE)	N/A 2.11.2 Construction of new 400 kV AC lines (OHL) and extension of existing ones on approximately 157 km and with a total capacity of 3500 MVA (tbd), and extension of substations. Transmission routes include: point Rommelsbach-Herbertingen, point Wullenstetten, point Niederwangen, point Neuravensburg – border DE/AT (onshore).	N/A 2.11.2 Permitting	N/A 2.11.2 2018
	198-986,1043	2.11.3 Internal line point Wullenstetten to point Niederwangen (DE) and internal line Neuravensburg to the border area DE-AT	2.11.3 South Germany to Switzerland and Austria	2.11.3 Amprion GmbH (DE), Transnet BW GmbH (DE)	2.11.3 Construction of new 400 kV AC lines (OHL) and extension of existing ones on approximately 157 km and with a total capacity of 3500 MVA (tbd), and extension of substations. Transmission routes include: point Rommelsbach-Herbertingen, point	2.11.3 Planned but not yet in permitting	2.11.3 2023

					Wullenstetten, point Niederwangen, point Neuravensburg – border DE/AT (onshore).		
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2.12	113-145	Germany — Netherlands interconnection between Niederrhein (DE) and Doetinchem (NL)	Niederrhein (DE) to Doetinchem (NL)	Amprion GmbH (DE) TenneT TSO B.V. (NL)	New 380 kV AC double circuit (OHL) of approximately 60 km and with a capacity of 2x2360 MVA between Niederrhein and Doetinchem (onshore).	Permitting	2017
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Cluster of projects increasing the integration of renewable energy between Ireland and Northern Ireland

2.13	81-462	Cluster Ireland — United Kingdom interconnections, including one or more of the following PCIs: 2.13.1 Ireland — United Kingdom interconnection between Woodland (IE) and Turleenan (UK)	2.13.1 Woodland (IE) to Turleenan, Northern Ireland (UK)	2.13.1 EirGrid; System Operator for Northern Ireland Ltd/SONI (UK)	2.13.1 A new 400 kV AC single circuit (OHL) of 138 km and with a capacity of 1,500 MVA between Turleenan 400/275 kV in Northern Ireland (UK) to Woodland 400/220 kV (IE) (onshore).	2.13.1 Permitting	2.13.1 2019
	82-463, 896, 897	2.13.2 Ireland — United Kingdom Interconnection between Srananagh (IE) and Turleenan (UK)	2.13.2 Srananagh in Co. Sligo (IE) to Turleenan in Northern Ireland (UK)	2.13.2 EirGrid; System Operator for Northern Ireland Ltd/SONI (UK)	2.13.2 A new cross border circuit of approximately 200 km at 220kV or greater with a capacity up to 710MVA between Srananagh 220/110 kV station in Co. Sligo (IE) and Turleenan 400/275 kV station in Northern Ireland (UK).	2.13.2 Planned, but not yet in permitting	2.13.2 2025-2027

Increase of the transmission capacity between Italy and Switzerland:

2.14	174-1014	Italy — Switzerland interconnection between Thusis/Sils (CH) and Verderio Inferiore (IT)	Verderio Inferiore, near Milano (IT) to Thusis, Graubünden Canton (CH), via an oil pipeline that is no longer in service, and that crosses the Italian and Swiss border at Splügenpass and is running close by the two grid interconnection points of the Greenconnector project (Sils i.D. in Graubünden and Verderio Inferiore, Lecco).	Greenconnector	A +/- 400 kV HVDC cable interconnector of 150 km (of which 47 under Como lake) and with a capacity of 1000 MW (1100 MW continuous overload) between Verderio Inferiore, near Milano (IT) to Thusis, Graubünden Canton (CH) (onshore). Great part of the cables route will exploit a section of an existing oil pipeline, no longer in service since January 1997 and that crosses the Italian and Swiss border at Splügenpass and is running close by the two grid interconnection points of the Greenconnector project (Sils i.D. in Graubünden and Verderio Inferiore, Lecco).	Permitting	2021
2.15	31-642	Cluster Italy — Switzerland capacity increase at IT/CH border, including the following PCI: 2.15.1 Interconnection between Airola (CH) and Baggio (IT)	2.15.1 Baggio (IT) to All'Acqua in Airola (CH)	2.15.1 Terna - Rete Elettrica Nazionale SpA. (IT), Swissgrid	2.15.1 A new 400 kV DC/AC link (OHL) between All'Acqua, Pallanzeno and Baggio of about 160 km and with a capacity about 2.000 MVA between Italy and Switzerland, including the following network items:	2.15.1 Permitting – IT side	2.15.1 2022

				(CH)	- 400kV AC connection between All'Acqua (CH) and Pallanzeno (IT); - 350 kV HVDC link by conversion from AC to DC of the existing 220 kV Pallanzeno (IT) and Baggio (IT)		
N/A	2.15.2	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
N/A	2.15.3	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
N/A	2.15.4	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

Cluster of internal projects increasing the integration of renewable energy in Portugal and improving the transmission capacity between Portugal and Spain:

2.16	1-2	Cluster Portugal capacity increase at PT/ES border and connecting new RES generation including the following PCIs: 2.16.1 Internal line between Pedralva and Sobrado (PT), formerly designated Pedralva and Alfena (PT)	2.16.1 North Portugal near Spanish border ; Pedralva (PT) – Sobrado (PT)	2.16.1 REN - Rede Eléctrica Nacional S.A. (PT)	2.16.1 New 67 km double circuit OHL Pedralva – (formerly designated Alfena) 400 kV (initially with only one circuit installed), with a capacity of 1630/1860 MVA per circuit correspondent to summer/winter (onshore).	2.16.1 Planned but not yet in permitting	2.16.1 2020
	N/A 1-4,474, 941	2.16.2 No longer considered a PCI 2.16.3 Internal line between Vieira do Minho, Ribeira de Pena and Feira (PT), formerly designated Frades B, Ribeira de Pena and Feira (PT)	N/A 2.16.3 North Portugal near Spanish border; V.Minho (by Ribeira de Pena and Fridão) - Feira; including Ribeira de Pena (PT) Substation and Fridão (PT) switching stations	N/A 2.16.3 REN - Rede Eléctrica Nacional S.A. (PT)	N/A 2.16.3 New 132 km double circuit OHL 400 kV Vieira do Minho – Ribeira de Pena – Fridão – Feira, along with the new 400/60 kV substation of R. Pena and the switching station of Fridão. Capacity is 2x (1630/ 1860 MVA) (summer/winter) between Vieira do Minho and R. Pena, and 2080/2370 MVA (summer/winter) along R. Pena – Fridão – Feira (onshore). On a large extension this line shares towers with the new 220 kV line V.P.Aguiar - Carrapatelo - Estarreja.	N/A 2.16.3 Permitting	N/A 2.16.3 2020

Increase of the transmission capacity between Portugal and Spain:

2.17	4-18,496, 498,499, 500	Portugal — Spain interconnection between Beariz — Fontefría (ES), Fontefria (ES) — Ponte de Lima (PT) (formerly Vila Fria / Viana do Castelo) and Ponte de Lima — Vila Nova de Famalicão (PT) (formerly Vila do Conde) (PT), including substations in Beariz (ES), Fontefría (ES) and Ponte de Lima (PT)	Portugal — Spain interconnection between Beariz — Fontefría (ES), Fontefria (ES) — Ponte de Lima (PT)	REN - Rede Eléctrica Nacional S.A. (PT), REE - Red Eléctrica de España S.A. (ES)	New 400 kV AC double circuit (OHL) of 190 km (138 km in Portugal and 52 km in Spain) between Beariz - Fontefría (ES) and Ponte de Lima – Vila Nova de Famalicão – Vermoim/Recarei (PT), with only one circuit being installed on the Fontefría – Vila Nova de Famalicão section (onshore). New 400 kV substations Fontefría, Beariz, Ponte de Lima and Vila Nova de Famalicão. The section regarding Vila Nova de Famalicão - Vermoim/Recarei (PT) (20 km) and the Vila Nova de Famalicão substation are expected to be commissioned until the end of 2015.	Permitting	2018
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Storage projects in Austria and Germany:

2.18	222	Capacity increase of hydro-pumped storage in Austria — Kaunertal, Tyrol (AT)	Location Austria / Tyrol / Kaunertal; Connection point: 220 kV Network of TIWAG Netz AG and additionally to 380 kV Grid, APG, both at UW Prutz.	TIWAG-Tiroler Wasserkraft AG	Total pump capacity (4 x Francis Type): 390 MW net annual generation of storage function: 1,050 GWh/a Connection point to transmission infrastructure: UW Prutz (220, 380 kV).	Permitting	2028
2.19	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
2.20	223	Capacity increase of hydro-pumped storage in Austria — Limberg III, Salzburg (AT)	Salzburg (AT) Connection point to transmission network: 380 kV switchyard UW Tauern	VERBUND Hydro Power GmbH	The pumped hydro storage power plant Limberg III will generate an additional capacity of 480 MW (500-850 GWh annually). Two variable-speed Francis pump-turbines with asynchronous motor-generator use the head between the two existing annual storage reservoirs for the production of additional backup and balancing energy. All facilities of the new power plant will be built below surface. Power transmission (energy outlet and intake) is ensured by an existing 380 kV double line linking the tension insulator portal to the substation Kaprun/main stage.	Permitting	2022
2.21	226	Hydro-pumped storage Riedl in the AT/DE border area	Riedl, near Jochenstein (DE) – border with AT Connection point to transmission network: 220 kV switchyard PP Jochenstein	Donaukraft Jochenstein AG	A pumped storage power plant with 300 MW installed capacity and an annual capacity of 330-462 GWh is planned upstream from Jochenstein HPP at the Danube. Drawdown and return of water will be ensured via Danube and a storage lake to be created southwest of Gottsdorf town, approx. 350 m above the live storage of Jochenstein. The upstream water conduit is designed as an inclined shaft. The downstream water conduit joins the intake/outlet structure on the Danube underground.	Permitting	2022
2.22	224	Hydro pumped storage Pfaffenboden in Molln (AT)	Molln in Upper Austria (AT) Connection point to transmission network: 220 kV Transmission Substation Molln (to be built)	Wien Energie GmbH	The hydro pumped storage Pfaffenboden in Molln will have a capacity of 300 MW and generate annually approximately 600 GWh. The headwater reservoir consists of 4 tunnels based in the ridge of the "Gaisbergschuppe" with a total volume of 1.25 Mio m ³ (1,500m length and 16m diameter). The power unit (two turbine sets, each approx. 150 MW) is located in an underground shaft. Therefore the project is especially environmentally friendly and sustainable, as instead of the construction of a dam, the plant comprises a closed-loop water system whose components are largely underground or located on an existing industrial site.	Permitting/Under construction	2019

Cluster of projects in northern and western Belgium to increase the transmission capacity:

2.23	24-445, 604, 605	Cluster of internal lines at the Belgian northern border between Zandvliet — Lillo (BE), Lillo-Mercator (BE), including a substation in Lillo (BE) [currently known as "Brabo"]	In Northern Belgium close to the border with the Netherlands, in the district of Antwerp	Elia System Operator SA (BE)	BRABO II + III: realization of a new 380 kV corridor between Zandvliet and Mercator consisting of a double-circuit overhead line, including a new substation 380kV in Lillo	Planned but not yet in permitting	2020
2.24	24-608	Internal line between Horta-Mercator (BE)	Belgian North Border to the Netherlands	Elia System Operator SA (BE)	The project consists of replacing the conductors of the double circuit 380 kV overhead line between the substations of Horta and Mercator with high performance conductors, hereby doubling its transport capacity. The circuit currently passing Mercator going to Doel will be integrated into the Mercator substation to obtain a better flux balance and avoid an upgrade between Mercator and Doel at this stage.	Planned but not yet in permitting	2019

Clusters of internal lines in Spain to increase the transmission capacity within the Mediterranean Region:

2.25	203-537, 1069,1070	Cluster of internal lines in Spain to increase capacity between Northern Spain and the Mediterranean area including the following PCIs: 2.25.1 Internal lines Mudejar-Morella (ES) and Mezquite-Morella (ES) including a substation in Mudejar (ES)	2.25.1 A project between the regions of Aragón and Castellón	2.25.1 REE - Red Eléctrica de España S.A. (ES)	2.25.1 A 400kV double circuit line between Mudejar and Morella (ES) , a 400 kV double circuit line between Mezquite and Morella (ES), and a 400kV substation in Mudejar (ES)	2.25.1 Permitting	2.25.1 2016
	203-538	2.25.2 Internal line Morella-La Plana (ES)	2.25.2 A project between the regions of Aragón and Castellón	2.25.2 REE - Red Eléctrica de España S.A. (ES)	2.25.2 A 400kV line between Morella in Aragón and La Plana in Castellón to complete the reinforcement of the axis between northern Spain and the Mediterranean area.	2.25.2 Planned but not yet in permitting	2.25.2 2018
2.26	193-927	Spain internal line La Plana/Morella — Godelleta to increase capacity of the north-south Mediterranean axis		REE - Red Eléctrica de España S.A. (ES)	A 400 kV line La Plana/Morella-Godelleta	Under consideration	2023
2.27	N/A	Capacity increase between Spain and France (generic project)	Northern Spain to Southern France (Location to be determined)	REE - Red Eléctrica de España: S.A. (ES), RTE - Réseau de Transport d'Electricité (FR)	N/A	Under consideration	2025

3. Priority corridor North-South electricity interconnections in Central Eastern and South Eastern Europe ('NSI East Electricity')

Reinforcement of the interconnection between Austria and Germany:

No	TYNDP reference	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
3.1	47-212	Cluster Austria — Germany between St. Peter and Isar, including the following PCIs: 3.1.1 Interconnection between St. Peter (AT) and Isar (DE)	3.1.1 St. Peter (AT) to Isar/Altheim/Ottenhofen (DE)	3.1.1 TenneT TSO GmbH (DE) Austrian Power Grid AG (AT)	3.1.1 380 kV AC OHL between Isar and St. Peter with a total capacity of 4.100 MVA, including 110 km of new line in DE (including Pirach), 61 km of new circuit on an existing line, new 380 kV switchgears in Altheim, Simbach, Pirach and St. Peter and one new 380/220 kV transformer in the substations Altheim and St. Peter.	3.1.1 Permitting	3.1.1 2020
	47-216	3.1.2 Internal line between St. Peter and Tauern (AT)	3.1.2 St. Peter (AT) to Tauern (AT)	3.1.2 Austrian Power Grid AG (AT)	3.1.2 Completion of the 380 kV AC line (OHL) with a length of approximately 174km and a capacity of approximately 2 x 2400 MVA between St.Peter and Tauern (as an important part of the 380 kV Ring) and namely: the upgrade of the existing 380 kV line between St.Peter and Salzburg from 220 kV operation to 380 kV operation and the erection of a new internal double circuit 380 kV line connecting Salzburg and Tauern, replacing the existing 220-kV-line on an optimized route (onshore). Moreover, the erection of the new substation Wagenham and Pongau and the integration of the existing substations Salzburg and Kaprun is planned.	3.1.2 Permitting	3.1.2 2021
	N/A	3.1.3 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

Reinforcement of the interconnection between Austria and Italy:

