

## Technical information on Projects of Common Interest

accompanying the Commission Delegated Regulation (EU) No 1391/2013 of 14 October 2013 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")

No.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
1.1.	E264 E262 E263	Cluster Belgium – United Kingdom between Zeebrugge and Canterbury [currently known as the NEMO project] including the following PCIs: 1.1.1. Interconnection between Zeebrugge (BE) and the vicinity of Richborough (UK) 1.1.2. Internal line between the vicinity of Richborough and Canterbury (UK) 1.1.3. Internal line between Dungeness to Sellindge and Sellindge to Canterbury (UK)	<b>1.1.1.:</b> Zeebrugge (BE) – Richborough (UK) <b>1.1.2.:</b> Richborough to Canterbury (UK) <b>1.1.3.:</b> Canterbury to Sellindge and Dungeness (UK)	<b>1.1.1.:</b> Elia System Operator SA (BE), National Grid (International Limited) <b>1.1.2.:</b> National Grid Electricity Transmission plc (UK) <b>1.1.3.:</b> National Grid Electricity Transmission plc (UK)	<b>1.1.1.:</b> New DC sea link including 135 km of DC subsea cable with 1000 MW capacity between Richborough and Zeebrugge (offshore) <b>1.1.2.:</b> New 400kV substation in Richborough and new 400kV AC double circuit OHL between Richborough and Canterbury (onshore) <b>1.1.3.:</b> Reconductor 400kV AC double circuit OHL between Canterbury, Sellindge and Dungeness (onshore)	<b>1.1.1.:</b> Feasibility/FEED Permitting (the permitting has already been initiated to anticipate the long permitting procedure) <b>1.1.2.:</b> Feasibility <b>1.1.3.:</b> Feasibility	<b>1.1.1.:</b> 2018 <b>1.1.2.:</b> 2020 <b>1.1.3.:</b> 2015
1.2.	E17	PCI Belgium – two grid-ready offshore hubs connected to the onshore substation Zeebrugge (BE) with anticipatory investments enabling future interconnections with France and/or UK	Zeebrugge (BE)  Location of the offshore hubs: approximately +/- 35 km to shore (the optimal locations and grid design are currently under study with the wind farm developers)	Elia System Operator SA (BE)	Two offshore hubs connecting offshore wind farms and connected to each other and to the AC onshore grid with underground cables, including compensation (offshore)	Feasibility/FEED	2016
1.3.	E90	Cluster Denmark - Germany between Endrup and Brunsbüttel including the following PCIs: 1.3.1. Interconnection between Endrup (DK) and Niebüll (DE) 1.3.2. Internal line between Brunsbüttel and Niebüll (DE)	Endrup (DK), Kaltenkirchen, Brunsbüttel (DE) to Brunsbüttel, Aurdorf, Kaltenkirchen (DE)	TenneT TSO GmbH (DE) Energinet.dk (DK)	New 380 kV AC lines (OHL) of about 200 km and with 3000 MVA capacity in Germany and about 80 km in Denmark (onshore) and new transformers for integration of onshore wind in Schleswig-Holstein, including lines: - Brunsbüttel – Barlt (Süderdonn) – Heide – Husum - Niebüll- border of Denmark Endrup.	Feasibility/FEED ongoing for Danish Part Final Investment Decision (FID) Permitting (part Brunsbüttel – Barlt/ Süderdonn) Danish part: not yet started	First part -2015, complete -2021
1.4.	E69	Cluster Denmark - Germany between Kassø and Dollern including the following PCIs:	Kassø (DK) to Dollern (DE)	TenneT TSO GmbH (DE) Energinet.dk (DK)	<b>1.4.1.:</b> Upgrade of existing 400kV AC line and building a new 400kV route in Denmark with a total length of 40 km.	Feasibility/FEED (part Kassø – Aurdorf) Final Investment Decision (FID)	DE: First part - 2015, complete -2017,

		<p>1.4.1. Interconnection between Kassø (DK) and Audorf (DE)</p> <p>1.4.2. Internal line between Audorf and Hamburg/Nord (DE)</p> <p>1.4.3. Internal line between Hamburg/Nord and Dollern (DE)</p>			<p><b>1.4.2.:</b> New 400kV AC double circuit line (OHL) mainly in the trace of an existing 220kV line between Audorf and Hamburg/Nord, including 2 new 400/230kV transformers in substation Audorf.</p> <p><b>1.4.3.:</b> New 400kV AC double circuit line (OHL) between Dollern and Hamburg/Nord, including 1 new 400/230kV transformer in substation Hamburg/Nord and new 400kV switchgear in Kummerfeld. The total length of German lines amounts to 195 km and a 4100 MVA capacity (onshore).</p>	Permitting (part Audorf – Dollern)	DK: complete -2017
1.5.	E198	PCI Denmark - Netherlands interconnection between Endrup (DK) and Eemshaven (NL)	Endrup (DK) to Eemshaven (NL)	TenneT TSO GmbH (DE) Energinet.dk (DK)	An HVDC 320 kV link of approximately 350 km and with a capacity of 700 MW between Denmark West and the Netherlands (offshore) to connect new offshore wind farms to the cable as a first step towards a meshed North Sea offshore grid.	Feasibility/FEED (finalized) Final Investment Decision (FID) (preparation ongoing) Permitting (ongoing)	2019
1.6.	E321	PCI France – Ireland interconnection between La Martyre (FR) and Great Island or Knockraha (IE)	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).	Feasibility/FEED	2025
1.7.	E319 E137 E279	<p>Cluster France-United Kingdom interconnections, including one or more of the following PCIs:</p> <p>1.7.1. France – United Kingdom interconnection between Cotentin (FR) and the vicinity of Exeter (UK) [currently known as FAB project]</p> <p>1.7.2. France - United Kingdom interconnection between Tourbe (FR) and Chilling (UK) [currently known as the IFA2 project]</p> <p>1.7.3. France - United Kingdom interconnection between Coquelles (FR) and Folkestone (UK) [currently known as the ElecLink project]</p>	<p><b>1.7.1.:</b> Cotentin (FR) to the vicinity of Exeter (UK)</p> <p><b>1.7.2.:</b> Caen area, most likely Tourbe (FR) to Chilling (UK)</p> <p><b>1.7.3.:</b> Coquelles (FR) to Folkestone (UK)</p>	<p><b>1.7.1.:</b> FABLink Ltd, a joint venture of Transmission Investment (UK) and Alderney Renewable Energy;</p> <p>Réseau de Transport d'Electricité / RTE (FR)</p> <p><b>1.7.2.:</b> National Grid International Ltd.</p> <p>Réseau de Transport d'Electricité/RTE (FR)</p> <p><b>1.7.3.:</b> ElecLink Limited</p>	<p><b>1.7.1.:</b> A 225 km HVDC link between France and Great Britain via the island of Alderney, with a capacity between 1000 and 1400 MW - exact value still to be determined (onshore and offshore).</p> <p><b>1.7.2.:</b> New subsea 320 kV HVDC link with a capacity of 1000 MW between the UK and France (offshore).</p> <p><b>1.7.3.:</b> 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).</p>	<p><b>1.7.1.:</b> Feasibility/FEED</p> <p>A list of all studies carried out so far for the project: Socio-economic study, Grid study, Study of regulatory and trading mechanisms for connecting renewable generation to an interconnector, Feasibility studies, Studies pursuing the acceleration of the completion date, with a target date of 2020 (2022 does not yet include these accelerations).</p> <p><b>1.7.2.:</b> Feasibility/FEED</p> <p>Economic studies carried out; physical survey done in summer 2012; preliminary design done in 2013 on the basis of physical survey data.</p> <p><b>1.7.3.:</b> Planning studies/FEED</p> <p>Signed grid connection agreements with RTE and NGET</p>	<p><b>1.7.1.:</b> 2022</p> <p><b>1.7.2.:</b> 2020</p> <p><b>1.7.3.:</b> 2016</p>
1.8.	E199	PCI Germany - Norway interconnection	Feda / Tonstad (NO) to	Statnett SF (NO)	A new HVDC subsea cable of minimum 500 kV,	Pre-feasibility	2018