3.2	26-63	Cluster Austria — Italy between Lienz and Veneto region, including the following PCIs: 3.2.1 Interconnection between Lienz (AT) and Veneto region (IT)	3.2.1 Lienz (AT) to Veneto region (IT)	3.2.1 Terna - Rete Elettrica Nazionale SpA (IT), Austrian Power Grid AG	3.2.1 The reconstruction of the existing 220 kV interconnection line between Soverzene and Lienz as a 400 kV AC insulated tie-line of about 100-150 km (approximately 35 km on AT and the rest on IT side)	3.2.1 Planned but not yet in permitting	3.2.1 2023
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	26-618	3.2.2 Internal line between Lienz and Obersielach (AT)	3.2.2 Lienz (AT) to Obersielach (AT)	(AT) 3.2.2 Austrian Power Grid AG	and with a capacity of 1500 MVA between Lienz and Veneto region substations, along an optimized route, which minimizes the environmental impact (onshore). 3.2.2 A 380kV AC line (OHL) with a length of approximately 190 km and a capacity of approximately 3000 MVA connecting the substation of Lienz and Obersielach to close the Austrian 380kV Ring in the southern grid area (onshore). New upgrade technologies which are under investigation may allow earlier commissioning than 2023.	3.2.2 Planned but not yet in permitting	3.2.2 2024
3.3	N/A	No longer considered a PCI					
3.4	210-1071	Austria – Italy interconnection between Wurlach (AT) and Somplago (IT)	Carinthia Region (AT) to Friuli Venezia Giulia Region (IT)	Alpe Adria Energia S.p.A	A new 220 kV AC line with a capacity of 300 MVA	Permitting	2018

3.5	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
3.6	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

Reinforcement of the interconnection between Bulgaria and Greece:

3.7		Cluster Bulgaria — Greece between Maritsa East 1 and N. Santa, including the following PCIs:					
	142-256	3.7.1 Interconnection between Maritsa East 1 (BG) and N. Santa (EL)	3.7.1 Maritsa East 1 (BG) to Nea Santa (EL)	3.7.1 ADMIE (EL), EAD/ESO (BG)	3.7.1 Construction of a new AC 400 kV single-circuit interconnector (OHL) with a length of 130 km and a capacity of 2000 MVA between Maritsa East 1 (BG) and Nea Santa (EL) (onshore).	3.7.1 Planned but not yet in permitting	3.7.1 2021
	142-257	3.7.2 Internal line between Maritsa East 1 and Plovdiv (BG)	3.7.2 Maritsa East 1 to Plovdiv (BG)	3.7.2 EAD/ESO (BG)	3.7.2 A new AC 400kV line (OHL) between Maritsa East and Plovdiv with a length of 100km and a capacity of 1700 MVA (onshore).	3.7.2 Permitting	3.7.2 2019
	142-258	3.7.3 Internal line between Maritsa East 1 and Maritsa East 3 (BG)	3.7.3 Maritsa East 1 to Maritsa East 3 (BG)	3.7.3 EAD/ESO (BG)	3.7.3 Construction of a new 400 kV AC line (OHL) of 13 km and with a capacity of 1700 MVA between Maritsa East 1 and Maritsa East 3 (onshore).	3.7.3 Permitting	3.7.3 2017
	142-262	3.7.4 Internal line between Maritsa East 1 and Bourgas (BG)	3.7.4 Maritsa East 1 to Bourgas (BG)	3.7.4 EAD/ESO (BG)	3.7.4 Construction of a new 400 kV AC line (OHL) of 150 km and with a capacity of 1700 MVA between Maritsa East 1 and Bourgas (onshore).	3.7.4 Permitting	3.7.4 2021

Reinforcement of the interconnection between Bulgaria and Romania:

3.8		Cluster Bulgaria — Romania capacity increase [currently known as "Black Sea Corridor"], including the following PCIs:					
	138-800	3.8.1 Internal line between Dobrudja and Bourgas (BG)	3.8.1 Dobrudja to Bourgas (BG)	3.8.1 Electroenergien	3.8.1 Construction of a new 400kV AC single-circuit line (OHL) of 140 km and with a capacity of 1700 MVA	3.8.1 Planned but not yet in permitting	3.8.1 2022

N/A N/A 138-273,715	3.8.2 No longer considered a PCI 3.8.3 No longer considered a PCI 3.8.4 Internal line between Cernavoda and Stalpu (RO)	N/A N/A 3.8.4 Cernavoda (RO) to Stalpu (RO)	Sistemen Operator EAD/ESO (BG)	N/A N/A 3.8.4 C.N.T.E.E. TRANSELECTRICA S.A. (RO)	connecting Dobrudja and Bourgas (onshore). N/A N/A 3.8.4 A new 400 kV AC OHL double circuit of 159 km and with a capacity of 2x1380 MVA shall be built between the 400 kV substation Cernavoda and the existing 220/110 kV Stalpu substation, which shall be replaced with a 400/110 kV substation (onshore). One of the two circuits shall be connected in-out to the 400 kV substation Gura Ialomitei, situated in the vicinity of the new line.	N/A N/A 3.8.4 Permitting	N/A N/A 3.8.4 2019
138-275	3.8.5 Internal line between Gutinas and Smardan (RO)	3.8.5 Gutinas (RO) to Smardan (RO)		3.8.5 C.N.T.E.E. TRANSELECTRICA S.A. (RO)	3.8.5 A new 400 kV AC OHL double circuit (one circuit wired) of 140 km with a capacity of 1380 MVA shall be built between the existing 400 kV substations Gutinas and Smardan.	3.8.5 Permitting	3.8.5 2020
N/A	3.8.6 No longer considered a PCI	N/A		N/A	N/A	N/A	N/A

Reinforcement of the interconnection between Slovenia, Croatia and Hungary, and reinforcements of the internal grid in Slovenia:

3.9	141-223	Cluster Croatia – Hungary - Slovenia, including the following PCIs: 3.9.1 Interconnection between Žerjavinec (HR)/Hévíz (HU) and Cirkovce (SI)	3.9.1 Cirkovce (SI) to Hévíz (HU)/Žerjavinec (HR)	3.9.1 Elektro Slovenija d. ELES d.o.o. (SI)	3.9.1 Construction of a new 400 kV double circuit OHL, which will be connected to one circuit of the existing Hévíz (HU)-Žerjavinec (HR) double circuit 400kV OHL by erecting a new AC 80 km double circuit 400 kV OHL with a capacity of 2x1330 MVA in Slovenia. The project will result in two new cross-border circuits: Hévíz (HU) - Cirkovce (SI) and Cirkovce (SI) - Žerjavinec (HR) (onshore). The new line will be connected in a new 400 kV substation of Cirkovce (SI).	3.9.1 Permitting	3.9.1 2019
	141-225	3.9.2 Internal line between Divača and Beričevo (SI)	3.9.2 Divača to Beričevo (SI)	3.9.2 Elektro Slovenija d. ELES d.o.o. (SI)	3.9.2 Upgrading 220 kV AC lines to 400 kV on 193 km and with a total capacity of 2x1330 MVA in corridor Divača-Kleče-Beričevo-Podlog-Cirkovce (onshore).	3.9.2 Permitting	3.9.2 2021
	141-225	3.9.3 Internal line between Beričevo and Podlog (SI)	3.9.3 Beričevo to Podlog (SI)	3.9.3 Elektro Slovenija d. ELES d.o.o. (SI)	3.9.3 Upgrading 220 kV AC lines to 400 kV on 193 km and with a total capacity of 2x1330 MVA in corridor Divača-Kleče-Beričevo-Podlog-Cirkovce (onshore).	3.9.3 Planned but not yet in permitting	3.9.3 2026
	141-225	3.9.4 Internal line between Podlog and Cirkovce (SI)	3.9.4 Podlog to Cirkovce (SI)	3.9.4 Elektro Slovenija d. ELES d.o.o. (SI)	3.9.4 Upgrading 220 kV AC lines to 400 kV on 193 km and with a total capacity of 2x1330 MVA in corridor Divača-Kleče-Beričevo-Podlog-Cirkovce (onshore).	3.9.4 Planned but not yet in permitting	3.9.4 2026
3.10		Cluster Israel — Cyprus — Greece between Hadera and Attica region [currently known as "EUROASIA Interconnector"], including the following					

	219-949	PCIs: 3.10.1 Interconnection between Hadera (IL) and Kofinou (CY)	Hadera (IL) to Kofinou (CY)	3.10.1 EuroAsia Interconnector Ltd	The project consists of a 400 kV DC underwater electric cable and any essential equipment and/or installation for interconnecting the Cypriot, Israeli and the Greek transmission networks (offshore). The project will have a capacity of 2000 MW and a total length of around 820 nautical miles/around 1518 km (329 km between CY and IL, 879 km between CY and Crete and 310 km between Crete and Athens) and allow for reverse transmission of electricity. The dumping depth of the cable in some areas between IL and CY is expected to reach 2200 m and the respective depth in some areas between CY and EL is expected to reach 2600 m.	3.10.1 Planned but not yet in permitting	3.10.1 2019
	219-971	3.10.2 Interconnection between Kofinou (CY) and Korakia, Crete (EL)	3.10.2 Kofinou (CY) to Korakia (EL)	3.10.2 Euro Asia Interconnector Ltd		3.10.2 Planned but not yet in permitting	3.10.2 2022
	219-1054	3.10.3 Internal line between Korakia, Crete and Attica region (EL)	3.10.3 Korakia (EL) to Attica (EL)	3.10.3 Euro Asia Interconnector Ltd, in cooperation with ADMIE (EL)		3.10.3 Planned but not yet in permitting	3.10.3 2020

Reinforcements of the internal grid in Czech Republic:

3.11	200-306,307,308	Cluster Czech Republic internal lines to increase capacity at North-Western and Southern borders including the following PCIs: 3.11.1 Internal line between Vernerov and Vitkov (CZ)	3.11.1 Vernerov (CZ) to Vitkov (CZ)		3.11.1 Building a new 400 kV substation at Vitkov with 400/110kV transformer of rating power 350 MVA as an additional reinforcement to the existing 220 kV substation. Building a new 400 kV substation at Vernerov with two 400/110kV transformers of rating power 350 MVA. Building a new 400 kV AC double circuit OHL of 75 km with a capacity of 2x1730 MVA between Vernerov and Vitkov (onshore). 3.11.2 Building a new 400kV AC double circuit OHL of 86 km with a capacity of 2x1730 MVA between Vitkov and Prestice (onshore). 3.11.3 Extension and upgrade of the existing substation 400/110kV at Kocin that will enable connection of 5 new OHL (onshore). Reinforcement of the existing 400 kV AC OHL of 115.8	3.11.1 Permitting	3.11.1 2023
	200-309	3.11.2 Internal line between Vitkov and Prestice (CZ)	3.11.2 Vitkov (CZ) to Prestice (CZ)			3.11.2 Permitting	3.11.2 2020
	200-311,315	3.11.3 Internal line between Prestice and Kocin (CZ)	3.11.3 Kocin (CZ) to Prestice (CZ)			3.11.3 Permitting	3.11.3 2028

	200-312, 313,314	3.11.4 Internal line between Kocin and Mirovka (CZ)	3.11.4 Kocin (CZ) to Mirovka (CZ), V413 (CZ) looping to Mirovka		km between Kocin and Prestice from single circuit with a capacity of 1360 MVA to double circuit with a capacity of 2x1730 MVA (onshore). 3.11.4 Extension and upgrade of the existing substation 400/110kV at Mirovka with two transformers of rating power 2x250 MVA that will enable the connection of new OHLs. New 400 kV AC OHL with a length of 120.5 km and a capacity of 2x1730 MVA between Kocin and Mirovka (onshore). New 400kV AC OHL of 26.5 km with a capacity of 2x1730 MVA between V413 and Mirovka (onshore).	3.11.4 Permitting	3.11.4 2024
	200-316	3.11.5 Internal line between Mirovka and Cebin (CZ)	3.11.5 Mirovka (CZ) to Cebin (CZ)	ČEPS, a.s. (CZ)	3.11.5 Reinforcement of the existing 400 kV AC OHL of 88,5 km between Mirovka and Cebin from single circuit with a capacity of 1360 MVA to double circuit OHL with a capacity of 2x1730 MVA (onshore).	3.11.5 Permitting	3.11.5 2029

Cluster North-South-East corridor in Germany to increase transmission capacity and to integrate renewable energy:

3.12	130-665	Internal line in Germany between Wolmirstedt and Bavaria to increase internal North-South transmission capacity	Wolmirstedt (DE) to Isar, Bavaria (DE)	50Hertz Transmission (DE) TenneT TSO GmbH (DE)	New HVDC line (500 kV) with a length of ca. 600 km and a capacity of minimum 2.000 MW to integrate especially new wind generation from Northeastern Germany and Baltic Sea towards Central/Southern Europe for consumption and system stability improvement. The forthcoming update of the Federal Requirements Plan (Bundesbedarfsplan) will specify either Gundremmingen or Isar as the project's endpoint in Bavaria (DE).	Planned but not yet in permitting	2022
3.13	205-193	Internal line in Germany between Halle/Saale and Schweinfurt to increase capacity in the North-South Corridor East	Altenfeld (DE) to Redwitz (DE)	50Hertz Transmission (DE) Tennet GmbH (DE)	New 380 kV AC OHL and with a capacity of more than 3500 MVA between the substations Altenfeld and Redwitz (onshore).	Under construction	2016

Increase of the transmission capacity between Germany and Poland:

3.14	58-140,726	Cluster Germany — Poland [currently known as "GerPol Power Bridge" project], including the following PCIs: 3.14.1 Interconnection between Eisenhüttenstadt (DE) and Plewiska (PL)	3.14.1 Eisenhüttenstadt (DE) to Plewiska (PL)	3.14.1 50Hertz Transmission (DE) PSE S.A.(PL)	3.14.1 New AC 380 kV double circuit OHL of about 250 km with thermal capacity of approximately 3750 MVA between Eisenhüttenstadt and Plewiska including the construction of new substation Gubin (PL).	3.14.1 Under consideration	3.14.1 2030
	58-353, 1035	3.14.2 Internal line between Krajnik and Baczyna (PL)	3.14.2 Krajnik (PL) to Baczyna (PL)	3.14.2 PSE S.A.(PL)	3.14.2 Construction of new 400 kV AC double circuit OHL of about 90 km with thermal capacity of 2x1870	3.14.2 Planned but not yet in permitting	3.14.2 2021

	58-355	3.14.3 Internal line between Mikułowa and Świebodzice (PL)	3.14.3 Mikułowa (PL) to Świebodzice (PL)	3.14.3 PSE S.A.(PL)	MVA between Krajnik and Baczyzna. One circuit temporarily working at 220 kV on the section between Krajnik and Gorzów. Construction of new 400 kV substation Baczyzna which will be connected by splitting and extending of the existing line and upgrading limitations between Krajnik and Plewiska. 3.14.3 Construction of new 400 kV double circuit line of about 100 km with thermal capacity of 2x1870 MVA between Mikułowa and Świebodzice with one circuit temporarily working at 220 kV.	3.14.3 Planned but not yet in permitting	3.14.3 2022
3.15	94-139	Cluster Germany — Poland between Vierraden and Krajnik [currently known as "GerPol Improvements"], including the following PCIs 3.15.1 Interconnection between Vierraden (DE) and Krajnik (PL)	3.15.1 Vierraden (DE) to Krajnik (PL)	3.15.1 50Hertz Transmission GmbH (DE) PSE S.A.(PL)	3.15.1 Upgrade of existing 220 kV AC OHL between Vierraden and Krajnik to 380 kV double circuit OHL with a length of 26 km and a capacity of approximately 3.500 MVA (onshore). The upgrade of the line is on condition that the line is equipped with PST (PCI 3.15.2.) in order to ensure the system security and stability in case of high flows on the mentioned line	3.15.1 Under construction	3.15.1 2017
	94-796,992	3.15.2 Installation of phase shifting transformers on the interconnection lines between Krajnik (PL) — Vierraden (DE) and coordinated operation with the PST on the interconnector Mikułowa (PL) — Hagenwerder (DE)	3.15.2 Phase shifting transformers on the interconnection line between Krajnik (PL) – Vierraden (DE)	3.15.2 50Hertz	3.15.2 Installation of Phase Shifting Transformers (PSTs) on the upgraded interconnection between Krajnik (PL) and Vierraden (DE).	3.15.2 Under construction	3.15.2 2017

Increase of the transmission capacity between Hungary and Slovakia:

3.16	48-214	Cluster Hungary — Slovakia between Gönyű and Gabčíkovo, including the following PCI: 3.16.1. Interconnection between Gabčíkovo (SK) - Gönyű (HU) - Veľký Ďur (SK) 3.16.1 Interconnection between Gabčíkovo (SK) — Gönyű (HU) and Veľký Ďur (SK)	3.16.1 Gabčíkovo (SK) -Gönyű (HU) – Veľký Ďur (SK)	3.16.1 MAVIR (HU), SEPS (SK)	3.16.1 New AC 400 kV double circuit interconnection with a total capacity of 2 772 MVA between SK and HU from Gabčíkovo substation (SK) to the Gönyű substation (HU), with one circuit connected to Veľký Ďur substation (SK). The approximate length of the interconnector is 20 km between Gabčíkovo and Gönyű and the project also includes the erection of a new switching station Gabčíkovo next to the existing	3.16.1 Planned but not yet in permitting	3.16.1 2018
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	N/A	3.16.2 No longer considered a PCI	N/A	N/A	one (onshore). Clusters 3.16 and 3.17 are co-dependent. N/A	N/A	N/A
	N/A	3.16.3 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
3.17	48-695,696,697	PCI Hungary — Slovakia interconnection between Sajóvánka (HU) and Rimavská Sobota (SK)	Sajóvánka (HU) to Rimavská Sobota (SK)	MAVIR (HU), SEPS (SK)	Connection of the two existing substations R. Sobota (SK) and Sajóvánka (HU) by a new 2x400 kV AC double circuit line (preliminary armed only with one circuit on the Hungarian side), with an approximate total length of 49 km and a capacity of 2x1386 MVA, including the R. Sobota (SK) substation necessary equipment (onshore). Installation of 2x70 MVar shunt reactors and a second 400/120 kV transformer in the substation of Sajóvánka (HU). Clusters 3.16 and 3.17 are co-dependent.	3.17 Planned but not yet in permitting	3.17 2018
3.18	54-720	Cluster Hungary — Slovakia between Kiszvárd area and Velké Kapušany, including the following PCIs: 3.18.1 Interconnection between Kiszvárd area (HU) and Velké Kapušany (SK)	3.18.1 Area of Kiszvárd to Velké Kapušany (SK), at the HU-SK border	3.18.1 MAVIR (HU), SEPS (SK)	3.18.1 Erection of new 400 kV AC double circuit line (OHL) with a capacity of 2772 MVA between Velké Kapušany (SK) and a substation in the area of Kiszvárd (HU - exact location and length of the line to be defined) (onshore).	3.18.1 Under consideration	3.18.1 2029
	N/A	3.18.2 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
3.19	28-70,621,622	Cluster Italy — Montenegro between Villanova and Lastva, including the following PCIs: 3.19.1 Interconnection between Villanova (IT) and Lastva (ME)	3.19.1 Villanova (IT) to Lastva (ME)	Terna - Rete Elettrica Nazionale SpA. (IT)	3.19.1 New HVDC interconnection line with a capacity of 1000 MW between Italy and Montenegro via about 455 km of 500 kV DC subsea cable and converter stations at both ending points in Villanova (IT) and Lastva (ME) (offshore).	3.19.1 Construction	3.19.1 2019
	N/A	3.19.2 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
	N/A	3.19.3 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
3.20	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
3.21	150-616	Italy – Slovenia interconnection between Salgareda (IT) and Divača - Bericevo region (SI)	Salgareda (IT) to Divača/Bericevo (SI) (still under consideration)	Terna - Rete Elettrica Nazionale SpA.(IT), ELES d.o.o. (SI)	The project includes a new 300-500 kV HVDC marine and underground cable between Italy and Slovenia with a length between about 150 and 250 km and a capacity up to 1000 MW.	Under consideration on Slovenian side; Under permitting on Italian side.	2022

3.22	144-238	Cluster Romania – Serbia between Resita and Pancevo (currently known as "Mid Continental East Corridor"), including the following PCIs: 3.22.1 Interconnection between Resita (RO) and Pancevo (RS)	3.22.1 Resita (RO) to Pancevo (RS)	3.22.1 C.N.T.E.E. TRANSELECTRICA S.A. (RO) Elektromreža Srbije (RS)	3.22.1 New 400 kV AC double circuit OHL with a length of 131 km (63 km on RO side and 68 km on RS side) and with a capacity of 2x1380 MVA between substations Resita and Pancevo (onshore).	3.22.1 Construction	3.22.1 2017
	144-269,701	3.22.2 Internal line between Portile de Fier and Resita (RO)	3.22.2 Portile de Fier to Resita (RO)	3.22.2 C.N.T.E.E. TRANSELECTRICA S.A.(RO)	3.22.2 New 400 kV AC OHL of 116 km and with a capacity of 1380 MVA between existing substation 400 kV Portile de Fier and new 400 kV substation Resita, extension with one bay of 400 kV substation Portile de Fier, new 400 kV substation Resita, with 400/220 kV and 400/110 kV transformers, as development of the existing 220/110 kV substation.	3.22.2 Permitting	3.22.2 2017
	144-270,705	3.22.3 Internal line between Resita and Timisoara/Sacalaz (RO)	3.22.3 Resita (RO) to Timisoara/Sacalaz (RO)	3.22.3 C.N.T.E.E. TRANSELECTRICA S.A.(RO)	3.22.3 Upgrade of an existing 220 kV AC double circuit line (OHL) between Resita – Timisoara (RO) to 400 kV double circuit line Resita-Timisoara/Sacalaz of which: 74 km from Resita to Timisoara with a capacity of 1380 MVA and 92 km from Resita to Sacalaz with a capacity of 1380 MVA, both overhead lines will be built on common towers up to Icloda on 58 km. Moreover, the project includes the new 400 kV substation Timisoara and replacement of 220 kV substation Sacalaz with 400 kV substation.	3.22.3 Permitting	3.22.3 2022
	144-270	3.22.4 Internal line between Arad and Timisoara/Sacalaz (RO)	3.22.4 Arad to Timisoara/Sacalaz (RO)	3.22.4 C.N.T.E.E. TRANSELECTRICA S.A.(RO)	3.22.4 Upgrade of the existing 220 kV AC double circuit line (OHL) Timisoara/Sacalaz-Arad to 400 kV as follows: 14 km of line will be build single circuit between Sacalaz-C.Aradului-connection point , 11 km single circuit from Timisoara to connection point and the rest 42 km of the line will be double circuit from connection point to Arad.	3.22.4 Planned, but not yet in permitting	3.22.4 2022

Hydro-pumped storages in Bulgaria and Greece:

3.23	218	Hydro-pumped storage in Bulgaria – Yadenitsa	Yadenitsa site is located about 20 km to the South of Belovo, along the valley of Belovska River Connection point to transmission network: substation Vetren	NATSIONALNA ELEKTRICHESKA KOMPANIA EAD (NEK EAD)	Chaira PSHP with its 788 MW pumping capacity is the most significant regulating capacity in the Bulgarian EPS. In the existing situation the four hydro units in Chaira PSHP during a pumping mode transfer waters from the lower reservoir Chaira to the upper reservoir Belmeken for 8,5 hours, which is not enough for the purposes of the EPS control and for balancing the night minimal load of the power system when there is wind. The reason for that comes from the small	Permitting	2022
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					volume of the lower reservoir Chaira - 5.6 mln m ³ . This problem can be solved by increasing the production potential of Chaira PSHPP by the construction of Yadenitsa Dam at the level of Chaira Dam and their connecting by pressure derivation. This system of connected vessels will allow transfer of waters in a gravity way from one reservoir to the other, which will mean volume increase of the lower reservoir of Chaira PSHPP by 9 mln m ³ .		
3.24	217	Hydro-pumped storage in Greece — Amfilochia	Location: Municipality of Amfilochia, Prefecture of Aitolokarnania (EL) Connection point to transmission network: Ultra H.V. Substation Acheloos (150/400 kV)	TERNA ENERGY S.A	Pumped Storage Complex with two independent upper reservoirs: Agios Georgios and Pyrgos, using as lower reservoir the artificial reservoir of Kastraki (owner Public Power Corporation). The equipment for energy production and energy pumping will be installed in two independent power houses, near Kastraki reservoir.	Permitting	2021
3.25	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
3.26	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

4. Baltic Energy Market Interconnection Plan ('BEMIP Electricity')

No	TYNDP reference	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
4.1	36-141	Denmark — Germany interconnection between Tolstrup Gaarde (DK) and Bentwisch (DE) via offshore windparks Kriegers Flak (DK) and Baltic 1 and 2 (DE) [currently known as "Kriegers Flak Combined Grid Solution"]	Tolstrup Gaarde (DK) to Bentwisch (DE)	50Hertz Transmission (DE) Energinet.dk (DK)	The Kriegers Flak Combined Grid Solution is a new 400 MW offshore interconnection between Bentwisch (DE) and Tolstrup Gaarde (DK) via the offshore wind farms Kriegers Flak (DK), Baltic 1 and 2 (DE). The project envisages three main components: 400MW HVDC VSC B2B converter station, offshore substations, approximately 2x25 km sea cables with a voltage of 150 kV.	Permitting	2018
4.2	62-386	Cluster Estonia – Latvia between Kilingi-Nõmme and Riga [currently known as 3 rd interconnection] including the following PCIs: 4.2.1 Interconnection between Kilingi-Nõmme (EE) and Riga CHP2 substation (LV)	4.2.1 Kilingi-Nomme (EE) Riga CHP2 (LV)	4.2.1 AS Augstsprieguma Tikls (LV), Elering AS (EE)	4.2.1 Estonia – Latvia third interconnection will consist of 211 km of 330 kV AC OHL with a capacity of 1143 MVA, constructed mostly on the existing transmission line routes between Kilingi-Nõmme and RigaCHP2 substations (onshore).	4.2.1 Permitting	4.2.1 2020
	62-735	4.2.2 Internal line between Harku and Sindi (EE)	4.2.2 Harku to Sindi (EE)	4.2.2 Elering AS (EE)	4.2.2 New double circuit AC OHL with 2 different voltages 330 kV and 110 kV, with a capacity of 1143 MVA/240 MVA and a length of 140 km. Major part of new internal	4.2.2 Permitting	4.2.2 2020

	163-1062	4.2.3 Internal line between Riga CHP2 and Riga HPP (LV)	4.2.3 Riga CHP2 to Riga HPP (LV)	4.2.3 AS Augstsprieguma Tikls (LV)	connection will be established on existing lines on the Western part of Estonian mainland (onshore). 4.2.3 Reinforcement of the existing 330 kV OHL between Riga CHP2 and Riga HPP (onshore) with a length of 12 km and a planned capacity of 600 MW (onshore).	4.2.3 Under consideration	4.2.3 2020
4.3	N/A	Now part of PCI no. 4.9	N/A	N/A	N/A	N/A	N/A

4.4	60-385	Cluster Latvia — Sweden capacity increase [currently known as "NordBalt" project], including the following PCIs 4.4.1 Internal line between Ventspils, Tume and Imanta (LV)	4.4.1 Ventspils to Imanta (LV)	4.4.1 AS Augstsprieguma Tikls (LV)	4.4.1 The PCI represents the third stage of the Kurzeme Ring project, which consists of a transmission network reinforcement project in Latvia with the construction of new 330 kV OHL in the Western part of Latvia, connecting Grobina substation with Imanta substation (Riga) by 330 kV network. The PCI covers the section Ventspils-Tume-Imanta (Riga), with a length of 210 km and a capacity of 940 MVA (onshore).	4.4.1 Under construction	4.4.1 2019
	124-733	4.4.2 Internal line between Ekhyddan and Nybro/Hemsjö (SE)	4.4.2 Part 1: Ekhyddan to Nybro Part 2: Nybro to Hemsjö	4.4.2 Svenska Kraftnät (SE)	4.4.2 New 400 kV AC single circuit OHL of 70 km between Ekhyddan and Nybro and a new 400 kV AC single circuit OHL of 85 km between Nybro and Hemsjö and with a total capacity of 3000 MVA (onshore).	4.4.2 Planned, but not yet in permitting	4.4.2 2021

Reinforcements in Lithuania and Poland necessary for the operation of "LitPol Link I":

4.5	N/A 123-335 123-373	Cluster Lithuania – Poland between Alytus (LT) and Elk (PL) including the following PCIs: 4.5.1 No longer considered a PCI 4.5.2 Internal line between Stanisławów and Olsztyn Mątki (PL)	N/A 4.5.2 Stanisławów to Ostrołęka to Olsztyn Mątki (PL)	N/A 4.5.2 PSE Operator S.A.(PL)	N/A 4.5.2 Construction of new 400 kV AC double-circuit OHL line with a length of 108 km and capacity of 2x1870 MVA between Ostrołęka and Stanisławów will partly use route existing 220 kV single-circuit line between Ostrołęka and Miłosna. In one circuit of 400 kV line, the Wyszków substation will be enabled. After the construction of 400 kV line, the 220 kV line will be dismantled. Expansion of 400 kV Ostrołęka substation and construction of a new 400 kV substation in Stanisławów, which will be connected by splitting and extending of 400 kV lines Miłosna - Narew and Miłosna - Siedlce. Existing 220 kV single circuit line of 139 km between Ostrołęka and Olsztyn Mątki will be upgraded to 400	N/A 4.5.2 Stanisławów to Ostrołęka: Planned, but not yet permitting Ostrołęka to Olsztyn Mątki: Under construction	N/A 4.5.2 Stanisławów to Ostrołęka: 2021 Ostrołęka to Olsztyn Mątki: 2019
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	N/A N/A 59-379 123-1038	4.5.3 No longer considered a PCI 4.5.4 No longer considered a PCI 4.5.5 Internal line between Kruonis and Alytus (LT)	N/A N/A 4.5.5 Kruonis to Alytus	N/A N/A 4.5.5 Litgrid AB (LT)	kV AC double circuit OHL with capacity of 2x1870 MVA. After dismantling of 220 kV line Ostrołęka – Olsztyn, the one circuit Ostrołęka - Olsztyn Mątki will be temporarily switched on 220kV and connected to Olsztyn substation. N/A N/A 4.5.5 New 330 kV double circuit OHL between Kruonis and Alytus with a length of 53 km and a capacity of 2x1080 MVA (onshore). Construction of the second 500 MW back-to-back converter station in Alytus.	N/A N/A 4.5.5 Internal line: Permitting Second converter station: Feasibility study to be completed by 2016 Q4	N/A N/A 4.5.5 Internal line: 2017 Second converter station: depends on feasibility study results
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Hydro-pumped storages in Estonia and Lithuania:

4.6	211	Hydro-pumped storage in Estonia — Muuga	Muuga, Jõelähtme parish, Harju county (EE) Connection point to transmission network: Aruküla	OÜ Energiasalv	Muuga HPSPP uses seawater and has an installed capacity of 500 MW. Maximum volumetric flow rate by generation and in the pumping mode is 120 m ³ /s. Normal static head is 500 m. Lower reservoir is on the level -500 m in Muuga granite massif. Energy rating of storage is 12 hours. The excavated granite will be used for road construction.	Under consideration	2024
4.7	212	Capacity increase of hydro-pumped storage in Lithuania — Kruonis	Kruonis (LT)	Lietuvos Energija	Hydro-pumped storage in Kruonis with an installed capacity of 900 MW (4 units of 225 MW). Existing units have 74% of cycle efficiency in maximum power output and can operate in the range of 160–225 MW in generation mode but have no flexibility in pump mode. New 225 MW variable speed (asynchronous) unit is planned to be installed. The new unit will have pump mode ranging from 110 to 225 MW and the cycle efficiency of up to 78%.	Planned, but not yet in Permitting	2018-2019