		between Wilster (DE) and Tonstad (NO) [currently known as the NORD.LINK project]	Wilster (DE)	TenneT TSO GmbH, KfW	approximately 520-600 km and with a capacity of 1400 MW between Southern Norway and Northern Germany (onshore and offshore).	Feasibility/FEED	
1.9.	E156  E291  E304	Cluster connecting generation from renewable energy sources in Ireland to United Kingdom, including one or more of the following PCIs: 1.9.1. Ireland – United Kingdom interconnection between Co. Offaly (IE), Pembroke and Pentir (UK) 1.9.2. Ireland – United Kingdom interconnection between Coolkeeragh - Coleraine hubs (IE) and Hunterston station, Islay, Argyll and Location C Offshore Wind Farms (UK) 1.9.3. Ireland – United Kingdom interconnection between the Northern hub, Dublin and Codling Bank (IE) and Trawsfynydd and Pembroke (UK) 1.9.4. Ireland – United Kingdom interconnection between the Irish midlands and Pembroke (UK) 1.9.5. Ireland – United Kingdom interconnection between the Irish midlands and Alverdiscott, Devon (UK) 1.9.6. Ireland – United Kingdom interconnection between the Irish coast and Pembroke (UK)	<b>1.9.1.:</b> Co. Offaly (IE) to Pembroke and Pentir, Wales (UK) <b>1.9.2., 1.9.3.:</b> Ireland, United Kingdom <b>1.9.4., 1.9.5., 1.9.6.:</b> Three interconnections linking Ireland to UK; these are: Circuit no.1: Irish midlands to Pembroke, South Wales Circuit no.2: Irish midlands to Alverdiscott, Devon Circuit no. 3: Irish coast to Pembroke, North Wales	<b>1.9.1.:</b> Greenwire Ltd (owned in turn by Element Power and Hudson Clean Energy) <b>1.9.2., 1.9.3.:</b> Scottish Government, Energy Directorate, Irish Government, Dept. of Communications, Energy & Natural Resources, Dept. of Enterprise Trade & Investment, Northern Ireland <b>1.9.4., 1.9.5., 1.9.6.:</b> Mainstream Renewable Power	<b>1.9.1.:</b> Around 40 individual onshore wind farms, totalling 3GW, collected together through and underground private network in the midlands of Ireland, connected directly to the UK national grid via two 600 kV HVDC sub-sea cables of approximately 500 km and with a capacity of 5 GW in Wales (onshore and offshore). <b>1.9.2., 1.9.3.:</b> An offshore interconnected electricity grid based on renewable resources (wind, wave and tidal, connecting 3200 MW) consisting of 850 km of HVDC interconnectors with a capacity of 500-1000MW in the northern area (offshore). <b>1.9.4., 1.9.5., 1.9.6.:</b> Energy Bridge (EB) HVDC underground cable of +/- 320kV for the 1 <sup>st</sup> circuit and +/- 500kV for 2 and 3, respectively, and with a total capacity of 5 GW. The length of the 3 circuits will be 290 km, 190 km and 129 km, respectively. The cable will route large amounts of renewable electricity generated in a series of interconnected Irish wind farms directly into the UK market (onshore and offshore).	<b>1.9.1.:</b> Pre-feasibility Feasibility/FEED Final Investment Decision (FID) Permitting <b>1.9.2., 1.9.3.:</b> Pre-feasibility <b>1.9.4., 1.9.5., 1.9.6.:</b> Pre-feasibility Feasibility/FEED  A list of all studies carried out so far for the project - UK-side: economic assessment, financial modelling, pre-grid application system studies and post Offer legal/technical/commercial review, engineering and environmental studies, land agent related activities	<b>1.9.1.:</b> 2017 <b>1.9.2., 1.9.3.:</b> 2020 <b>1.9.4., 1.9.5., 1.9.6.:</b> Commissioned in phases; these being: 2017, 2018 and 2020
1.10.	E200 E261	PCI Norway – United Kingdom interconnection	Norway to United Kingdom	Statnett SF National Grid International Ltd NorthConnect KS	A new HVDC interconnection with a capacity of 1400 MW between Norway and the United Kingdom.	Pre-/Feasibility	<b>2020</b>
1.11.	149b	Cluster of electricity storage projects in Ireland and associated connections to United Kingdom, including one or more of the following PCIs: 1.11.1. Hydro-pumped storage in	<b>1.11.1.:</b> Location: North West Ireland Connection point to transmission network: North West Ireland	<b>1.11.1.:</b> Natural Hydro Energy <b>1.11.2.:</b> Natural Hydro Energy <b>1.11.3.:</b> Organic	<b>1.11.1.:</b> Large Scale Hydro Storage facility with a daily capacity of 90 GWh (32850 GWh annually). <b>1.11.2.:</b> A 320-400 kV HVDC underground cable interconnection of approximately 450km and with a capacity of 1200 MW between Ireland and the UK	<b>1.11.1.:</b> Final Investment Decision (FID) Permitting <b>1.11.2.:</b> Final Investment Decision (FID)	<b>1.11.1.:</b> 2019 <b>1.11.2.:</b> 2017 <b>1.11.3.:</b> 2017 <b>1.11.4.:</b> 2017

	<p>E149a</p> <p>150b</p> <p>150a</p>	<p>North West Ireland</p> <p>1.11.2. Ireland – United Kingdom interconnection between North West Ireland (IE) and Midlands (UK)</p> <p>1.11.3. Hydro-pumped (seawater) storage in Ireland – Glinsk</p> <p>1.11.4. Ireland – United Kingdom interconnection between Glinsk, Mayo (IE) and Connah's Quay, Deeside (UK)</p>	<p><b>1.11.2.:</b> North West Ireland to Midlands (UK)</p> <p><b>1.11.3.:</b> Glinsk, Mayo (IE)</p> <p><b>1.11.4.:</b> Glinsk, Mayo (IE) to Connah's Quay, Deeside (UK)</p> <p>Route type: Onshore and offshore</p>	<p>Power Ltd</p> <p><b>1.11.4.:</b> Organic Power Ltd</p>	<p>(onshore and offshore).</p> <p><b>1.11.3.:</b> Combined 1900 MW wind generation, with a 6.1 GWh (2226.5 GWh annually) storage in Glinsk, Mayo (IE).</p> <p><b>1.11.4.:</b> A 500kV HVDC VSC cable of 530 km (subsea Atlantic 75, cross country Ireland 222km, Irish Sea approx.230, 1-3 km onshore Pembroke) with a capacity of 1300 MW, connecting the combined wind generation and storage facility in Glinsk, Mayo (IE) to Connah's Quay, Deeside (UK) (onshore and offshore).</p>	<p>Permitting</p> <p>List of all studies carried out so far on project: Wind Studies, Irish Demand Studies, System Marginal Price Analysis, Operational Modelling, Equipment Pricing, Financial Modelling, Storage Sites Investigation, Dam and Power Station Design, Land Acquisition and Pricing, Cable Routing, Transmission Facilities, Curtailment Studies</p> <p><b>1.11.3.:</b> Feasibility/FEED Final Investment Decision (FID) Permitting</p> <p>List of all studies carried out so far on project (including 1.14): Transmission route selection study, Natura 2000 Assessment Transmission route, Preliminary Civil and Electrical Design Storage facility, System modelling, Baseline environmental studies Storage facility, Draft EIS for Storage facility</p> <p><b>1.11.4.:</b> Feasibility/FEED Final Investment Decision (FID) Permitting</p> <p>List of all studies carried out so far on project (including 1.19): Transmission route selection study, Natura 2000 Assessment Transmission route, Preliminary Civil and Electrical Design Storage facility, System modelling, Baseline environmental studies Storage facility, Draft EIS for Storage facility</p>	
1.12.	151	PCI compressed air energy storage in United Kingdom - Larne	Location: Larne, Northern Ireland (UK) Connection point to transmission network:	Gaelectric Energy Storage Ltd	Compressed Air Energy Storage using caverns / chambers to be created in bedded salt deposits with an annual storage capacity of 550 GWh.	Feasibility/FEED Environmental baseline studies in progress	Phase 1: 2016 Phase 2: 2019-2020 Subsequent Phases: 2022-2030

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

No.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
2.1.	E5	PCI Austria internal line between Westtirol and Zell-Ziller (AT) to increase capacity at the AT/DE border	Westtirol (AT) to Zell/Ziller (AT)	Austria 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.	Feasibility/FEED	2020
2.2.	E19	Cluster Belgium - Germany between Lixhe and Oberzier [currently known as the ALEGrO project] including the following PCIs: 2.2.1. Interconnection between Lixhe (BE) and Oberzier (DE) 2.2.2. Internal line between Lixhe and Herderen (BE) 2.2.3. New substation in Zutendaal (BE)	Lixhe, Liège area (BE) to Oberzier, Aachen / Düren region (DE)	Elia System Operator SA (BE), Amprion GmbH (DE)	<b>2.2.1.:</b> Connection between Lixhe (BE) and Oberzier (DE) including a new 100 km HVDC underground cable (voltage under investigation) and the extension of existing 380 kV substations. <b>2.2.2.:</b> A new 380 kV AC circuit between Lixhe and Herderen (BE), a second 380 kV OHL in / out from Herderen to Lixhe (10 km). <b>2.2.3.:</b> The addition of 2 transformers 380 / 150 kV in Lixhe and in Zutendaal, leading to new substations in these locations (onshore).	Feasibility/FEED Permitting (the permitting has already been initiated to anticipate the long and complex permitting procedure)	2018
2.3.	E197	Cluster Belgium - Luxembourg capacity increase at the BE/LU border including the following PCIs: 2.3.1 Coordinated installation and operation of a phase-shift transformer in Schiffflange (LU) 2.3.2. Interconnection between Aubange (BE) and Bascharage/Schiffflange (LU)	Bascharage/Schiffflange (LU) to Aubange (BE)	Creos Luxembourg S.A. (LU)	<b>2.3.1.:</b> As a first step (2016) a Phase Shifter Transformer (PST) would be placed in the existing 225 kV line between LU and BE. <b>2.3.2.:</b> In a second stage, one 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).	Feasibility/FEED	<b>2.3.1.:</b> 2016 <b>2.3.2.:</b> 2020
2.4.	E182	PCI France - Italy interconnection between Codrongianos (IT), Lucciana (Corsica, FR) and Suvereto (IT) [currently known as the SA.CO.I.3 project]	Codrongianos (IT) to Suvereto (IT)	Terna - Rete Elettrica Nazionale SpA (IT)	Repowering of existing tri-terminal HVDC interconnection between Sardinia, Corsica and mainland Italy via a 358 km DC subsea cable (onshore and offshore).	Final Investment Decision (FID)	2022
2.5.	E133  E172	Cluster France - Italy between Grande Ile and Piosasco, including the following PCIs: 2.5.1. Interconnection between Grande Ile (FR) and Piosasco (IT) [currently known as Savoie-Piemont project] 2.5.2. Internal line between Trino and Lacchiarella (IT)	<b>2.5.1.:</b> Grande Ile (FR) to Piosasco (IT), via Frejus motorway tunnel <b>2.5.2.:</b> Trino to Lacchiarella (IT) and associated restructuring of local HV network	<b>2.5.1.:</b> Terna - Rete Elettrica Nazionale SpA (IT), Réseau de Transport d'Electricité/RTE (FR) <b>2.5.2.:</b> Terna - Rete Elettrica Nazionale SpA (IT)	<b>2.5.1.:</b> 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 along the existing motorways (onshore). <b>2.5.2.:</b> A new 400kV AC double circuit (OHL) of 95 km and with a capacity of 3000 MVA between the existing 400kV substations of Trino and Lacchiarella in North West Italy area (onshore). Restructuring works of local	<b>2.5.1.:</b> Construction <b>2.5.2.:</b> Construction	<b>2.5.1.:</b> 2019 <b>2.5.2.:</b> 2014

					HV network associated to the line Trino – Lacchiarella are planned to be realized after the 400 kV line.		
2.6.	E128	PCI Spain internal line between Santa Llogaia and Bescanó (ES) to increase capacity of the interconnection between Bescanó (ES) and Baixas (FR)	Santa Llogaia (ES) to Bescanó (ES)	Red Eléctrica de España: S.A./REE (ES)	A new 40 km section of 400 kV AC double circuit (OHL) between Sta. Llogaia, Ramis and Bescanó (ES) (onshore), part of the new Sta. Llogaia – Ramis – Bescanó – Vic / Senmenat 400 kV OHL (single circuit in some sections) . It will connect the already commissioned section between Bescanó-Vic / Senmenat 400 kV to the cross-border HVDC Sta Llogaia (ES)-Baixas (FR). New 400 kV substations in Bescanó, Ramis and Sta.Llogaia, with 400 / 220 kV transformers in Ramis and Bescanó.	Permitting	2014
2.7.	E132	PCI France - Spain interconnection between Aquitaine (FR) and the Basque country (ES)	Aquitaine (FR) to the Basque Country (ES)	Red Eléctrica de España: S.A./REE (ES) Réseau de Transport d'Electricité/RTE (FR)	New 320 kV or 500 kV (voltage tbd) HVDC subsea cable interconnection of approximately 360 km and with a capacity of 2000 MW (tbc) between Aquitaine and the Basque country, via the the Biscay Gulf (offshore).	Feasibility/FEED	2020
2.8.	E129	PCI 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)	Red Eléctrica de España: S.A./REE (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.	Pre-feasibility	2016
2.9.	E88	PCI 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 +/- 400 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).	Feasibility/FEED	2018
2.10.	E89	PCI Germany internal line between Brunsbüttel-Großgartach and Wilster-Grafenrheinfeld (DE) to increase capacity at Northern and Southern borders	Brunsbüttel (DE), Wilster (DE), Kaltenkirchen (DE) to Großgartach (DE), Grafenrheinfeld (DE)	TenneT TSO GmbH (DE) TransnetBW GmbH (DE)	New DC lines (OHL) with a total capacity of 3.9 GW, with every line having a length between 670 and 770 km (voltage tbd), to integrate new wind generation from northern Germany towards southern Germany and southern Europe for consumption and storage (onshore).	Feasibility/FEED	2022
2.11.	E92	Cluster Germany – Austria - Switzerland capacity increase in Lake Constance area including the following PCIs: 2.11.1. Interconnection between border area (DE), Meiningen (AT) and Rüthi (CH) 2.11.2. Internal line in the	South Germany to Meiningen (AT) and Rüthi (CH)	<b>2.11.1.:</b> Amprion GmbH (DE) Transnet BW GmbH (DE) Swissgrid AG (CH) Vorarlberger Übertragungsnetz	Construction of new 400 kV AC lines (OHL) and extension of existing ones on approximately 380 km and with a total capacity of 3500 MVA (tbd), and erection of a 400/220/110kV-substation. Transmission routes include: Herberlingen - Tiengen, Herberlingen - Pkt. Rommelsbach, Herberlingen - Meiningen (AT) – Rüthi (CH), Pkt. Wullenstetten - Pkt. Niederwangen	<b>2.11.1.:</b> Study / Pre-feasibility <b>2.11.2.:</b> Feasibility/FEED	<b>2.11.1.:</b> long term (under study) <b>2.11.2.:</b> 2020