4.8		Cluster Estonia-Latvia and internal reinforcements in Lithuania, including the following PCIs:					
	163-1010	4.8.1 Interconnection between Tartu (EE) and Valmiera (LV)	4.8.1 Tartu (EE) to Valmiera (LV)	4.8.1 AS Augstsprieguma Tikls (LV), Elering AS (EE)	4.8.1 Reinforcement of existing 330 kV OHL between Tartu (EE) and Valmiera (LV) with a length of 133 km (48 km in LV and 85 km in EE) and a planned capacity of 1000 MVA.	4.8.1 Under consideration	4.8.1 2023
	163-1012	4.8.2 Internal line between Balti and Tartu (EE)	4.8.2 Balti to Tartu (EE)	4.8.2 Elering AS (EE)	4.8.2 Reinforcement of existing 330 kV OHL between Balti and Tartu (EE) with a planned capacity of 1143 MVA.	4.8.2 Under consideration	4.8.2 2030
	163-1011	4.8.3 Interconnection Tsirguliina (EE) and Valmiera (LV)	4.8.3 Tsirguliina (EE) to Valmiera (LV)	4.8.3 AS Augstsprieguma	4.8.3 Reinforcement of existing 330 kV OHL between Tsirguliina (EE) and Valmiera (LV) with a length of 62	4.8.3 Under consideration	4.8.3 2024

	163-1013	4.8.4 Internal line between Eesti and Tsirguliina (EE)	4.8.4 Eesti to Tsirguliina (EE)	Tikls (LV), Elering AS (EE)	km (49 km in LV and 13 km in EE) and a planned capacity of 1000 MVA.		
	170-1034	4.8.5 Internal line between substation in Lithuania and state border (LT)	4.8.5 substation (tbd) in LT to state border	4.8.4 Elering AS (EE) 4.8.5 LITGRID AB	4.8.4 Reinforcement of existing 330 kV OHL between Eesti and Tsirguliina (EE) with a planned capacity of 1143 MVA. 4.8.5 New 400 kV OHL between substation in Lithuania and the state border (onshore). The exact route of the project is still to be determined.	4.8.4 Under consideration	4.8.4 2030
	170-380	4.8.6 Internal line between Kruonis and Visaginas (LT)	4.8.6 Kruonis to Visaginas (LT)	4.8.6 LITGRID AB	4.8.6 New 330 kV single circuit OHL with a length of 200 km and a capacity of 1080 MVA (onshore).	4.8.5 Under consideration	4.8.5 2023
4.9	N/A	Various aspects of the integration of the Baltic States' electricity network into the continental European network, including their synchronous operation (generic project)*	N/A	LITGRID AB (LT), AS Augstsprieguma tikls (LV), Elering AS (EE)	This generic project will aim at assessing all possible options for the enhanced integration of the Baltic States' electricity network into the Continental European Network (CEN), including their synchronous operation with CEN, but also the options of integration of the Baltic States in the Nordic power systems by their operation only on HVDC connections or their technical capability to operate as a self-standing region (asynchronous cooperation).	N/A	N/A

5. Priority corridor North-South gas interconnections in Western Europe ('NSI West Gas')

Projects allowing bidirectional flows between Ireland and the United Kingdom

No	TYNDP reference	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
5.1	TRA-N-059	Cluster to allow bidirectional flows from Northern Ireland to Great Britain and Ireland and also from Ireland to United Kingdom, including the following PCIs: 5.1.1 Physical reverse flow at Moffat interconnection point (IE/UK)	5.1.1 Moffat Entry Point in South West Scotland (UK)	5.1.1 GNI(UK) Ltd.	5.1.1 Physical reverse flow at the Moffat interconnection point, which is currently unidirectional, supporting forward flow only from UK to IE, the Isle of Man and Northern Ireland (onshore). The planned capacity will be determined by the feasibility study, which will examine compression, odourisation, network capacity requirements to facilitate physical reverse flow from Ireland to GB and Northern Ireland.	5.1.1 Pre-feasibility	5.1.1 2018

	TRA-N-027	5.1.2 Upgrade of the SNIP (Scotland to Northern Ireland) pipeline to accommodate physical reverse flow between Ballylumford and Twynholm	5.1.2 Northern Ireland and Scotland, nearest interconnection point is 23 (UK)	5.1.2 Premier Transmission Limited	5.1.2 Upgrading of the Scotland to Northern Ireland pipeline to accommodate physical reverse flow between Ballylumford and Twynholm. The upgrade involves 3 components: install compression, reversal of a metering stream and flow control and removing upstream gas odourisation equipment and installing at a downstream point so that the gas in the pipeline will not be odourised in future. The planned capacity is 132 GWh/d.	5.1.2 Feasibility studies	5.1.2 2016
	UGS-N-294	5.1.3 Development of the Islandmagee Underground Gas Storage (UGS) facility at Larne (Northern Ireland)	5.1.3 Northern Ireland near the town of Larne, nearest interconnection point is 23 (UK) The facility will connect to the Northern Ireland Gas Transmission System at Ballylumford	5.1.3 Islandmagee Storage Ltd	5.1.3 New salt cavity gas storage Islandmagee UGS at Larne (UK). The project will provide a working volume of 500 MCM/day allowing for a withdraw capacity of 22 MCM/day and an injection capacity of 12 MCM/day.	5.1.3 Feasibility/FEED Permitting	5.1.3 2018
5.2	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
5.3	LNG-N-030	Shannon LNG Terminal and connecting pipeline (IE)	Between Tarbert and Ballylongford in County Kerry (IE)	Shannon LNG Limited	Shannon LNG will deliver gas into the existing Bord Gáis Éireann owned national gas transmission network near Foynes, County Limerick in IE via a 26 km high pressure onshore pipeline (with a design pressure of 98 bars). The planned initial capacity is 176.5 GWh/d with ultimate capacity of 294.3 GWh/d.	Pre-feasibility studies Feasibility studies Permitting	2018

Projects allowing bidirectional flows between Portugal, Spain, France and Germany

No	TYNDP reference	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
5.4	TRA-N-168 TRA-N-283 TRA-N-284 TRA-N-285	3 rd interconnection point between Portugal and Spain	Celorico da Beira to Braganza (PT) and Zamora (ES)	ENAGAS (ES) REN Gasodutos (PT)	A pipeline between Celorico da Beira (PT) and Zamora (ES) in a first phase. Reinforcements on both gas systems (pipelines and CS), with the correspondent incremental capacities, are also considered.	Pre-feasibility FEED studies (from Portuguese side).	2019 (first phase) 2020-2025 (future developments)
5.5	TRA-N-161 TRA-N-252 TRA-N-256	Eastern Axis Spain — France — interconnection point between Iberian Peninsula and France at Le Perthus,	ES to FR at the interconnection point Le Perthus	ENAGAS (ES) GRTgaz (FR) TIGF	A new pipeline from Hostalric to the French border (104 km) and Martorell CS (36 MW), including several loops at Tivisa-Arbos (ES) and Castelnou-	Pre-feasibility Feasibility/FEED	2021/2022

		including the compressor stations at Montpellier and St. Martin de Crau [currently known as "Midcat"]			Villar de Arnedo (ES). A 120 km long pipeline between the border (in Le Perthus) and the CS of Barbaira, the installation of an additional compression of 10 MW at Barbaira, and a 28 km long pipeline between Lupiac and Baran (Artère de Gascogne). New compressor station in Montpellier and adaptation of compressor station in Saint Martin de Crau.		
5.6	TRA-N-047	Reinforcement of the French network from South to North – Reverse flow from France to Germany at Obergailbach/Medelsheim Interconnection point (FR)	FR-DE border, 20 km far from Saarbrücken and 80 km from Strasbourg Additional compressor stations in 3 locations in France.	GRTgaz (FR) GRTgaz Deutschland GmbH (DE)	Removing existing odorisation stations and setting up new ones at the entry of regional one-way pipelines in the French gas network and setting up additional compressor stations in 3 locations in France. Reinforcement of the North East pipeline between Morelmaison and Voisines (FR). Change of the metering facility in Medelsheim.	Planned	2021/2022
5.7	TRA-N-043 TRA-N-331 TRA-N-391	Reinforcement of the French network from South to North to create a single market zone, including the following PCIs: 5.7.1 Val de Saône pipeline between Etrez and Voisines (FR) 5.7.2 Gascogne-Midi pipeline (FR)	5.7.1 Etrez and Voisines (FR) 5.7.2 Lupiac (FR) to Barran (FR)	5.7.1 GRTgaz (FR) TIGF (FR) 5.7.2 GRTgaz(FR) TIGF (FR)	5.7.1 New onshore pipeline of 190 km between Etrez (FR) and Voisines (FR) and new compressor station of 9 MW at Etrez (FR). 5.7.2 A 60 km long pipeline with 5,5 MW compression in Barbaira station. Adaptation of interconnection station in Cruzy and Saint Martin on the Midi pipeline to enable reverse flow (FR).	5.7.1 Permitting Feasibility/FEED 5.7.2 Design and permitting; FID	5.7.1 2018 5.7.2 2018
5.8	TRA-N-253 TRA-F-041	Reinforcement of the French network to support South to North flows, including the following PCIs: 5.8.1 Est Lyonnais pipeline between Saint-Avit and Etrez (FR) 5.8.2 Eridan pipeline between Saint-Martin-de-Crau and Saint-Avit (FR)	5.8.1 Saint Avit to Etrez (FR) 5.8.2 Saint Martin de Crau to Saint Avit (FR)	5.8.1 GRTgaz (FR) 5.8.2 GRTgaz (FR)	5.8.1 Reinforcement of the pipeline between Saint Martin de Crau and Saint-Avit on a distance of 220 km. 5.8.2 Reinforcement of the pipeline between Saint-Avit and Etrez on a distance of 170 km. Capacity and the power of the compressor station in Saint-Avit are still to be assessed.	5.8.1 Planned 5.8.2 Permitting	5.8.1 2021/2022 5.8.2 2021/2022

Bidirectional flows between Italy, Switzerland, Germany and Belgium/France

5.9	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
5.10	TRA-N-208	Reverse flow interconnection on TENP pipeline in Germany	TENP pipeline from interconnection point at Walbach (DE) to Bocholtz (DE)	Fluxys TENP GmbH	Deodorisation facility and reversal of the compressor station Hgelheim.	Pre-feasibility	2017
5.11	TRA-F-214	Reverse flow interconnection between Italy and Switzerland at Passo Gries interconnection point	Passo Gries interconnection point, North area of IT	Snam Rete Gas SpA	Reverse flow at Passo Gries interconnection point towards Germany and France via Switzerland with new onshore pipelines of approximately 80 km and with a daily capacity of 421 GWh/day as overall reverse flow capacity increment. The power of the compressor station is 95 MW.	Under construction	2018
5.12	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

Development of interconnections between the Netherlands, Belgium, France and Luxembourg

5.13	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
5.14	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
5.15	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
5.16	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
5.17	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

Other projects

5.18	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
5.19	LNG-N-211 and/or TRA-N-031	Connection of Malta to the European Gas network — pipeline interconnection with Italy at Gela and/or offshore Floating LNG Storage and Re-gasification Unit (FSRU)	MT to IT – interconnection point at Gela	Maltese Ministry for Energy and Health	The project is made up of two components or phases: The first phase of the project is a gas pipeline interconnection between Gela (Sicily) to Delimara (Malta) including terminal stations with an approx. length of 155 km and annual capacity of 2 bcm/y and daily capacity of 49 GWh/day; primarily intended for the importation of natural gas from the Italian gas network. Following the completion of this first phase, a second phase can be planned allowing for bi-directional flow of gas through the pipeline interconnection by installing a Floating LNG Storage and Re-Gasification Unit (FSRU) located approximately 12km offshore	First Phase : Preliminary design studies – not yet in permitting stage Second Phase: Consideration stage	First phase : 2026 Second Phase: 2031

					from Delimara.		
5.20	TRA-N-012	Gas Pipeline connecting Algeria to Italy (via Sardinia) [currently known as "Galsi " pipeline]	Algerian coast to Tuscany landfall via Sardinia	GALSI SpA	New transcontinental gas pipeline project between Algeria and Italy (via Sardinia). The project can be divided into three sections: offshore pipeline between Algeria and south Sardinia (length 288 km, capacity 258 GWh/d, compression station in Algeria at Koudiet Draouche 3x33 MW); onshore pipeline between south Sardinia and north Sardinia (length 285 km, capacity 258 GWh/d); offshore pipeline between south Sardinia and Tuscany (length 288 km, capacity 258 GWh/d, compression station in north Sardinia at Olbia 2x26 MW)	Permitting	2019

6. Priority corridor North-South gas interconnections in Central Eastern and South Eastern Europe ("NSI East Gas")

Projects allowing bidirectional flows between Poland, Czech Republic, Slovakia and Hungary linking the LNG terminals in Poland and Croatia:

No	TYNDP reference	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
6.1	TRA-N-136 TRA-N-273 TRA-N-247 TRA-N-136	Cluster Czech — Polish interconnection upgrade and related internal reinforcements in Western Poland, including the following PCIs: 6.1.1 Poland — Czech Republic Interconnector [currently known as "Stork II"] between Libhošť — Hať (CZ/PL) — Kędzierzyn (PL) 6.1.2 Transmission infrastructure projects between Lwówek and Kędzierzyn (PL)	 6.1.1 Libhošť (CZ) — Hať (CZ/PL) — Kędzierzyn (PL) 6.1.2 Lwówek to Kędzierzyn (PL)	 6.1.1 Gas Transmission Operator GAZ-SYSTEM S.A.; NET4GAS, s.r.o. 6.1.2 Gas Transmission Operator GAZ-SYSTEM S.A.	 6.1.1 New onshore cross-border pipeline with a length of ca. 112.4 km and a maximum daily capacity of 153.2 GWh/d (13.7 mcm/day) in the direction PL->CZ and 219.1 GWh/d (19.6 mcm/d) in the direction CZ->PL. 6.1.2 New onshore pipelines and compressor stations in Western Poland which are required to ensure an effective and efficient cross-border network expansion: Zdzieszowice - Kędzierzyn pipeline – 19 km; Zdzieszowice - Wrocław pipeline – 130 km; Czesów - Kiełczów pipeline – 32 km; Czesów - Wierzchowice pipeline – 13 km;	 6.1.1 Design and permitting 6.1.2 Design and permitting	 6.1.1 2019 6.1.2 2019

	N/A	6.1.3 Now part of PCI no. 6.1.2	N/A	N/A	Lwowek - Odolanow pipeline – 162 km; Tworóg - Kędzierzyn pipeline – 47 km; N/A	N/A	N/A
	N/A	6.1.4 Now part of PCI no. 6.1.2	N/A	N/A	N/A	N/A	N/A
	N/A	6.1.5 Now part of PCI no. 6.1.2	N/A	N/A	N/A	N/A	N/A
	N/A	6.1.6 Now part of PCI no. 6.1.2	N/A	N/A	N/A	N/A	N/A
	N/A	6.1.7 Now part of PCI no. 6.1.2	N/A	N/A	N/A	N/A	N/A
	N/A	6.1.8 Now part of PCI no. 6.2.3	N/A	N/A	N/A	N/A	N/A
	N/A	6.1.9 Now part of PCI no. 6.1.2	N/A	N/A	N/A	N/A	N/A
	N/A	6.1.10 Now part of PCI no. 6.2.3	N/A	N/A	N/A	N/A	N/A
	N/A	6.1.11 Now part of PCI no. 6.2.3	N/A	N/A	N/A	N/A	N/A
	TRA-N-136	6.1.12 Tvrdonice-Libhošť pipeline, including upgrade of CS Břeclav (CZ)	6.1.12 Tvrdonice (CZ) – Libhošť (CZ) and CS Břeclav (CZ)	6.1.12 NET4GAS, s.r.o.	6.1.12 New onshore Tvrdonice – Libhošť pipeline with a length of ca. 155 km and upgrade of Břeclav compressor station are required to ensure an effective and efficient cross-border network expansion.	6.1.12 Design and permitting	6.1.12 2019
6.2		Cluster Poland – Slovakia interconnection and related internal reinforcements in Eastern Poland, including the following PCIs:					
	TRA-N-190	6.2.1 Poland – Slovakia interconnector	6.2.1 Strachocina (PL) – Veľké Kapušany (SK)	6.2.1 Gas Transmission Operator GAZ-SYSTEM S.A. eustream, a.s.	6.2.1 New cross-border pipeline with the length of approximately 164 km and with maximum daily capacity of 15.6 MCM/day in the direction SK-PL and 12.9 MCM/day in the direction PL-SK. Construction of new compressor station in Strachocina (Poland), modification of the compressor station at Veľké Kapušany (Slovakia) and construction of border gas metering station on the Slovak territory.	6.2.1 Feasibility study completed; FEED in process; procurement of compressor units delivery at Slovak side in process.	6.2.1 2019
	TRA-N-275	6.2.2 Transmission infrastructure projects between Rembelszczyna and Strachocina (PL)	6.2.2 Rembelszczyna to Strachocina (PL)	6.2.2 Gas Transmission Operator GAZ-	6.2.2 New onshore pipelines and compressor stations in Eastern Poland which are required to ensure an effective and efficient cross-border	6.2.2 Design and permitting	6.2.2 2019–2023