		region of point Rommelsbach to Herbertingen, Herbertingen to Tiengen, point Wullenstetten to point Niederwangen (DE) and the border area DE-AT		GmbH/Vuen (AT) <b>2.11.2.:</b> Amprion GmbH (DE), Transnet BW GmbH (DE)	(onshore).		
2.12.	E93	PCI 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).	FEED Permitting	2016
2.13.	E155  E152	Cluster Ireland – United Kingdom (Northern Ireland) interconnections, including one or more following Projects of Common Interest: 2.13.1. Ireland – United Kingdom interconnection between Woodland (IE) and Turleenan (UK – Northern Ireland) 2.13.2. Ireland – United Kingdom Interconnection between Srananagh (IE) and Turleenan (UK – Northern Ireland)	<b>2.13.1.:</b> Woodland (IE) to Turleenan, Northern Ireland (UK) <b>2.13.2.:</b> Srananagh in Co. Sligo (IE) to Turleenan in Northern Ireland (UK)	<b>2.13.1.:</b> EirGrid Northern Ireland Electricity (NIE), System Operator for Northern Ireland Ltd/SONI (UK) <b>2.13.2.:</b> EirGrid Northern Ireland Electricity (NIE), System Operator for Northern Ireland Ltd/SONI (UK)	<b>2.13.1.:</b> A new 400 kV AC single circuit (OHL) of 140 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). <b>2.13.2.:</b> A new 275 kV and partly 220 kV AC cross border circuit (OHL) of 196 km and with minimum capacities of 710 MVA and partly 431 MVA between Srananagh 220 kV station in Co. Sligo (IE) and Turleenan 400/275 kV station in Northern Ireland (UK) that will facilitate the integration of a planned wind generation of approximately 768 MW, which equates to 0.1 GW/1000km <sup>2</sup> (onshore).	<b>2.13.1.:</b> Permitting <b>2.13.2.:</b> Feasibility/FEED	<b>2.13.1.:</b> 2017 <b>2.13.2.:</b> 2020
2.14.	E187	PCI Italy – Switzerland interconnection between Thusis/Sils (CH) and Verderio Inferiore (IT)	Verderio Inferiore, near Milano (IT) to Thusis, Graubunden Canton (CH), via an existing pipeline 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 Graubunden 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, Graubunden 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 Graubunden and Verderio Inferiore, Lecco).	Permitting  The project is at a very advanced stage of technical and environmental feasibility, with a large number of detailed studies, ranging from topographical studies, marine surveys of the lake route, temperature and resistivity studies along the route, geological studies, load flow studies, grid studies (harmonic, filter design), etc. having been already performed during some 8 years of project development activity.	2018
2.15.	E186	Cluster Italy – Switzerland capacity increase at IT/CH border including the following PCIs: 2.15.1. Interconnection	<b>2.15.1., 2.15.2:</b> Baggio (IT) to Airolo (CH), Magenta <b>2.15.3.:</b> Pavia to Piacenza (IT) <b>2.15.4.:</b> Tirano to Verderio	<b>2.15.1., 2.15.2:</b> Terna - Rete Elettrica Nazionale SpA.	<b>2.15.1., 2.15.2:</b> A new 400 kV DC/AC link (OHL) between Airolo, Bappanzeno and Baggio of about 160 km and with a capacity of over 2.000 MW/1500 MVA between Italy and Switzerland (onshore), including the	<b>2.15.1., 2.15.2:</b> Permitting (permitting procedure started in October 2012 on Italian side) <b>2.15.3.:</b> Pre-feasibility	<b>2.15.1., 2.15.2:</b> 2022 <b>2.15.3.:</b> 2022 <b>2.15.4.:</b> 2022

	E179 E178	between Airolo (CH) and Baggio (IT) 2.15.2. Upgrade of Magenta substation (IT) 2.15.3. Internal line between Pavia and Piacenza (IT) 2.15.4. Internal line between Tirano and Verderio (IT)	(IT)	(IT)/Swissgrid (CH) <b>2.15.3.:</b> Terna - Rete Elettrica Nazionale SpA.(IT) <b>2.15.4.:</b> Terna - Rete Elettrica Nazionale SpA (IT)	following network items: - 400kV AC connection between Airolo (CH) and Pallanzeno (IT); - HVDC connection between Pallanzeno (IT) and Baggio (IT) - Reinforcement with new 400 kV section in Magenta substation (IT) <b>2.15.3.:</b> New 400 kV AC double circuit (OHL) of 45 km and with a capacity of 1.500/3.000 MVA between 2 substations in Pavia and Piacenza area (onshore). <b>2.15.4.:</b> New 140 km 400kV AC single circuit (OHL) with a capacity of 1500 MVA between Tirano and Verderio substations (onshore), connecting also the new 400 kV substations Grosio and Venina and including a wide HV network area restructuring program.	<b>2.15.4.:</b> Pre-feasibility	
2.16.	E222 E223 E225	Cluster Portugal capacity increase at PT/ES border including the following PCIs: 2.16.1. Internal line between Pedralva and Alfena (PT) 2.16.2. Internal line between Pedralva and Vila Fria B (PT) 2.16.3. Internal line between Frades B, Ribeira de Pena and Feira (PT)	North Portugal near Spanish border Pedralva – Alfena and Pedralva – Vila Fria B; Interior North to littoral Frades B – Ribeira Pena – Fridão - Feira	Rede Eléctrica Nacional, S.A./REN (PT)	<b>2.16.1.:</b> New 50 km double circuit OHL Pedralva - Alfena 400 kV (initially with only one circuit installed), with a capacity of 1630/1860 MVA per circuit correspondent to summer/winter (onshore). In a section the construction of this line may take advantage of an existing corridor of 150 kV single circuit line. <b>2.16.2.:</b> New 55 km double circuit Pedralva - Vila Fria B 400 kV OHL (initially one circuit installed), with a capacity of 1630/1860 MVA per circuit correspondent to summer/winter (onshore). <b>2.16.3.:</b> New 160 km double circuit OHL 400 kV Frades B – 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 Frades B 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.	<b>2.16.1.:</b> Pre-feasibility <b>2.16.2.:</b> Permitting <b>2.16.3.:</b> Permitting	<b>2.16.1.:</b> 2017 <b>2.16.2.:</b> 2015 <b>2.16.3.:</b> 2016
2.17.	E230	PCI Portugal - Spain interconnection between Vila Fria - Vila do Conde – Recarei (PT) and Beariz - Fontefría (ES)	Beariz - Fontefría (ES) to Vila Fria -Vila Conde-Recarei (PT)	Rede Eléctrica Nacional, S.A./REN (PT), Red Eléctrica de España: S.A./REE (ES)	New 400 kV AC double circuit (OHL) of 162 km (112 km in Portugal and 41 km in Spain) between Beariz - Fontefría (ES) and Vila Fria – Vila do Conde – Recarei (PT), with only one circuit being installed on the Fontefría – Vila do Conde section (onshore). New 400 kV substations Fontefría, Boboras, Vila Fria B and Vila do Conde.	Permitting	2016
2.18.	303	PCI capacity increase of hydro-pumped storage in Austria - Kaunertal, Tyrol	Location Austria / Tyrol / Kaunertal; Inntal/Ötztaler Alps	TIWAG-Tiroler Wasserkraft AG	“Ausbau Kraftwerk Kaunertal” is a Hydro pumped storage plant project (upper stage) with a capacity of 400 MW and a hydro storage plant project (lower	Permitting	2024



			Connection point to transmission network: 220 kV Distribution Network der TIWAG Netz AG at UW Prutz. Additional Project.		stage) with a capacity of 500 MW in the Austrian area of the Ötztaler Alps. It consists of 4 water intakes with a diversion gallery to the existing basin Gepatsch and the new reservoir Platzertal as upper basin for the new pump storage power station. Additional is planned to construct a new peak load power station at Prutz sharing a new waterway with the existing power plant Kaunertal. The affected water body is Inn-Danube.		
2.19.	12	PCI hydro-pumped storage in Austria - Obervermuntwerk II, Vorarlberg province	Obervermunt II, Vorarlberg province (AT) Connection point to transmission network: Partenen/Umspannanlage Bürs	Vorarlberger Illwerke AG	The plant is designed as an underground power plant, situated in the rock mass consisting Silvretta crystallin between the reservoir Silvretta (2030 a.s.l.) and the reservoir Vermunt (1745 a.s.l) and functioning as a pumped storage with 2 ternary units (turbine, generator, pump) with an annual capacity of approximately 800 GWh, incl. 47,4 GWh based on water inflow.	Permitting	2018
2.20.	6	PCI capacity increase of hydro-pumped storage in Austria - Limberg III, Salzburg	Salzburg (AT) Connection point to transmission network: 380 kV switchyard UW Tauern	VERBUND Hydro Power AG	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.	Feasibility/FEED Permitting	2020
2.21.	9	PCI hydro-pumped storage in Germany - Riedl	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.	Feasibility/FEED Permitting	2019

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

No.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
3.1.	E14 E1 E2	Cluster Austria - Germany between St. Peter and Isar including the following PCIs: 3.1.1. Interconnection between St. Peter (AT) and Isar (DE) 3.1.2. Internal line between St. Peter and Tauern (AT) 3.1.3. Internal line between St. Peter and Ernstshofen (AT)	<b>3.1.1.:</b> Isar (DE) to St. Peter (AT) <b>3.1.2.:</b> St. Peter (AT) to Tauern (AT) <b>3.1.3.:</b> Ernstshofen (AT) to St.Peter (AT)	<b>3.1.1.:</b> TenneT TSO GmbH (DE) Austria Power Grid AG (AT) <b>3.1.2.:</b> Austria Power Grid AG (AT), Salzburg Netz (DSO) <b>3.1.3.:</b> Austria Power Grid AG (AT)	<b>3.1.1.:</b> 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 and fourth circuit on the line between Isar and Ottenhofen (onshore). <b>3.1.2.:</b> 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. <b>3.1.3.:</b> Upgrade from 220 kV operation to 380 kV of the 112 km AC OHL with a capacity of approximately 3000 MVA between Ernstshofen and St.Peter (onshore) and erection of a 380 kV substation.	<b>3.1.1.:</b> Permitting <b>3.1.2.:</b> Permitting <b>3.1.3.:</b> Construction	<b>3.1.1.:</b> 2017 <b>3.1.2.:</b> 2019 <b>3.1.3.:</b> 2013
3.2.	E16 E4 E157	Cluster Austria - Italy between Lienz and Veneto region including the following PCIs: 3.2.1. Interconnection between Lienz (AT) and Veneto region (IT) 3.2.2. Internal line between Lienz and Obersielach (AT) 3.2.3. Internal line between Volpago and North Venezia (IT)	<b>3.2.1.:</b> Lienz (AT) to Veneto region (IT) <b>3.2.2.:</b> Obersielach (AT) to Lienz (AT) <b>3.2.3.:</b> Volpago (IT) to North Venezia (IT)	<b>3.2.1.:</b> Terna - Rete Elettrica Nazionale SpA (IT), Austrian Power Gird AG (AT) <b>3.2.2.:</b> Austrian Power Grid AG <b>3.2.3.:</b> Terna - Rete Elettrica Nazionale SpA (IT)	<b>3.2.1.:</b> 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) and with a capacity of 1500 MVA between Lienz and Veneto region substations, along an optimized route, which minimizes the environmental impact (onshore). <b>3.2.2.:</b> 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 gird area (onshore). New upgrade technologies which are under investigation may allow earlier commissioning than 2023. <b>3.2.3.:</b> Realization of a new 31 km 400 kV AC OHL with a	<b>3.2.1.:</b> Feasibility/FEED <b>3.2.2.:</b> Pre-feasibility <b>3.2.3.:</b> Final Investment Decision (FID)	<b>3.2.1.:</b> 2022 <b>3.2.2.:</b> 2023 <b>3.2.3.:</b> 2022

					capacity of 1500 MVA between the existing substation of North Venezia and the future 400 kV substation of Volpago, connected in and out to the 400 kV Sandrigo – Cordignano line (onshore).		
3.3.	E167	PCI Austria - Italy interconnection between Nauders (AT) and Milan region (IT)	Nauders (AT) to Milan Area (IT)	Terna - Rete Elettrica Nazionale SpA (IT)	New 400 kV AC/DC interconnection line (OHL) of about 200 km and with a capacity of 1000 MW/1500 MVA between Nauders (AT) and Milan Area (IT) (onshore). The project will be realized in two different phases: - phase1) realization of the first part of the line connecting Nauders (AT) and Curon (IT); regarding phase1) Terna is in contact with the Austrian TSO (Austrian Power Grid AG) discussing technical options; - phase2) prosecution of realization of the line until Milan area.	Pre-feasibility/Feasibility	2022
3.4.	E15	PCI Austria – Italy interconnection between Wurlach (AT) and Somplago (IT)	Somplago (IT) to Wurlach (AT)	Alpe Adria Energia S.p.A	A new 220 kV AC OHL of 40 km and with a capacity of 300 MVA from Somplago substation to Wurlach substation (onshore).	Permitting	2015 (2017 proposed by APG)
3.5.	E138 E139 E140 E143	Cluster Bosnia and Herzegovina - Croatia between Banja Luka and Lika including the following PCIs: 3.5.1. Interconnection between Banja Luka (BA) and Lika (HR) 3.5.2. Internal lines between Brinje, Lika, Velebit and Konjsko (HR)	<b>3.5.1.:</b> Banja Luka (BA) to Lika (HR) <b>3.5.2.:</b> Brinje (HR) to Konjsko (HR), including intermediate substations in the area of Lika and North Dalmatia	<b>3.5.1.:</b> Hrvatski operator prijenosnog sustava d.o.o. / HOPS (HR) <b>3.5.2.:</b> Hrvatski operator prijenosnog sustava d.o.o. / HOPS (HR), [Elektroprijenos BiH (BA) and NOS BiH (BA)]	<b>3.5.1.:</b> New 400 kV AC interconnection line (OHL) of 155 km (45 km in Croatia) and with a capacity of 1320 MVA between Banja Luka and Lika (onshore). <b>3.5.2.:</b> New 400 kV AC line (OHL) of 215 km and with a capacity of 1320 MVA between Brinje and Konjsko (HR) replacing/upgrading aging 220 kV OHL, with extension and upgrade of the substation Brinje, extension of the existing substation Konjsko and new intermediate substations in the area of Lika and North Dalmatia (onshore).	<b>3.5.1.:</b> Pre-feasibility <b>3.5.2.:</b> Pre-feasibility	<b>3.5.1.:</b> 2020 <b>3.5.2.:</b> 2020
3.6.	E126	Cluster Bulgaria capacity increase with Greece and Romania including the following PCIs: 3.6.1. Internal line between Vetren and Blagoevgrad (BG) 3.6.2. Internal line between Tsarevets and Plovdiv (BG)	Vetren to Blagoevgrad (BG) and Tsarevets to Plovdiv (BG)	Electroenergien Sistemen Operator EAD/ESO (BG)	The cluster consists in the construction of 2 AC new high-voltage transmission lines with a total capacity of 1700 MVA, as follows: 400kV OHL of 100 km between Vetren and Blagoevgrad and 400 kV OHL of 150 km between Tsarevets and Plovdiv (onshore).	Pre-feasibility	2020
3.7.	E125 E20	Cluster Bulgaria - Greece between Maritsa East 1 and N. Santa including the following PCIs: 3.7.1. Interconnection between Maritsa East 1 (BG) and N. Santa (EL) 3.7.2. Internal line between Maritsa East 1 and Plovdiv (BG)	<b>3.7.1.:</b> Maritsa East 1 (BG) to Nea Santa (EL) <b>3.7.2.:</b> Maritsa East 1 to Plovdiv (BG) <b>3.7.3.:</b> Maritsa East 1 to Maritsa East 3 (BG) <b>3.7.4.:</b> Maritsa East 1 to Bourgas (BG)	Electroenergien Sistemen Operator EAD/ESO (BG)	<b>3.7.1.:</b> 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). <b>3.7.2.:</b> A new AC 400kV line (OHL) between Maritsa East and Plovdiv with a length of 94 km and a capacity of 1700 MVA (onshore). <b>3.7.3.:</b> Construction of a new 400 kV AC line (OHL) of 13	<b>3.7.1.:</b> Pre-feasibility: Completed Feasibility/FEED: Route on BG territory selected <b>3.7.2.:</b> Pre-feasibility Feasibility/FEED: Signed contract for route selection, preparation of	<b>3.7.1.:</b> 2021 <b>3.7.2.:</b> 2016 <b>3.7.3.:</b> 2016 <b>3.7.4.:</b> 2016