	TRA-N-245	6.2.3 Transmission infrastructure projects between Tworóg and Strachocina (PL)	6.2.3 Tworóg to Strachocina (PL)	SYSTEM S.A. 6.2.3 Gas Transmission Operator GAZ-SYSTEM S.A.	network expansion: Tworóg – Tworzeń pipeline – 56 km; Rembelszczyzna - Wola Karczewska pipeline – 37 km; Wola Karczewska - Wronow pipeline – 98 km; Rozwadów – Końskowola - Wronów pipeline – 103 km; Jarosław - Rozwadów pipeline – 60 km; Hermanowice - Jarosław pipeline – 39 km; Hermanowice - Strachocina pipeline – 72 km. 6.2.3 New onshore pipelines and compressor stations in Eastern Poland which are required to ensure an effective and efficient cross-border network expansion: Pogórska Wola - Tworzeń pipeline – 160 km; Strachocina - Pogórska Wola pipeline – 98 km; N/A	6.2.3 Design and permitting	6.2.3 2019–2023
	N/A	6.2.4 Now part of PCI no. 6.2.2	N/A	N/A	N/A	N/A	N/A
	N/A	6.2.5 Now part of PCI no. 6.2.2	N/A	N/A	N/A	N/A	N/A
	N/A	6.2.6 Now part of PCI no. 6.2.2	N/A	N/A	N/A	N/A	N/A
	N/A	6.2.7 Now part of PCI no. 6.2.2	N/A	N/A	N/A	N/A	N/A
	N/A	6.2.8 Now part of PCI no. 6.2.2	N/A	N/A	N/A	N/A	N/A
	N/A	6.2.9 Now part of PCI no. 6.2.2	N/A	N/A	N/A	N/A	N/A
6.3	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
6.4	TRA-N-021 TRA-N-133	PCI Bidirectional Austrian — Czech interconnection (BACI) between Baumgarten (AT) – Reinthal (CZ/AT) — Brečlav (CZ)	Baumgarten (AT) – Reinthal (CZ/AT) — Brečlav (CZ)	GAS CONNECT AUSTRIA GmbH, NET4GAS, s.r.o.	BACI will be a new infrastructure directly connecting the Austrian and Czech market. It will be connected to the existing Czech transmission system via CS Břeclav and to the Austrian transmission system via Baumgarten.	Planned	2019

Projects allowing gas to flow from Croatian LNG terminal to neighbouring countries:

6.5		Cluster Krk LNG terminal and evacuation pipelines towards Hungary and beyond, including the following PCIs:					
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LNG-N-082	6.5.1 LNG Phased development of a LNG terminal in Krk (HR)	6.5.1 Omišalj, on the island of Krk (HR)	6.5.1 LNG Hrvatska d.o.o.	6.5.1 LNG terminal based on a migration concept: 1 st Phase: - LNG RV – installation of receipt of LNGRV, with the correspondent annual send-out capacity of 1-2 BCM/year; 2 nd Phase: - FSU – storing LNG on a vessel - onshore regasification – a segment of the future LNG terminal, with a correspondent annual send-out capacity of 2-3 BCM/year; 3 rd Phase: LNG terminal onshore, with a correspondent annual send-out capacity of 4-6 BCM/year.	6.5.1 Feasibility/FEED/permitting	6.5.1 2019
TRA-N-075	6.5.2 Gas pipeline Zlobin – Bosiljevo – Sisak – Kozarac – Slobodnica (HR)	6.5.2 Zlobin via Bosiljevo, Sisak, the gas node Kozarac to Slobodnica (CZ)	6.5.2 Plinacro Ltd	6.5.2 Construction of new, upgrade and extension of existing pipelines with a total distance of 308 km, namely: Zlobin – Bosiljevo pipeline – 58 km; Bosiljevo – Sisak pipeline - 100 km; Sisak – Kozarac pipeline – 22 km; Kozarac – Slobodnica pipeline – 128 km. The daily capacity is of 30 MCM/day.	6.5.2 Feasibility/FEED/permitting	6.5.2 2019
N/A	6.5.3 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
N/A	6.5.4 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

Projects allowing gas flows from the Southern Gas Corridor and/or LNG terminals in Greece through Greece, Bulgaria, Romania, Serbia and further to Hungary, including reverse flow capability from south to north and integration of transit and transmission systems:

6.8	Cluster Interconnection between Greece, Bulgaria and Romania and necessary reinforcements in Bulgaria, including the following PCIs:					
TRA-N-378	6.8.1 Interconnection Greece – Bulgaria [currently known as IGB] between Komotini (EL) – Stara Zagora (BG)	6.8.1 Komotini (EL) to Stara Zagora (BG)	6.8.1 ICGB AD	6.8.1 New onshore pipeline with a length of 185 km and a daily capacity of approximately 13.7 MCM/day. The power of the compressor station(s) is of approximately 20 MW.	6.8.1 Permitting	6.8.1 2018
TRA-N-298	6.8.2 Necessary rehabilitation, modernization and expansion of the Bulgarian transmission system	6.8.2 BG Existing gas transmission infrastructure on the territory of Bulgaria	6.8.2 Bulgartransgaz EAD (BG)	6.8.2 Activities related to the overall rehabilitation, modernization, reinforcement and expansion of the existing gas transmission infrastructure on the territory of Bulgaria (modernization and rehabilitation of compressor stations, inspections, repair and replacement of sections; expansion and modernization of the existing network:	6.8.2 Feasibility studies/FEED/permitting	6.8.2 2020

	TRA-N-431	6.8.3 Interconnection of the Northern ring of the Bulgarian gas transmission system with Podisor — Horia pipeline and expansion of capacity on Hurezani-Horia-Csanadpalota section	6.8.3 Hurezani-Horia-Csanadpalota	6.8.3 SNTGN Transgaz SA	6.8.3 The project is meant to link the new planned IP3 between BG and RO with Podisor – Horia pipeline and to expand the gas transmission capacity on Hurezani – Horia – Csanadpalota section.	6.8.3 Planned	6.8.3 2023
	TRAN-N-379	6.8.4 Gas pipeline aiming at expanding the capacity on the interconnection of the Northern ring of the Bulgarian and Romanian gas transmission networks	6.8.4 Northern Bulgaria	6.8.4 Bulgartransgaz EAD	6.8.4 The project shall include construction of new infrastructure and modernization and expansion of the existing one aimed at increasing the capacity of interconnectivity of the Northern semi-ring of Bulgartransgaz EAD national gas transmission network and Transgaz S.A. Romania gas transmission network.	6.8.4 Planned	6.8.4 2018
6.9	LNG-N-062 TRA-N-063	Cluster LNG terminal in northern Greece, including the following PCIs: 6.9.1 LNG terminal in Northern Greece	6.9.1 Region of Thrace (EL) – Sea of Thrace (NE part of EL), 17.6 km SW from Alexandroupolis)	6.9.1 Gastrade S.A.,DEPA S.A.	6.9.1 New offshore LNG FSRU near Alexandroupolis (mooring position 17.6 km SW of Alexandroupolis port) and a system of subsea and onshore pipeline with a length of 28 km (4 km onshore and 24 km offshore), with a daily send out capacity of 16.8 MCM/day (187.5 GWh/day).	6.9.1 Permitting completed	6.9.1 2018
	N/A	6.9.2 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
	TRA-N-128	6.9.3 Gas compressor station at Kipi (EL)	6.9.3 Kipi	6.9.3 DEFSA S.A.	6.9.3 Compressor station to upgrade the capacity of the interconnector between Turkey and Greece. The power of the compressor station is estimated at 4.5 x 2 MW – layout: 1 on duty +1stand-by	6.9.3 Permitting completed	6.9.3 2020
6.10	TRA-N-137	PCI Gas interconnection Bulgaria — Serbia [currently known as "IBS"]	Sofia district, from Sofia to Kalotina (BG), and then through Dimitrovgrad to Nis (RS)	Ministry of Energy Bulgaria Srbijagas (RS)	New onshore pipeline with a length of 150 km and a daily capacity of 4.93 MCM/day interconnecting Bulgarian and Serbian gas systems between Sofia (BG) and Nis (RS).	Feasibility studies Design of the Bulgarian section	2018
6.11	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
6.12	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
6.13	N/A	6.13.1 Now PCI no. 6.24.4	N/A	N/A	N/A	N/A	N/A
	N/A	6.13.2 Now PCI no. 6.24.5	N/A	N/A	N/A	N/A	N/A
	N/A	6.13.3 Now PCI no. 6.24.6	N/A	N/A	N/A	N/A	N/A
6.14	N/A	Now PCI no. 6.24.1	N/A	N/A	N/A	N/A	N/A
6.15	TRA-N-139	Interconnection of the national transmission system with the international gas transmission pipelines	Isaccea	SNTGN Transgaz SA	Works within GMS Isaccea and the upgrade (amplification) of Compressor Station Silistea and a new compression station at Onesti. The power of the	Pre-feasibility studies	2019

		and reverse flow at Isaccea (RO)			compressor stations amounts to a total 22 MW. The project also implies the construction of a connection pipeline between the DN 1000 Pipeline (Transit 1 Bulgaria) and the NTS with a capacity of 2.2 bcm/year and with the possibility to meter the natural gas volumes transmitted in both directions.		
N/A		6.15.1 Now part of PCI 6.15	N/A	N/A	N/A	N/A	N/A
N/A		6.15.2 Now part of PCI 6.15	N/A	N/A	N/A	N/A	N/A

Project allowing gas from the Southern Gas Corridor to flow through Italy towards the North-Eastern Europe

6.16	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
6.17	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
6.18	TRA-N-007	Adriatica pipeline (IT)	South-Centre of IT	Snam Rete Gas	New onshore pipeline of approximately 700 km and with a daily capacity of approximately 24 MCM/day. The power of the compressor station(s) will be of 33 MW	Permitting	Exact date will be defined according to transportation contracts to be signed in relation to additional capacity requests at new or existing entry points in the south of Italy
6.19		No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

Projects allowing development of underground gas storage capacity in South-Eastern Europe

6.20		Cluster increase storage capacity in South-East Europe, including one or more of the following PCIs:					
	N/A	6.20.1 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
	UGS-N-138	6.20.2 Chiren UGS expansion	6.20.2 Chiren (BG)	6.20.2 Bulgartransgaz	6.20.2 Expansion of the underground gas storage facility in depleted gas field in Chiren, Bulgaria, with following technical characteristics:	6.20.2 Feasibility/FEED	6.20.2 2021

	N/A	6.20.3 No longer considered a PCI	N/A	EAD (BG)	Projected working gas volume of between 1000 MCM (existing + new); Projected withdrawal capacity maximum 10 MCM/day (existing +new); Injection capacity 8-10 MCM/day (existing +new). Cycling rate 1 times/year. N/A	N/A	N/A
	UGS-N-233	[...] and one of the following PCIs: 6.20.4 Depomures storage in Romania	6.20.4 Depomures (RO)	6.20.4 GDF Suez Energy Romania S.A. (RO)	6.20.4 Extension of storage facility in depleted field in Depomures, with the following technical characteristics: Working Gas Volume 600 (300 existing + 300 new) MCM; Withdraw capacity 5 (2 existing + 3 new) MCM/day; Injection capacity 5 (2 existing + 3 new) MCM/day; times/year.	6.20.4 Feasibility/FEED/permitting	6.20.4 2018
	UGS-N-366	6.20.5 New underground gas storage in Romania	6.20.5 Suceava(RO)	6.20.5 Romgaz S.A. RO	6.20.5 New gas storage facility in depleted field located in the Northern part of Romania with the following technical characteristics: Working Gas Volume 200 MCM; Withdraw capacity 2 MCM/day; Injection capacity 1,4 MCM/day; Cycling rate 1 times/year x.	6.20.5 Pre-feasibility	6.20.5 2023
	UGS-N-371	6.20.6 Sarmasel underground gas storage in Romania	6.20.6 Sarmasel, Targu Mures (RO)	6.20.6 Romgaz S.A. RO	6.20.6 Extension and upgrading of storage facility in depleted field Sarmasel, with the following technical characteristics: Working Gas Volume 1550 (800 existing + 100 in progress+ 650 new) MCM; Withdraw capacity 10 (4,75 existing +2 in progress+ 3,25 new) MCM/day; Injection capacity 10 (6 in progress + 4 new) MCM/day; Cycling rate 1 times/year	6.20.6 Pre-feasibility	6.20.6 2024

6.21	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
6.22	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
6.23	TRA-N-112 TRA-N-325	Hungary – Slovenia interconnection (Nagykanizsa – Tornyiszentmiklós (HU) –	Nagykanizsa – Tornyiszentmiklós (HU) –	Plinovodi d.o.o., FGSZ	Interconnector between the Hungarian and Slovenian transmission systems on the route Nagykanizsa -		2020

		Lendava (SI) – Kidričevo	Lendava (SI) – Kidričevo		Tornyiszentmiklós (HU) - Lendava (SI) – Kidričevo, enabling access to underground storages in Hungary for Slovenian gas suppliers, enabling access to LNG terminals in northern Adriatic and other gas sources for Hungarian gas suppliers.		
6.24		Cluster: Phased capacity increase on the Bulgaria — Romania — Hungary — Austria bidirectional transmission corridor (currently known as "ROHUAT/BRUA") to enable an indicative capacity 1.75 bcm/a in the 1st phase and 4.4 bcm/a in the 2nd phase at the Hungarian-Romanian interconnection point as a reference for the corridor including new resources from the Black Sea:					
	TRA-N-126	6.24.1 Romanian-Hungarian reverse flow: Hungarian section 1st stage CS at Csanádpalota (1st phase)	6.24.1 Bacia – Nadlac route	6.24.1 SNTGN TRANSGAZ SA	6.24.1 New onshore pipeline with a length of about 280 km with a capacity of 4.4 bcm/year and two new compressor stations located along the route. The power of the compressor stations amounts to a total of 33 MW.	6.24.1 Pre-feasibility study	6.24.1 2023
	TRA-N-358	6.24.2 Development on the Romanian territory of the National Gas Transmission System on the Bulgaria — Romania — Hungary — Austria Corridor — transmission pipeline Podișor — Horia GMS and 3 new compressor stations (Jupa, Bibești and Podișor) (1st phase)	6.24.2 Podișor – Corbu – Hateg – Horia route	6.24.2 SNTGN TRANSGAZ SA	6.24.2 New onshore pipeline with a length of 528 km and with a transmission capacity of 4.5 bcm/year. The power of the compressor station(s) amounts to a total 43.5 MW.	6.24.2 FEED	6.24.2 2019
	TRA-N-423	6.24.3 GCA Mosonmagyaróvár CS (development on the Austrian side) (1st phase)	6.24.3 Mosonmagyaróvár GCA, Austria	6.24.3 Gas Connect Austria GmbH	6.24.3 Compressor station at Baumgarten including pipeline works in order to generate freely allocable capacity (FZK) at Entry Mosonmagyaróvár of 153.08 GWh/d	6.24.3 Planned	6.24.3 2020
	TRA-N-018	6.24.4 Városföld-Ercsi– Győr pipeline (HU) (2nd phase)	6.24.4 In Hungary, between Városföld (Southern Great Plain), Ercsi (Central Hungary) and Győr (Western Transdanubia).	6.24.4 FGSZ	6.24.4 The project contains two main parts, one is a 98 km long DN1000, PN100 onshore natural gas pipeline between Városföld and Ercsi , the other one is a 112 km long DN1000, PN100 onshore natural gas pipeline between the Ercsi and Győr. New onshore pipelines,	6.24.4 Feasibility study	6.24.4 2020