	E22 E21	3.7.3. Internal line between Maritsa East 1 and Maritsa East 3 (BG) 3.7.4. Internal line between Maritsa East 1 and Burgas (BG)			km and with a capacity of 1700 MVA between Maritsa East 1 and Maritsa East 3 (onshore). <b>3.7.4.:</b> Construction of a new 400 kV AC line (OHL) of 150 km and with a capacity of 1700 MVA between Maritsa East 1 and Burgas (onshore).	detailed development plan and steps location; Prepared Scoping report, defining the content of works of environmental and social impact assessment (ESIA) report. Permitting: Awarded national relevance status <b>3.7.3.:</b> Pre-feasibility Feasibility/FEED: Signed contract for route selection, preparation of detailed development plan and steps location; Prepared Scoping report, defining the content of works of environmental and social impact assessment (ESIA) report. Permitting: Awarded national relevance status <b>3.7.4.:</b> Pre-feasibility Feasibility/FEED: Signed contract for route selection, preparation of detailed development plan and steps location; Prepared Scoping report, defining the content of works of environmental and social impact assessment (ESIA) report. Permitting: Awarded national relevance status	
3.8.	E23 E24 E27	Cluster Bulgaria – Romania capacity increase including the following PCIs: 3.8.1. Internal line between Dobrudja and Burgas (BG) 3.8.2. Internal line between Vidno and Svoboda (BG) 3.8.3 Internal line between Svoboda (BG) and the splitting point of the interconnection Varna (BG) - Stupina (RO) in	<b>3.8.1.:</b> Dobrudja to Burgas (BG) <b>3.8.2.:</b> Vidno to Svoboda/ Krushari (BG) <b>3.8.3.:</b> BG <b>3.8.4.:</b> Cernavoda (RO) to Stalpu (RO) <b>3.8.5.:</b> Gutinas (RO) to Smardan (RO) <b>3.8.6.:</b> Gadalın (RO) to	<b>3.8.1., 3.8.2., 3.8.3.:</b> Electroenergien Sistemen Operator EAD/ESO (BG) <b>3.8.4., 3.8.5., 3.8.6.:</b> C.N.T.E.E. TRANSELECTRICA S.A. (RO)	<b>3.8.1.:</b> Construction of a new 400kV AC single-circuit line (OHL) of 140 km and with a capacity of 1700 MVA connecting Dobrudja and Burgas (onshore). <b>3.8.2.:</b> Construction of a new 400 kV AC power line (OHL) of 80 km and with a capacity of 1700 MVA between the 400/110kV substations Vidno and Svoboda (onshore). This project also includes the construction of two new 400/110kV substations in Svoboda (Krushari) and in Vidno to connect around 1800 MW of RES, transform	<b>3.8.1.:</b> Pre-feasibility <b>3.8.2.:</b> Pre-feasibility <b>3.8.3.:</b> Pre-feasibility <b>3.8.4.:</b> Permitting <b>3.8.5.:</b> Permitting <b>3.8.6.:</b> Feasibility/FEED	<b>3.8.1.:</b> 2018 <b>3.8.2.:</b> 2019 <b>3.8.3.:</b> 2019 <b>3.8.4.:</b> 2017 <b>3.8.5.:</b> 2020 <b>3.8.6.:</b> 2021

	E236 E238 E239	(BG) 3.8.4. Internal line between Cernavoda and Stalpu (RO) 3.8.5. Internal line between Gutinas and Smardan (RO) 3.8.6. Internal line between Gadalín and Suceava (RO)	Suceava (RO)		the corresponding renewable output to a higher voltage level and transfer that energy to demand centres. <b>3.8.3.</b> Construction of a new 400/110kV power line breaking up the existing 400kV Saedinenie OHL and connecting 400/110kV Svoboda substation. Length of 10 km, capacity of 1700 MVA (onshore). <b>3.8.4.:</b> 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. <b>3.8.5.:</b> New 400kV AC OHL double circuit (one circuit wired) of 137.5 km and with a capacity of 1380 MVA between existing substations Gutinas and Smardan (onshore). <b>3.8.6.:</b> New 400 kV OHL simple circuit of 260 km and with a capacity of 1204 MVA between existing substations Gadalín and Suceava (onshore).		
3.9.	E256 E257	Cluster Croatia – Hungary - Slovenia between Žerjavenc /Heviz and Cirkovce including the following PCIs: 3.9.1. Interconnection between Žerjavenc (HR)/Heviz (HU) and Cirkovce (SI) 3.9.2. Internal line between Divača and Beričevo (SI) 3.9.3. Internal line between Beričevo and Podlog (SI) 3.9.4. Internal line between Podlog and Cirkovce (SI)	<b>3.9.1.:</b> Cirkovce (SI) to Heviz (HU) <b>3.9.2., 3.9.3., 3.9.4.:</b> Cirkovce to Divača (SI)	Elektro Slovenija d.o.o./ELES (SI)	<b>3.9.1.:</b> The existing substation of Cirkovce (SI) will be connected to one circuit of the existing Heviz (HU)-Žerjavenc (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: Heviz (HU) - Cirkovce (SI) and Cirkovce (SI) - Žerjavenc (HR) (onshore). <b>3.9.2., 3.9.3., 3.9.4.:</b> Upgrading 220 kV AC lines to 400 kV on 193 km and with a total capacity of 2x1330 MVA in corridor Divaca-Klece-Bericevo-Podlog-Cirkovce (onshore).	<b>3.9.1.:</b> Permitting <b>3.9.2., 3.9.3., 3.9.4.:</b> Permitting	<b>3.9.1.:</b> 2016 <b>3.9.2.:</b> 2020 <b>3.9.3.:</b> 2025 <b>3.9.4.:</b> 2025
3.10.	E30	Cluster Israel - Cyprus – Greece between Hadera and Attica region [currently known as the Euro Asia Interconnector] including the following PCIs: 3.10.1. Interconnection between Hadera (IL) and Vasilikos (CY) 3.10.2. Interconnection between Vasilikos (CY) and Korakia, Crete (EL)	Hadera (IL) to Vasilikos (CY) to Korakia, Crete (EL) and to Attica region (EL)	<b>3.10.1.:</b> ΔEH Quantum Energy Ltd <b>3.10.2.:</b> ΔEH Quantum Energy Ltd <b>3.10.3.:</b> ΔEH Quantum Energy Ltd, in cooperation with	The project consists of a 600 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 will exceed the 2000 m under the sea in some	Pre-feasibility	<b>3.10.1.:</b> 2017 <b>3.10.2.:</b> 2019 <b>3.10.3.:</b> 2018