TRA-N-061	6.24.5 Ercsi-Százhalombatta pipeline (HU) (2nd phase)	6.24.5 In Hungary, between Ercsi and Százhalombatta (Central Hungary).	6.24.5 FGSZ	which will improve the daily capacity of Csanádpalota IP (RO/HU) and (HU/RO) directions up to 11.4 Mcm/day (4,17 Bcm/a (0oC)), and Mosonmagyaróvár IP (HU/AT) and (AT/HU) directions up to 13.6 Mcm/day (4,93 Bcm/a (0oC)) together with the Városföld CS and Romanian-Hungarian reverse flow Hungarian section 2nd stage projects. 6.24.5 New 11 km long DN800, PN63 onshore natural gas pipeline Ercsi and Százhalombatta (Central Hungary), enabling potential transmission towards Slovakia. New onshore pipeline, which enables potential transmission towards Vecsés IP (FGSZ/MGT) and (MGT/FGSZ) directions up to 13.6 Mcm to prepare the increased SK/HU bidirectional capacity deliveries.	6.24.5 Feasibility study	6.24.5 2020
TRA-N-123	6.24.6 Városföld compressor station (HU) (2nd phase)	6.24.6 In Hungary, close to the existing compressor station at Városföld (Central Hungary).	6.24.6 FGSZ	6.24.6 The project contains an additional compressor unit to as extension to the existing stations. The improved compressor power ensures the needed operational pressure and enables the 13,6 Mcm/day (4,93 Bcm/a (0oC)) capacity up to the Austrian and/or Vecsés 4 IP (Slovak border). Enlargement of the existing compressor station at Városföld with a power of 5.7 MW, which will improve the daily capacity of Csanádpalota IP (RO/HU) and (HU/RO) directions up to 11.4 Mcm/day (4,17 Bcm/a (0oC)), and Mosonmagyaróvár IP (AT/HU) and (HU/AT) directions up to 13.6 Mcm/day (4,93 Bcm/a (0oC)).	6.24.6 Feasibility study	6.24.6 2020
TRA-N-358	6.24.7 Expansion of the transmission capacity in Romania towards Hungary up to 4.4 bcm/year (2nd phase)	6.24.7 Jupa, Bibești and Podișor	6.24.7 SNTGN TRANSGAZ SA	6.24.7 Pipeline between Recas and Horia with a length of 50 km and expansion with additional third units of compressor stations Jupa, Bibești and Podișor.	6.24.7 FEED	6.24.7 2019
TRA-N-362	6.24.8 Black Sea shore — Podișor (RO) for taking over the Black sea gas	6.24.8 Black Sea shore – Podișor route	6.24.8 SNTGN TRANSGAZ SA	6.24.8 New onshore pipeline with a length of 307 km and with a capacity of 6 bcm/year.	6.24.8 Feasibility study	6.24.8 2020
TRA-N-377	6.24.9 Romanian-Hungarian reverse flow: Hungarian section 2nd stage Csanádpalota or Algyő (HU)(2nd phase)	6.24.9 In Hungary, close to the existing measuring station at Csanádpalota (RO/HU border)	6.24.9 FGSZ	6.24.9 The project contains an eventual 3rd compressor unit at Csanádpalota near the Romanian-Hungarian border and the enhancement of Csanádpalota Measuring Station. New onshore compressor unit with a power of 4.5 MW, which will	6.24.9 Feasibility study	6.24.9 2020

					improve the daily capacity of Csanádpalota IP (RO/HU) and (HU/RO) directions up to 11.4 Mcm/day (4,17 Bcm/a (0oC)). It also contains the enhancement of Csanádpalota Measuring Station up to 475 000 cm/h (0oC).		
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6.25	TRA-N-654 TRA-N-655 TRA-N-656 TRA-N-628	Cluster infrastructure to bring new gas to the Central and South-Eastern European region with the aim of diversification, including one or more of the following PCIs: 6.25.1 Pipeline system from Bulgaria to Slovakia [currently known as "Eastring"]	6.25.1 Bulgaria to Slovakia	6.25.1 Bulgartransgaz EAD, SNTGN Transgaz SA, FGSZ, Eastring B.V.	6.25.1 Construction of a project connecting Velke Kapusany to Malkoclar, with a maximum daily bi-directional capacity of 20 bcm/year (Stage I) and 40 bcm/year (Stage II). TRA-N-654: New onshore DN1400 pipeline of approximately 257 km, new compressor station of total power 88 MW and new metering station. TRA-N-655: New onshore DN1400 pipeline of approximately 651 km and new metering station. TRA-N-656: New onshore DN1400 pipeline of approximately 102 km and new metering station. TRA-N-628: New onshore DN1400 pipeline of approximately 19 km, new compressor units of total power 52 MW, installed at the existing CS Velke Kapusany and new metering station.	6.25.1 TRA-N-654:pre-feasibility study, finished hydrological calculations TRA-N-655: pre-feasibility study, finished hydrological calculations TRA-N-656: pre-feasibility study, finished hydrological calculations TRA-N-628: pre-feasibility study, finished hydrological calculations	6.25.1 2019
	TRA-N-631 TRA-N-582 TRA-N-630 TRA-N-585 TRA-N-583	6.25.2 Pipeline system from Greece to Austria [currently known as "Tesla"]	6.25.2 Greece to Austria	6.25.2 Joint Stock Company GA-MA Skopje; Srbijagas FGSZ; Gas Connect Austria GmbH	6.25.2 The project aims at transporting natural gas from the, planned, Turkish Stream pipeline (RU - TK) to Central Europe, the Balkans and Italy, via Greece, FYROM, Serbia, Hungary and Austria. In Greece, the project consists in the construction of a pipeline and two or three compressor stations, according to the variant, within the territory of Greece, from the GR/TK border to the GR/MK border.	6.25.2 Planned	6.25.2 2019

TRA-N-358	6.25.3 Further enlargement of the Bulgaria — Romania — Hungary — Austria bidirectional transmission corridor [currently known as "ROHUAT/BRUA", phase 3]	6.25.3 Bulgaria — Romania — Hungary — Austria	6.25.3 SNTGN Transgaz SA	6.25.3 Further enhancement of the Podisor – Corbu – Hateg – Horia pipeline.	6.25.3 Planned	6.25.3 2022
TRA-N-592 TRA-N-649 TRA-N-593 TRA-N-594	6.25.4 Infrastructure to allow the development of the Bulgarian gas hub	6.25.4 Bulgaria	6.25.4 Bulgartransgaz	6.25.4 Looping CS Valchi Dol - Line valve Novi Iskar (pipeline with a length of 383 km). TRA-N-593 Varna-Oryahovo gas pipeline (pipeline with a length of 383 km 844 km) TRA-N-594 Construction of a Looping CS Provadia – Rupcha village (pipeline with a length of 383 km 50 km)	6.25.4 Planned	6.25.4 2022

6.26	Cluster Croatia — Slovenia — Austria at Rogatec, including the following PCIs:					
TRA-N-086	6.26.1 Interconnection Croatia — Slovenia (Lučko — Zabok - Rogatec)	6.26.1 Lučko — Zabok - Rogatec	6.26.1 Plinacro Ltd	6.26.1 New pipeline which will upgrade the existing interconnection Croatia/Slovenia. Along with the existing interconnection Karlovac-Lučko-Zabok-Rogatec, a new gas pipeline system has been planned which would significantly increase the capacity of the interconnection of the Croatian and the Slovenian gas transmission systems in this direction. Considering almost all existing and new supply directions in the surrounding region and the Croatian storage potentials this opens significant transit potentials in both directions. Along this transit route, it is planned to upgrade the capacity to 5 bcm/y.	6.26.1 Planned	6.26.1 2018
TRA-N-094	6.26.2 CS Kidričevo, 2nd phase of upgrade (SI)	6.26.2 Kidričevo (si)	6.26.2 Plinovodi d.o.o.	6.26.2 Upgrade of CS for higher operational pressure in M1/1 pipeline, higher flow and bidirectional operation.	6.26.2 Planned	6.26.2 2018
TRA-N-334	6.26.3 Compressor stations at the Croatian gas transmission system	6.26.3 Croatia	6.26.3 Plinacro Ltd	6.26.3 In compliance with the national TYNDP 2014-2023, Plinacro plan to build two compressor stations at the national gas transmission system by 2018.	6.26.3 Planned	6.26.3 2018
TRA-N-361	6.26.4 GCA 2014/04 Murfeld (AT)	6.26.4 Murfeld (AT)	6.26.4 GAS CONNECT AUSTRIA GmbH	6.26.4 New Gas compressor station in Murfeld (AT).	6.26.4 Planned	6.26.4 2019
TRA-N-389	6.26.5 Upgrade of Murfeld/Ceršak interconnection (AT-SI)	6.26.5 Murfeld to Ceršak	6.26.5 Plinovodi d.o.o.	6.26.5 Adjustment to operating parameters of the transmission system of the Austrian TSO, increasing the	6.26.5 Planned	6.26.5 2019

	TRA-N-390	6.26.6 Upgrade of Rogatec interconnection	6.26.6 Lučko — Zabok - Rogatec	6.26.6 Plinovodi d.o.o.	transmission capacity and enabling bidirectional operation. 6.26.6 Adjustment to operating parameters of the transmission system of the Croatian TSO, increasing the transmission capacity and enabling bidirectional operation.	6.26.6 Planned	6.26.6 2020
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7. Priority corridor Southern Gas Corridor ('SGC')

No	TYNDP reference	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
7.1	TRA-F-221 (TANAP) TRA-F-395 (SCP-(F)X) TRA-N-339 (TCP)	PCI Cluster of integrated, dedicated and scalable transport infrastructure and associated equipment for the transportation of a minimum of 10 bcm/a of new sources of gas from the Caspian Region, crossing Georgia and Turkey and ultimately reaching Italy through the Adriatic Sea, and including one or more of the following PCIs: 7.1.1 Gas pipeline to the EU from Turkmenistan and Azerbaijan, via Georgia and Turkey, [currently known as the combination of "Trans-Caspian Gas Pipeline" (TCP), "Expansion of the South-Caucasus Pipeline" (SCP-(F)X) and "Trans Anatolian Natural Gas Pipeline" (TANAP)]	7.1.1 TCP: From Turkmenistan (tie-in to the East-West Pipeline or offshore collection points) to Azerbaijan (tie-in to the SCP-(F)X through the Caspian Sea SCP-F(X): From the vicinity of Baku (Azerbaijan) to the vicinity of Tbilisi (Georgia) to the Georgia/Turkey border with subsequent tie-in to TANAP TANAP: From the Georgia/Turkey border (tie-in to the SCP-(F)X) to the Greece/Turkey border at Kipi (tie-in to TAP)	7.1.1 TCP: W-Stream Caspian Pipeline Company Ltd SCP-(F)X: SOCAR MIDSTREAM OPERATIONS TANAP: TANAP DOGALGAS ILETIM ANONIM SIRKETI	7.1.1 TCP: Offshore pipeline in the Caspian Sea with a length of 300 km and an ultimate capacity of 32 bcm/a will branch-off at a connection with the East-West pipeline in Turkmenistan or, for the first stage, from a collection point of offshore Caspian production/treatment in Turkmenistan. It will feed into Sangachal terminal/SCP-(F)X in Azerbaijan. SCP-(F)X: Upgrade of the existing pipeline system between Azerbaijan and Turkey via Georgia system with throughput capacity upgrades of 5 bcm/a by 2022 (SCP-(F)X). TANAP: New onshore and offshore pipeline between the Eastern and Western borders of Turkey and crossing Anatolia with a length of 1900 km and an initial throughput capacity of 16 bcm/a.	7.1.1 TCP: Pre-feasibility SCP-(F)X: Pre-feasibility studies TANAP: FEED Final Investment decision (FID) Permitting	7.1.1 TCP: 2019-2020 SCP-(F)X: 2021-2022 TANAP: 2018 Turkish exit point 2019 Greek Cross Border exit point

TRA-N-128	7.1.2 Gas compressor station at Kipi (EL)	7.1.2 Compressor Station at Kipi: Located in the vicinity of Kipi (Greece) near the GR/TK border	7.1.2 DESFA S.A	7.1.2 Compressor station to upgrade the capacity of the interconnector between Turkey and Greece to 11 BCM/year. The power of the compressor station in Kipi is estimated at 9,7 x 3 MW – layout: 2 on duty + 1 stand-by.	7.1.2 Planned	7.1.2 2020
TRA-F-051	7.1.3 Gas pipeline from Greece to Italy via Albania and the Adriatic Sea [currently known as “Trans-Adriatic Pipeline” (TAP)]	7.1.3 From the Greece/Turkey border point at Kipi (tie-in to TANAP) to the vicinity of San Foca (Italy) via Albania and the Adriatic Sea.	7.1.3 Trans Adriatic Pipeline A.G.	7.1.3 New onshore and offshore pipeline between Greece/Turkey and Italy with a total length of 871 km (766 km onshore and 105 km offshore), with a normal daily capacity of 27.1 MCM/day and a maximum daily capacity of 30.1 MCM/day. Initial throughput capacity of 10 bcm/a. The power of the compressor station(s) is 90 MW.	7.1.3 Design and permitting, FID	7.1.3 2020
TRA-N-010	7.1.4 Gas pipeline from Greece to Italy [currently known as "Poseidon Pipeline"]	7.1.4 The pipeline will connect the Italian and Greek gas networks, from the Compressor Station in Thesprotia (EL) to the Receiving Terminal in Otranto (IT), crossing the Ionian Sea.	7.1.4 IGI Poseidon S.A.	7.1.4 New offshore pipeline of approximately 216km with a capacity of 329.4 GWh/day. The total power of the compressor station in Thesprotia will be around 120MW.	7.1.4 Permitting (completed in Italy, under completion in Greece)	7.1.4 2020
N/A	7.1.5 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
TRA-N-512	7.1.6 Metering and Regulating Stations for the connection of the Greek transmission system with TAP	7.1.6 Two locations are foreseen, one in Komotini and one in Thessaloniki greater area.	7.1.6 DESFA S.A.Compressor	7.1.6 Metering and Regulating stations, given the higher operating pressure of TAP	7.1.6 Planned	7.1.6 2020
TRA-N-014	7.1.7 Komotini — Thesprotia pipeline (EL)	7.1.7 New onshore pipeline” from Komotini in Eastern Greece to Thesprotia in Western Greece near the Ionian sea.	7.1.7 DESFA S.A	7.1.7 The pipeline will have a total length of about 610 km and a diameter of 42” and two compressor stations, one in Komotini and one in Nea Messimvria, in the greater Thessaloniki area, both with 9,7 x 3 MW – layout: 2 on duty + 1 stand-by.	7.1.7 Planned	7.1.7 2022