		3.10.3. Internal line between Korakia, Crete and Attica region (EL)		ADMIE	areas between IL and CY. The dumping depth of the cable will exceed the 2000 m under the sea in some areas between IL and CY and will exceed the 2500 m under the sea in some areas between CY and EL.		
3.11.	E32 E33 E34 E35  E36 E40 E37 E38 E39 E41	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)  3.11.2. Internal line between Vitkov and Prestice (CZ) 3.11.3. Internal line between Prestice and Kocin (CZ) 3.11.4. Internal line between Kocin and Mirovka (CZ)  3.11.5. Internal line between Mirovka and Cebin (CZ)	<b>3.11.1.:</b> Vernerov (CZ) to Vitkov (CZ) <b>3.11.2.:</b> Vitkov (CZ) to Prestice (CZ) <b>3.11.3.:</b> Kocin (CZ) to Prestice (CZ) <b>3.11.4.:</b> Kocin (CZ) to Mirovka (CZ), V413 (CZ) point of splitting <b>3.11.5.:</b> Mirovka (CZ) to Cebin (CZ)	ČEPS, a.s. (CZ)	<b>3.11.1.:</b> Building new 400 kV substation in Vitkov with 400/110kV and 350 MVA transformer as addition to existing 220 kV substation. Building new 400 kV substation in Vernerov with two 400/110kV and 350 MVA transformers. Building new 400 kV AC double circuit OHL of 75 km and with a capacity of 2x1730 MVA between Vernerov and Vitkov (onshore). <b>3.11.2.:</b> Building new 400kV AC double circuit OHL of 86 km and with a capacity of 2x1730 MVA between Vitkov and Prestice (onshore). <b>3.11.3.:</b> Extension and upgrade of the existing substation 400/110kV in Kocin that will enable connection of 5 new OHL. Reinforcement of existing 400 kV AC OHL of 115.8 km between Kocin and Prestice from single circuit with a capacity of 1360 MVA to double circuit with a capacity of 2x1730 MVA (onshore). <b>3.11.4.:</b> Extension and upgrade of the existing substation 400/110kV in Mirovka with two transformers of 2x250 MVA that will enable the connection of a new OHL. 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 and with a capacity of 2x1730 MVA between V413 and Mirovka (onshore). <b>3.11.5.:</b> Reinforcement of 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).	<b>3.11.1.:</b> Permitting Documentation for project assignment is on progress. RES increase connection in the area necessities its earlier commissioning. <b>3.11.2.:</b> Permitting <b>3.11.3.:</b> Permitting Extra land is bought; land approval has been acquired; documentation for construction approval is on progress. Adaption of the New Construction Act may cause some delays. <b>3.11.4.:</b> Permitting Positive EIA approval by the Ministry responsible has been issued. Project plan is approved. Documentation for land approval is on progress. Time schedule is adjusted to be in line with schedule of other interrelated project investments. <b>3.11.5.:</b> Permitting	<b>3.11.1.:</b> 2019 <b>3.11.2.:</b> 2021 <b>3.11.3.:</b> 2024 <b>3.11.4.:</b> 2020 <b>3.11.5.:</b> 2024
3.12.	E67	PCI internal line in Germany between Lauchstädt and Meitingen to increase capacity at Eastern borders	Lauchstädt (DE) to Meitingen (DE)	50Hertz Transmission (DE) Amprion GmbH (DE)	New HVDC line (voltage tbd) with a length of 450 km and a capacity of minimum 2000 MW to integrate especially new wind generation from Baltic Sea towards Central/South Europe for consumption and system stability improvement. The line type is planned as OHL (onshore).	FEED (Planning)	2022
3.13.	E60	PCI internal line in Germany between Halle/Saale and Schweinfurt to increase capacity in the North-South Corridor East	Vieselbach / Altenfeld (DE) to Grafenrheinfeld (DE)	50Hertz Transmission (DE) Tennet GmbH (DE)	New 380 kV AC OHL of 110 km and with a capacity of more than 3500 MVA between the substations Halle/Saale and Schweinfurt (onshore).	Permitting	2015

3.14.	E94 E212 E213	Cluster Germany – Poland between Eisenhüttenstadt and Plewiska [currently known as the GerPol Power Bridge project] including the following PCIs: 3.14.1. Interconnection between Eisenhüttenstadt (DE) and Plewiska (PL) 3.14.2. Internal line between Krajnik and Baczyzna (PL) 3.14.3. Internal line between Mikułowa and Świebodzice (PL)	<b>3.14.1.:</b> Eisenhüttenstadt (DE) to Plewiska (PL) <b>3.14.2.:</b> Krajnik (PL) to Baczyzna (PL) <b>3.14.3.:</b> Mikułowa (PL) to Świebodzice (PL)	<b>3.14.1.:</b> 50Hertz Transmission (DE) PSE Operator S.A.(PL) <b>3.14.2.:</b> PSE Operator S.A.(PL) <b>3.14.3.:</b> PSE Operator S.A.(PL)	<b>3.14.1.:</b> New AC 380 kV double circuit OHL of 252 km and with a capacity of approximately 3750 MVA between Eisenhüttenstadt and Plewiska (onshore) including the construction of new substations Plewiska Bis (PL) and Gubin (PL). In the final stage after 2022, also substation Zielona Góra between Gubin and Plewiska Bis is planned to connect with this line. <b>3.14.2.:</b> Construction of a new 400kV AC double circuit OHL of 91 km and with a capacity of 2x1870 MVA between Krajnik and Baczyzna (onshore). The single circuit temporarily working at 220 kV on the section between Krajnik and Gorzów and the new 400 kV substation Baczyzna will be connected by splitting and extending the existing line and upgrading limitations between Krajnik and Plewiska. <b>3.14.3.:</b> The 98 km double circuit 220 kV AC line between Mikułowa and Świebodzice will be upgraded to 400 kV single circuit temporarily working at 220 kV and with a capacity of approximately 2x1870 MVA (onshore).	<b>3.14.1.:</b> Feasibility/FEED <b>3.14.2.:</b> Pre-feasibility <b>3.14.3.:</b> Pre-feasibility	<b>3.14.1.:</b> 2022 <b>3.14.2.:</b> 2020 <b>3.14.3.:</b> 2020
3.15.	E95 E217 / E218	Cluster Germany – Poland between Vierraden and Krajnik including the following PCIs: 3.15.1. Interconnection between Vierraden (DE) and Krajnik (PL) 3.15.2. Coordinated installation and operation of phase shifting transformers on the interconnection lines between Krajnik (PL) – Vierraden (DE) and Mikulowa (PL) – Hagenwerder (DE)	<b>3.15.1.:</b> Vierraden (DE) to Krajnik (PL) <b>3.15.2.:</b> Phase shifting transformers on the interconnection lines between Krajnik (PL) – Vierraden (DE) and Mikulowa (PL) – Hagenwerder (DE)	<b>3.15.1.:</b> 50Hertz Transmission GmbH (DE) PSE S.A.(PL) <b>3.15.2.:</b> 50Hertz PSE S.A.(PL)	<b>3.15.1.:</b> 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 3500 MVA (onshore). The upgrade of the line is on condition that the line is equipped with a PST (PCI 3.15.2.) in order to ensure the system security and stability in case of high flows on the mentioned line. The PST has to be installed and operated by cooperation of Germany and Poland. <b>3.15.2.:</b> Installation of Phase Shifting Transformers (PSTs) on the upgraded interconnection between Krajnik (PL) and Vierraden (DE) and phase shifting transformers (PSTs) on the existing interconnection between Mikułowa (PL) and Hagenwerder (DE).	<b>3.15.1.:</b> Final Investment Decision (FID) <b>3.15.2.:</b> Final Investment Decision (FID)	<b>3.15.1.:</b> 2016 <b>3.15.2.:</b> 2016
3.16.	E147 E258 E145	Cluster Hungary - Slovakia between Gönyű and Gabčíkovo including the following PCIs: 3.16.1. Interconnection between Gönyű (HU) and Gabčíkovo (SK) 3.16.2. Internal line between Velký Ďur and Gabčíkovo (SK) 3.16.3. Extension of Győr substation (HU)	<b>3.16.1.:</b> Gabčíkovo (SK) to Gönyű (HU) <b>3.16.2.:</b> Velký Ďur (SK) to Gabčíkovo (SK) <b>3.16.3.:</b> Győr (HU)	<b>3.16.1.:</b> Slovenska elektrizacna prenosova sustava, a.s./SEPS (SK) <b>3.16.2.:</b> Slovenska elektrizacna prenosova sustava, a.s./SEPS (SK) <b>3.16.3.:</b> MAVIR	<b>3.16.1.:</b> New AC 400 kV double circuit interconnection with a total capacity of 2 772 MVA between Gabčíkovo and Gönyű (13 km on Slovak side) and the erection of new switching station Gabčíkovo next to the existing one (onshore). <b>3.16.2.:</b> Erection of the new 2x400kV AC double circuit line of 93 km and with a total capacity of 2772 MVA between substations Velký Ďur and Gabčíkovo and the necessary extension of the substation Velký Ďur (onshore). <b>3.16.3.:</b> Installation of a third 400/120 kV transformer	<b>3.16.1.:</b> Pre-feasibility <b>3.16.2.:</b> Permitting in the permitting process (building and territorial permissions) <b>3.16.3.:</b> Pre-feasibility	<b>3.16.1.:</b> 2016 <b>3.16.2.:</b> 2016 <b>3.16.3.:</b> 2016