7.2	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
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7.3	TRA-N-330	7.3.1 Pipeline from offshore Cyprus to Greece mainland via Crete [currently known as "EastMed Pipeline"]	7.3.1 IGI Poseidon S.A.	7.3.1 New onshore and offshore pipeline of approximately 1700 km (1200 km offshore, 500 km onshore). The pipeline will have an estimated capacity of 450 GWh/day, with a delivery capacity of 30 GWh/day to Cyprus and 420 GWh/day to Greece Mainland. The total power of the compressor stations to be installed will be around 320 MW.	7.3.1 Pre-FEED phase	7.3.1 3Q 2020
	N/A	7.3.2 Removing internal bottlenecks in	7.3.2 Ministry of	7.3.2 Infrastructures and associated equipment	7.3.2 N/A	7.3.2 2021-2022

		Cyprus to end isolation and to allow for the transmission of gas from the Eastern Mediterranean region	location/routing is not available yet	Energy, Commerce, Industry and Tourism of the Republic of Cyprus	intended to remove internal bottlenecks in Cyprus to end isolation and transmit gas from East Med: Assessment of monetisation options aiming to transmit gas from the East Med gas resources (particularly from the Levantine basin) with the aim to supply natural gas to Cyprus so as to remove internal bottlenecks and end energy isolation.		
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7.4	TRA-N-128	Cluster of interconnections with Turkey, including the following PCIs: 7.4.1 Compressor Station at Kipi (EL)	7.4.1 Located in the vicinity of Kipi (Greece) near the GR/TK border	7.4.1 DESFA S.A.	7.4.1 Compressor station to upgrade the capacity of the interconnector between Turkey and Greece. The power of the compressor station in Kipi is estimated at 1+1x4,5MW (1 duty + 1 stand-by).	7.4.1 Planned	7.4.1 2020
	TRA-N-140	7.4.2 Interconnector between Turkey and Bulgaria [currently known as "ITB"]	7.4.2 Bulgaria/Turkey, South-East Region, Yambol	7.4.2 Bulgartransgaz EAD	7.4.2 New onshore pipeline of up to 200 km (approx. 75 km Bulgarian section and approx. 130 km Turkish section) and with a daily capacity of 9-15 MCM/day in a first phase.	7.4.2 Feasibility/FEED	7.4.2 tbc

8. Priority corridor Baltic Energy Market Interconnection Plan in gas ('BEMIP Gas')

No	TYNDP reference	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
8.1	TRA-N-023 TRA-N-072	Cluster diversifying supply in the Eastern Baltic Sea Region, including the following PCIs: 8.1.1 Interconnector between Estonia and Finland [currently known as "Balticconnector"] and	8.1.1 From Inkoo in the western side of Helsinki (FI) to Paldiski in the western side of Tallinn (EE) – routing based on the TEN-E G122/04 Balticconnector study	8.1.1 Baltic Connector OY (FI) and Elering Gaas AS	8.1.1 New bidirectional offshore pipeline (Inkoo-Paldiski, DN500, 80 bar) of 80 km, plus 50 km onshore pipeline in EE (Kiili-Paldiski pipeline, DN 700, 55 bar) and 20 km onshore pipeline in FI (Siuntio-Inkoo pipeline, DN500, 80 bar) including metering and compressor stations at both ends with a daily nominal capacity of 7.2 mcm/day. Capacity can be increased to 11 mcm/day if network capacity in EE and FI is increased. The power of each compressor station is about 10 MW. Estimated share of offshore pipeline is	8.1.1 Design and permitting	8.1.1 2020

	N/A LNG-N-079	8.1.2 One of the following LNG terminals: 8.1.2.1 No longer considered a PCI 8.1.2.2 Paldiski LNG (EE)	N/A 8.1.2.2 Near Paldiski, Harju county (EE)	N/A 8.1.2.2 Balti Gaas LLC	expected to be 50 km as a part of the FI transmission system and 30 km as a part of the EE transmission system. N/A 8.1.2.2 New onshore LNG terminal near Paldiski, including a reloading facility for bunkering and truck loading bays. The terminal is developed in two stages: Stage I will have a storage capacity of 160 000 cm of LNG with a daily send-out capacity of 3,84 mcm/day; second stage can increase the storage capacity to total of 320 000 cm of LNG and the daily send-out capacity to 14 mcm/day, subject to market demand. The maximum ship size is 160 000 cm of LNG or any standard LNG tanker capable to pass through Danish Straits.	N/A 8.1.2.2 Design and permitting	N/A 8.1.2.2 2019 (I stage)
	LNG-N-146	8.1.2.3 Tallinn LNG (EE)	8.1.2.3 Near Tallinn, at Muuga harbour (EE)	8.1.2.3 Vopak /AS Tallinna Sadam (Tallinn Port Ltd.)	8.1.2.3 New conventional onshore LNG terminal near Tallinn, at Muuga harbour (including, reloading facilities: ships, barges, bio-methane and/or methane rich gas receiving, network injection facility, truck loading bay), with an annual send-out capacity of 4 bcm/year - with further potential up to 8 bcm/year. The LNG storage capacity is of up to 320.000 cm LNG and the ship size on existing berth is of 230 m (LOA), with an extension possibility to the second berth (also existing) with ship size of 350 m (LOA). The terminal is capable of handling any size LNG tanker capable to pass through Danish Straits	8.1.2.3 Design and permitting	8.1.2.3 2017 (Phase I); 2019 (Phase II)
	N/A	8.1.2.4 No longer considered a PCI	N/A	N/A	N/A	N/A	N/A

Reinforcement of the transmission infrastructure in the Baltic States and modernisation of the gas underground storage in Latvia:

8.2	TRA-N-342 TRA-N-382	Cluster infrastructure upgrade in the Eastern Baltic Sea region, including the following PCIs: 8.2.1 Enhancement of Latvia — Lithuania interconnection	8.2.1 Riga to Iecava (LV) and Iecava to the Lithuanian border; Kiemenai GM station (LT)	8.2.1 JSC Latvijas Gaze, and AB Amber Grid	8.2.1 Construction of new parallel pipeline from Riga to Iecava (LV) with a length of 50 km and construction of a new parallel pipeline from Iecava to the Lithuanian border with a length of 43 km with a daily capacity of 12 mcm/day (onshore), and an upgrade of a gas metering station in Kiemenai (LT).	8.2.1 Planned	8.2.1 2021
	TRA-N-084	8.2.2 Enhancement of Estonia — Latvia interconnection	8.2.2 Viljandimaa, Karksi, Puiatu (EE)	8.2.2 Elering Gaas AS	8.2.2 Upgrade of an onshore pipeline to a daily capacity of 10 mcm/day. The power of the compressor station(s) is of 35 MW.	8.2.2 Design and permitting	8.2.2 2019

	N/A UGS-N-374	8.2.3 No longer considered a PCI 8.2.4 Enhancement of Inčukalns Underground Gas Storage (LV)	N/A 8.2.4 Inčukalns underground gas storage in Vidzeme, 45 km from Riga (LV)	N/A 8.2.4 JSC Latvijas Gaze	N/A 8.2.4. Upgrade and extension of an aquifer storage facility with the following technical characteristics: - Current working gas volume: 2300 mcm, and after extension: 2635- 2835 mcm. - Current withdrawal capacity: up to 28-30 mcm/day, after modernization expected: 34-35 mcm/day. - Current injection capacity: 17 mcm/day, after modernization: 21-22 mcm/day. - Cycling rate - 1 time/year (seasonal storage).	N/A 8.2.4 FID (Stage 1)	N/A 8.2.4 Stage 1 & 2: 2022; Stage 3: 2027
8.3	TRA-N-271 TRA-N-428	Poland–Denmark interconnection [currently known as "Baltic Pipe"]	PL to DK (bi-directional). Closest cities: Niechorze, Ploty, Świnoujście (PL), Avedore, Copenhagen (DK) or landfall in the south of Zealand.	Gas Transmission Operator GAZ-SYSTEM S.A. (PL) and Energinet.dk (DK)	New, bi-directional offshore gas pipeline connecting PL and DK through the Baltic Sea (estimated capacity of approx. 6 bcm/y; estimated length of approx. 200 km to 290 km) and the related auxiliary installations, namely the required onshore pipelines (connecting the offshore part with national grids), the receiving terminals and compressor stations in both countries. The project parameters will be thoroughly evaluated during planned feasibility study.	Under consideration	2020-2022
8.4	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
8.5	TRA-N-212 TRA-N-341	Poland-Lithuania interconnection [currently known as "GIPL"]	PL (Rembelszczyzna) – LT (Jauniunai)	Gas Transmission Operator GAZ-SYSTEM S.A. (PL) and AB Amber Grid (LT)	New onshore, bidirectional pipeline with a total length of 534 km (177 km in the territory of LT and 357 km in the territory of PL) and with capacity of 2.4 bcm/year in the direction PL->LT, and up to 1.7 bcm/year in the direction LT->PL. The capacity in the direction PL->LT may be extended up to 4.1 bcm/y in the second stage of the project development.	Design and permitting	2019
8.6	LNG-N-032	Gothenburg LNG terminal in Sweden	Gothenburg Harbour, in a close proximity to an existing transmission pipeline Gothenburg – Stenungsund (SE)	Swedegas AB	New onshore LNG terminal with an annual send-out capacity of 1 bcm/year and a LNG storage capacity of 30.000- 35.000 cm LNG. The maximum ship size is of 75.000 cm LNG. The terminal will be built in 2 phases. Phase 1 with a smaller storage capacity, bunkering availability, railcar and truck (un)loading possibilities. Phase 2 will be constructed with a larger storage facility, regasification unit and connection to Swedegas' transmission grid.	Design and permitting	2018
8.7	LNG-N-272	Capacity extension of Świnoujście LNG terminal in Poland	Świnoujście, Western Pomerania region (PL)	Gas Transmission Operator GAZ-	Extension of the onshore LNG terminal with an annual send-out capacity of 7.5 bcm/year and a total LNG	Planned	2020

			Closest cities: Świnoujście, Szczecin	SYSTEM S.A. (PL)	storage capacity of 3 x 160.000 cm LNG, with the construction of the third storage tank. Provision of additional services (e.g. bunkering, transshipment) is also foreseen.		
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8.8	N/A	No longer considered a PCI	N/A	N/A	N/A	N/A	N/A
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9. Priority corridor Oil Supply Connections in Central Eastern Europe ('OSC')

Enhancement of the security of oil supply in the Central Eastern European region by increasing interoperability and enabling adequate alternative supply routes:

No		Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
9.1	N/A	Adamowo — Brody pipeline: pipeline connecting the JSC Ukrtransnafta's handling site in Brody (Ukraine) and Adamowo Tank Farm (Poland)	From Ukrtransnafta's Handling Site in Brody (UA) to Adamowo Tank Farm (PL)	MPR Sarmatia Sp z o.o. and JSC Ukrtransnafta	A pipeline of 371 km length connecting the JSC Ukrtransnafta's Handling Site in Brody (UA) and Adamowo Tank Farm (PL) and with a maximum technical capacity of 10, 20 and 30 million tonnes per year respectively, depending on the three consecutive stages of project implementation.	Design and permitting	2019
9.2	N/A	Bratislava — Schwechat — Pipeline: pipeline linking Schwechat (Austria) and Bratislava (Slovak Republic)	From Schwechat (AT) to Bratislava (SK)	BSP GmbH	A pipeline of 80 km length linking Schwechat (AT) and Bratislava (SK) and with a diameter of 400 mm and the maximal throughput capacity of 5.0 million tonnes per year.	Design and permitting	2019
9.3	N/A	JANAF-Adria pipelines: reconstruction, upgrading, maintenance and capacity increase of the existing JANAF and Adria pipelines linking the Croatian Omisalj seaport to the Southern Druzhba pipeline in Slovakia; (The Hungarian — Slovak interconnection is no longer considered a PCI)	From Omisalj seaport (HR) to the Southern Druzhba pipeline, through HU and SK	JANAF Plc. (HR) MOL Plc. (HU) Transpetrol (SK)	Increasing capacity and operation security of oil pipelines from Omisalj (HR) through Hungary to the Southern Druzhba pipeline in Slovakia.	Ongoing	2017

9.4	N/A	Litvinov (Czech Republic) — Spergau (Germany) pipeline: the extension project of the Družba crude oil pipeline to the refinery TRM Spergau	From Litvinov (CZ) to Spergau (DE)	MERO CR, a.s.	A pipeline between Litvinov (CZ) and Spergau (DE) with a diameter of 700 mm and a length of 160 km.	Planning	3 years following FID
9.5	N/A	Cluster Pomeranian pipeline (Poland), including the following PCIs: 9.5.1 Construction of oil terminal in Gdańsk	9.5.1 Gdańsk Oil Terminal	9.5.1 PERN “Przyjaźń” S.A.	9.5.1 Handling terminal of 6 crude oil tanks with capacity of 62.500 m ³ each and related installations within the oil terminal.	9.5.1 Ongoing	9.5.1 Gradually by 2016
	N/A	9.5.2 Expansion of the Pomeranian pipeline: loopings and second line on the Pomeranian pipeline linking Plebanka tank farm (near Płock) and Gdańsk handling terminal	9.5.2 From Plebanka Tank Farm (near Płock) to Gdańsk Handling Terminal	9.5.2 PERN “Przyjaźń” S.A.	9.5.2 A pipeline of 234 km with the maximum technical capacity still under consideration, depending on the development of the Litvinov-Spergau and Brody – Adamowo pipelines.	9.5.2 Planning	9.5.2 Depends on the situation on the market
9.6	N/A	TAL Plus: capacity expansion of the TAL pipeline between Trieste (Italy) and Ingolstadt (Germany)	From Trieste (IT) to Ingolstadt (AT)	TAL consortium	Increasing capacity of the TAL pipeline in its first section between Trieste and Ingolstadt to allow for full diversification of oil supply to the Czech Republic.	Design	3 years following FID

10. Priority thematic area Smart Grids Deployment

No		Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	
10.1	N/A	North Atlantic Green Zone Project (Ireland, United Kingdom/Northern Ireland) aims at lowering wind curtailment by implementing communication infrastructure, enhanced grid control and interconnection and establishing (cross-border) protocols for Demand Side Management.	The North Atlantic Green Zone Project is located in the north west of the Republic of Ireland and West of Northern Ireland UK.	Electricity Supply Board - ESB Networks Ltd. Northern Ireland Electricity plc – NIE EirGrid Plc. System Operator Northern Ireland	A major cross border network infrastructure project delivering a ‘smart grid’. This project comprises of intelligent distribution networks with increased cross-border capability, overlaid with high speed communications, enabling operational excellence and leveraging the involvement of all users will be the blueprint for future network deployment on the island of Ireland, and across Europe	Detailed specification and planning - on-going Interaction with regulatory authorities – on-going	2019

				(SONI)			
10.2	N/A	Green-Me (France, Italy) aims at enhancing RES integration by implementing automation, control and monitoring systems in HV and HV/MV substations, including communication with the renewable generators and storage in primary substations, as well as new data exchange to allow for a better cross-border interconnection management.	The project is located in a large cross-border area, involving: - three French administrative regions: Languedoc Roussillon, Midi-Pyrénées and Provence Alpes Côte d'Azur - two Italian administrative regions: Piemonte, Lombardia, Friuli-Venezia-Giulia, Veneto, Emilia Romagna	ENEL DISTRIBUZIONE SPA TERNA SPA ERDF - Electricité Réseau Distribution France RTE – Réseau de Transport d'Electricité	Through the implementation of “smart technologies” together with innovative system tools, the RES generation (in particular PV) will be made more observable, predictable and controllable, improving: - the load and generation forecast at primary distribution level - the hosting capacity of further RES maintaining quality and system reliability. - the communication between TSO and DSO automation systems	Feasibility studies and design phase (project scale was revised, compared to PCI 2013)	2019
10.3	N/A	SINCRO.GRID (Slovenia/Croatia) aims at solving network voltage, frequency control and congestion issues enabling further deployment of renewables and displacement of conventional generation by integrating new active elements in the transmission and distribution grids into the virtual cross-border control centre based on advanced data management, common system optimisation and forecasting involving two neighbouring TSOs and the two neighbouring DSOs.	The SINCRO.GRID project influence area is entire Slovenian and Croatian network.	ELES d.o.o. (Slovenian TSO) HOPS d.o.o. - Hrvatski operator prijenosnog sustava d.o.o. (Croatian TSO) SODO d.o.o. (Sistemski operater distribucijskega omrežja z električno energijo) (Slovenian DSO) HEP-ODS d.o.o. (HEP Operator distribucijskog sustava d.o.o.) (Croatian DSO)	<ul style="list-style-type: none"> • A virtual cross-border control centre for renewable energy in Slovenia and Croatia which will consist of dedicated IT infrastructure and software to be used by system operators for the efficient and coordinated management of RES, using advanced algorithms for VVC optimization, secondary reserve, managing battery storage, advanced real time operation of the grid with advanced forecasting tools and using dynamic thermal rating. Furthermore, telecommunication support for RES control and communication platform for the DSM will be established. • Reactive power sources (substations Divača, Beričevo, Cirkovce/Krško) in Slovenia and in Croatia (substations Konjsko, Melina, Mraclin) using SVC at each TSO involved. • An advanced dynamic thermal rating system • In Slovenia a set of storage (batteries) and DG sources for relieving local power flows and alternative source for secondary control. • Activation of wind power plants in Croatia into the VVC optimization process. 	Feasibility studies and design phase	2021

11. Priority Thematic Area Electricity Highways

List of PCIs with double labelling as electricity highways

No	TYNDP reference	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
Priority Corridor Northern Seas Offshore Grid ('NSOG')							
	74-443	1.1.1 Interconnection between Zeebrugge (BE) and the vicinity of Richborough (UK)	1.1.1 Gezelle (BE) – Richborough (UK)	1.1.1 Nemo Link Limited	1.1.1 New DC sea link including 140 km of DC subsea cable with 1000 MW capacity between Richborough and Gezelle (vicinity of Zeebrugge) (offshore + onshore)	1.1.1 Under construction	1.1.1 technical commissioning 2018 with operation in 2019
	183-1018	1.3.1 Interconnection between Endrup (DK) and Niebüll (DE)	1.3.1 Brunsbüttel (DE) to Endrup (DK)	1.3.1 TenneT TSO GmbH (DE) Energinet.dk (DK)	1.3.1 New 380 kV AC lines (OHL) of about 200 km and with 3000 MVA capacity in Germany and about 80 km in Denmark and new 380 kV-substations for integration of the available and further forecasted onshore wind in Schleswig-Holstein.	1.3.1 Under consideration	1.3.1 2022
	209-67	1.3.2 Internal line between Brunsbüttel and Niebüll (DE)	1.3.2 Brunsbüttel (DE) to Endrup (DK)	1.3.2 TenneT TSO GmbH (DE)	1.3.2 New 380 kV AC lines (OHL) of about 200 km and with 3000 MVA capacity in Germany and about 80 km in Denmark and new 380 kV-substations for integration of the available and further forecasted onshore wind in Schleswig-Holstein.	1.3.2 Under construction	1.3.2 2018
	39-144	1.4.1 Interconnection between Kassø (DK) and Audorf (DE)	1.4.1 Kassø (DK) to Dollern (DE)	1.4.1 TenneT TSO GmbH (DE) Energinet.dk (DK)	1.4.1 Upgrade of existing 220kV AC line to 400 kV thus building a new 400kV route from Denmark to Germany.	1.4.1 Permitting	1.4.1 2020
	209-148	1.4.2 Internal line between Audorf and Hamburg/Nord (DE)	1.4.2 Kassø (DK) to Dollern (DE)	1.4.2 TenneT TSO GmbH (DE)	1.4.2 New 400kV AC double circuit line (OHL) mainly in the trace of an existing 220kV line between Audorf and Hamburg/Nord, including 2 new 400/220kV transformers in substation Audorf.	1.4.2 Under construction	1.4.2 2017
	209-147	1.4.3 Internal line between Hamburg/Nord and Dollern (DE)	1.4.3 Kassø (DK) to Dollern (DE)	1.4.3 TenneT TSO GmbH (DE)	1.4.3 New 400kV AC double circuit line (OHL) between Dollern and Hamburg/Nord, including 2 new 400/220kV transformers in substation Hamburg/Nord (of 50Hertz Transmission) and new 400kV switchgear in Kummerfeld.	1.4.3 Under construction	1.4.3 2016
1.5	71-427	Denmark — Netherlands interconnection between Endrup (DK) and Eemshaven (NL) [currently known as "COBRACable"]	Endrup (DK) to Eemshaven (NL)	TenneT TSO B.V. (NL) Energinet.dk (DK)	A new offshore HVDC 320 kV link of approximately 350 km and with a capacity of 700 MW between Denmark West and the Netherlands. This interconnection will technically be prepared to enable a connection of a potential future offshore wind farm.	Permitting	2019
1.6	107-810	France — Ireland interconnection between La Martyre (FR) and Great Island or Knockraha (IE) [currently known as "Celtic Interconnector"]	Brittany, most probably La Martyre (FR) to future 400 kV substation at Great Island or Knockraha (IE)	EirGrid plc (IE) Réseau de Transport d'Electricité /RTE (FR)	A new 320 kV – 500 kV (depending on the technology, to be fixed at a later stage in detailed design studies) HVDC subsea connection of approximately 600 km and with a capacity of around 700 MW between Ireland and France (offshore).	Under consideration	2025
	153-987	1.7.1 France—United Kingdom interconnection between Cotentin (FR)	1.7.1 Cotentin (FR) to the vicinity of Exeter (UK)	1.7.1 FABLink Ltd, a joint venture of	1.7.1 A 225 km HVDC link between France and Great Britain via the island of Alderney, with a capacity of	1.7.1 Planned, but not yet in permitting	1.7.1 2020-2022

		and the vicinity of Exeter (UK) [currently known as FAB project]		Transmission Investment (UK) and Alderney Renewable Energy; Réseau de Transport d'Electricité / RTE (FR)	between 1000 and 1400 MW - exact value still to be determined (onshore and offshore).		
	25-62	1.7.2 France — United Kingdom interconnection between Tourbe (FR) and Chilling (UK) [currently known as "IFA2" project]	1.7.2 Caen area, most likely Tourbe (FR) to Chilling (UK)	1.7.2 National Grid Interconnector Holdings Limited (UK) Réseau de Transport d'Electricité/RTE (FR)	1.7.2 New subsea 320 kV – 390kV HVDC link with a capacity of around 1000 MW (depending on technology to be fixed at a later stage in detailed specification and competitive procurement processes) between the UK and France (offshore).	1.7.2 Permitting	1.7.2 2020
	172-1005	1.7.3 France — United Kingdom interconnection between Coquelles (FR) and Folkestone (UK) [currently known as "ElecLink" project]	1.7.3 Coquelles (FR) to Folkestone (UK)	1.7.3 ElecLink Limited	1.7.3 A new 51 km 320 kV DC electricity interconnector with a capacity of 1000 MW between Coquelles and Folkestone, via the Channel Tunnel (onshore and offshore).	1.7.3 Permitting	1.7.3 2018
1.8	37-142	Germany — Norway interconnection between Wilster (DE) and Tonstad (NO) [currently known as "NordLink"]	Ertsmyra / Tonstad (NO) to Wilster (DE)	Statnett SF (NO) TenneT TSO GmbH, KfW (DE)	A new HVDC subsea cable of 525 kV, 514 km and with a capacity of 1400 MW between Southern Norway and Northern Germany ((total length onshore and offshore 623 km)).	Under construction	2020
1.10	110-424 190-1033	Norway — United Kingdom interconnection	Norway to United Kingdom	Statnett SF (NO) National Grid Interconnector Holdings Limited (UK) NorthConnect KS	One or more new HVDC interconnection with a capacity of 1400 MW between Norway and the United Kingdom.	Under construction (110-424) Permitting (190-1033)	2021 (110-424) 2022 (190-1033)
1.13	214-1082	Interconnection between Iceland and United Kingdom [currently known as "Ice Link"]	Iceland to UK	National Grid Interconnector Holdings Limited (UK) Landsnet hf (IC) Landsvirkjun (IC)	A new HVDC subsea cable of approximately 1000 km and with a capacity of approximately 800-1200 MW between the UK and Iceland (onshore and offshore), Further details of technology and voltage to be fixed at a later stage.	Under consideration	2030
1.14	167-998	Interconnection between Revsing (DK) and Bicker Fen (UK) [currently known as "Viking Link"]	Bicker Fenn (UK) to Revsing (DK)	National Grid Interconnector Holdings Limited (UK) Energinet.dk (DK)	A new HVDC subsea cable of 500 kV, approximately 740 km and with a capacity of up to 1400 MW between the UK and Denmark (onshore and offshore).	Planned but not yet in permitting	2022

Priority Corridor North-South Electricity Interconnections in Western Europe ('NSI West Electricity')							
	92-146	2.2.1 Interconnection between Lixhe (BE) and Oberzier (DE)	2.2.1 Lixhe, Liège area (BE) to Oberzier, Aachen / Düren region (DE)	2.2.1 Elia System Operator SA (BE), Amprion GmbH (DE)	2.2.1 Connection between Lixhe (BE) and Oberzier (DE) including a new 100 km HVDC underground cable (voltage: ±320kV) and the extension of existing 380 kV substations.	2.2.1 Permitting	2.2.1 2019
	21-55	2.5.1 Interconnection between Grande Ile (FR) and Piosasco (IT) [currently known as Savoie-Piemont project]	2.5.1 Grande Ile (FR) to Piosasco (IT), via Frejus motorway tunnel	2.5.1 Terna - Rete Elettrica Nazionale SpA (IT), RTE - Réseau de Transport d'Electricité (FR)	2.5.1 New 190 km HVDC (VSC) interconnection between Grande Ile (FR) and Piosasco (IT) via an approximately 320 kV underground cable and converter stations at both ends (two poles, each of them for a maximum of 600 MW power capacity). The cables will be laid in the security gallery of the Frejus motorway tunnel and mainly along the existing motorways (onshore).	2.5.1 Construction – both sides Public consultation for route optimization on Italian side	2.5.1 2019
2.7	16-38	France — Spain interconnection between Aquitaine (FR) and the Basque country (ES) [currently known as "Biscay Gulf" project]	Aquitaine (FR) to the Basque Country (ES)	REE - Red Eléctrica de España S.A. (ES), RTE - Réseau de Transport d'Electricité (FR)	New 320 kV or 500 kV (voltage tbd) HVDC subsea cable interconnection of approximately 360 km with a capacity of 2000 MW (tbc) between Aquitaine and the Basque country, via the the Biscay Gulf (offshore).	Planned, but not yet in permitting	2022
2.10	164-664	Germany internal line between Brunsbüttel-Großgartach and Wilster-Grafenrheinfeld (DE) to increase capacity at Northern and Southern borders	Brunsbüttel (DE) to Großgartach (DE) and Wilster (DE) to area Grafenrheinfeld (DE)	TenneT TSO GmbH (DE) TransnetBW GmbH (DE)	New DC lines with a total capacity of 4 GW, with every line having a length according to the line of sight of approx. 450 and 550 km, to integrate new wind generation from northern Germany towards southern Germany and southern Europe for consumption and storage (onshore).	Planned, but not yet in permitting; currently ongoing amendment of the German energy law aiming at preference for underground cabling	2022
2.13	81-462 82-463, 896, 897	Cluster Ireland — United Kingdom interconnections, including one or more of the following PCIs: 2.13.1 Ireland — United Kingdom interconnection between Woodland (IE) and Turleenan (UK) 2.13.2 Ireland — United Kingdom Interconnection between Srananagh (IE) and Turleenan (UK)	2.13.1 Woodland (IE) to Turleenan, Northern Ireland (UK) 2.13.2 Srananagh in Co. Sligo (IE) to Turleenan in Northern Ireland (UK)	2.13.1 EirGrid; System Operator for Northern Ireland Ltd/SONI (UK) 2.13.2 EirGrid; System Operator for Northern Ireland Ltd/SONI (UK)	2.13.1 A new 400 kV AC single circuit (OHL) of 138 km and with a capacity of 1,500 MVA between Turleenan 400/275 kV in Northern Ireland (UK) to Woodland 400/220 kV (IE) (onshore). 2.13.2 A new cross border circuit of approximately 200 km at 220kV or greater with a capacity up to 710MVA between Srananagh 220/110 kV station in Co. Sligo (IE) and Turleenan 400/275 kV station in Northern Ireland (UK).	2.13.1 Permitting 2.13.2 Planned, but not yet in permitting	2.13.1 2019 2.13.2 2025-2027
Priority Corridor North-South Electricity Interconnections in Central Eastern and South Europe ('NSI East Electricity')							
	219-949	3.10.1 Interconnection between Hadera (IL) and Kofinou (CY)	Hadera (IL) to Vasilikos (CY) to Korakia, Crete (EL) and to Attica region (EL)	3.10.1 EuroAsia Interconnector Ltd	The project consists of a 400 kV DC underwater electric cable and any essential equipment and/or installation for interconnecting the Cypriot, Israeli and the Greek transmission networks (offshore). The project will have a capacity of 2000 MW and a total length of around 820 nautical miles/around 1518 km (329 km between	3.10.1 Planned but not yet in permitting	3.10.1 2019

					CY and IL, 879 km between CY and Crete and 310 km between Crete and Athens) and allow for reverse transmission of electricity. The dumping depth of the cable in some areas between IL and CY is expected to reach 2200 m and the respective depth in some areas between CY and EL is expected to reach 2600 m.		
	219-971	3.10.2 Interconnection between Kofinou (CY) and Korakia, Crete (EL)	3.10.2 Kofinou to Korakia	3.10.2 Euro Asia Interconnector Ltd		3.10.2 Planned but not yet in permitting	3.10.2 2022
	219-1054	3.10.3 Internal line between Korakia, Crete and Attica region (EL)	3.10.3 Korakia to Attica	3.10.3 Euro Asia Interconnector Ltd, in cooperation with ADMIE (EL)		3.10.3 Planned but not yet in permitting	3.10.3 2020
3.12	130-665	Internal line in Germany between Wolmirstedt and Bavaria to increase internal North-South transmission capacity	Wolmirstedt (DE) to Bavaria (either Gundremmingen or Isar) (DE)	50Hertz Transmission (DE) TenneT TSO GmbH (DE)	New HVDC line (500 kV) with a length of ca. 600 km and a capacity of minimum 2.000 MW to integrate especially new wind generation from Northeastern Germany and Baltic Sea towards Central/Southern Europe for consumption and system stability improvement. The forthcoming update of the Federal Requirements Plan (Bundesbedarfsplan) will specify either Gundremmingen or Isar as the project's endpoint in Bavaria (DE).	Planned but not yet in permitting	2022
Priority Corridor Baltic Energy Market Interconnection Plan ('BEMIP Electricity')							
4.1	36-141	Denmark — Germany interconnection between Tolstrup Gaarde (DK) and Bentwisch (DE) via offshore windparks Kriegers Flak (DK) and Baltic 1 and 2 (DE) [currently known as "Kriegers Flak Combined Grid Solution"]	Tolstrup Gaarde (DK) to Bentwisch (DE)	50Hertz Transmission (DE) Energinet.dk (DK)	The Kriegers Flak Combined Grid Solution is a new 400 MW offshore interconnection between Bentwisch (DE) and Tolstrup Gaarde (DK) via the offshore wind farms Kriegers Flak (DK), Baltic 1 and 2 (DE). The project envisages three main components: 400MW HVDC VSC B2B converter station, offshore substations, approximately 2x25 km sea cables with a voltage of 150 kV.	Permitting	2018