				Magyar Villamosenergia-ipari Átviteli Rendszerirányító Zártkörűen Működő Részvénytársaság (HU)	and 70 Mvar shunt reactor in station Győr.  Clusters 3.16 and 3.17 are co-dependent.		
3.17.	E144 E148	PCI Hungary - Slovakia interconnection between Sajóvánka (HU) and Rimavská Sobota (SK)	Rimavská Sobota (SK) to Sajóvánka (HU)	MAVIR Magyar Villamosenergia-ipari Átviteli Rendszerirányító Zártkörűen Működő Részvénytársaság (HU), Slovenska elektrizacna prenosova sustava, a.s./SEPS (SK)	Installation of a second 400/120 kV transformer and 2x70 Mvar shunt reactors in station Sajóvánka. Connection of the two existing substations R. Sobota (SK) and Sajóvánka (HU) by the new 2x400 kV AC double circuit line (preliminary armed only with one circuit), with an approximate length of 25 km on SK side and a capacity of 2x1386 MVA, including the R. Sobota (SK) substation equipment (onshore).  Clusters 3.16 and 3.17 are co-dependent.	Pre-feasibility	2016
3.18.	E146  E285	Cluster Hungary - Slovakia between Kisvárda area and Velké Kapušany including the following PCIs: 3.18.1. Interconnection between Kisvárda area (HU) and Velké Kapušany (SK) 3.18.2. Internal line between Lemešany and Velké Kapušany (SK)	<b>3.18.1.:</b> area of Kisvárda to Velké Kapušany (SK), at the HU-SK border <b>3.18.2.:</b> Lemešany (SK) to Velké Kapušany (SK)	<b>3.18.1.:</b> MAVIR Magyar Villamosenergia-ipari Átviteli Rendszerirányító Zártkörűen Működő Részvénytársaság (HU) <b>3.18.2.:</b> Slovenska elektrizacna prenosova sustava, a.s./SEPS (SK)	<b>3.18.1.:</b> Erection of new 400 kV AC double circuit line (OHL) with a capacity of 2772 MVA between Velké Kapušany and a substation in the area of Kisvárda (exact location and length of the line to be defined) (onshore). <b>3.18.2.:</b> Erection/upgrade of existing 400 kV AC line (OHL) of approximately 100 km and to a total capacity of 2772 MVA between Lemešany and Velké Kapušany substations (onshore) and the necessary extension of both substations.	<b>3.18.1.:</b> Pre-feasibility <b>3.18.2.:</b> Feasibility/FEED  Included to the network development plan and long-term investment plan with the preliminary date of commissioning in 2018. The EIA process has been finished successfully.	<b>3.18.1.:</b> 2021 <b>3.18.2.:</b> 2018
3.19.	E160  E161  E168	Cluster Italy - Montenegro between Villanova and Lastva including the following PCIs: 3.19.1. Interconnection between Villanova (IT) and Lastva (ME) 3.19.2. Internal line between Fano and Teramo (IT) 3.19.3. Internal line between Foggia and Villanova (IT)	<b>3.19.1.:</b> Villanova (IT) to Lastva (ME) <b>3.19.2.:</b> Fano to Teramo (IT) <b>3.19.3.:</b> Foggia to Villanova (IT)	Terna - Rete Elettrica Nazionale SpA. (IT)	<b>3.19.1.:</b> New HVDC interconnection line with a capacity of 1000 MW between Italy and Montenegro via 375 km of 500 kV DC subsea cable and converter stations at both ending points in Villanova (IT) and Lastva (ME) (offshore). <b>3.19.2.:</b> New 400 kV AC single circuit OHL with a length of 200 km and a capacity of 1500 MVA between the existing 400 kV substations of Fano and Teramo (onshore), providing the connection in and out to the future substation to be built in Macerata area.	<b>3.19.1.:</b> Construction <b>3.19.2.:</b> Feasibility/FEED <b>3.19.3.:</b> Construction / Permitting	<b>3.19.1.:</b> 2017 <b>3.19.2.:</b> 2022 <b>3.19.3.:</b> 2019



					<b>3.19.3.:</b> New 400 kV AC double circuit OHL with a length of 178 km and a capacity of 3.000 MVA between existing 400 kV substations of Foggia and Villanova (onshore), connecting in and out also the Larino and Gissi 400 kV substations. The first part of the line connecting Villanova and Gissi substations was already permitted in January 2013 and is currently in construction. The second part of the line connecting Gissi, Larino and Foggia substations is still in permitting.		
3.20.	E189  E159	Cluster Italy – Slovenia between West Udine and Okroglo including the following PCIs:  3.20.1. Interconnection between West Udine (IT) and Okroglo (SI) 3.20.2. Internal line between West Udine and Redipuglia (IT)	<b>3.20.1.:</b> West Udine (IT) to Okroglo (SI) <b>3.20.2.:</b> West Udine (IT) to Redipuglia (IT)	<b>3.20.1.:</b> Elektro Slovenija d.o.o./ELES (SI) Terna - Rete Elettrica Nazionale SpA (IT) <b>3.20.2.:</b> Terna - Rete Elettrica Nazionale SpA (IT)	<b>3.20.1.:</b> New 120 km 400 kV AC double circuit OHL with a capacity of 2x1870 MVA between Okroglo and Udine (onshore). <b>3.20.2.:</b> New 40 km 400kV AC double circuit OHL with a capacity of 1.500-3.000 MVA between the existing substations of West Udine and Redipuglia, providing in and out connection to the future 400 kV substation of South Udine (onshore).	<b>3.20.1.:</b> Feasibility/FEED (Italian side) Permitting (Slovenian side) <b>3.20.2.:</b> Construction (permitted in March 2013)	<b>3.20.1.:</b> 2022 <b>3.20.2.:</b> 2016
3.21.	E190	PCI Italy – Slovenia interconnection between Salgareda (IT) and Divača - Bericevo region (SI)	Divača (still under consideration) to Salgareda (IT)	Elektro Slovenija d.o.o./ELES (SI) Terna - Rete Elettrica Nazionale SpA.(IT)	The project includes a new 300-500 kV HVDC underground cable between Italy and Slovenia with a length of about 150-200 km and a capacity of 1000 MW.	Feasibility/FEED (SI side) Permitting (IT side - permitting procedure started in October 2012)	2022
3.22.	E231  E232  E233	Cluster Romania – Serbia between Resita and Pancevo including the following PCIs:  3.22.1. Interconnection between Resita (RO) and Pancevo (RS) 3.22.2. Internal line between Portile de Fier and Resita (RO) 3.22.3. Internal line between Resita and Timisoara/Sacalaz (RO) 3.22.4. Internal line between Arad and Timisoara/Sacalaz (RO)	<b>3.22.1.:</b> Resita (RO) to Pancevo (RS) <b>3.22.2.:</b> Portile de Fier to Resita (RO) <b>3.22.3., 3.22.4.:</b> Resita (RO) to Timisoara, Sacalaz and Arad (RO)	C.N.T.E.E. TRANSELECTRICA S.A. (RO)	<b>3.22.1.:</b> 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). <b>3.22.2.:</b> 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 extension of the existing 220/110 kV substation. <b>3.22.3., 3.22.4.:</b> Upgrade of an existing 220 kV AC double circuit line (OHL) between Resita – Timisoara – Sacalaz – Arad (RO) to 400 kV double circuit line on 100 km and as single circuit on 74.6 km with a capacity of 1380 MVA on sections Resita-Timisoara, Resita – Sacalaz, Timisoara – Arad and of 1204 MVA on the section Sacalaz – Calea Aradului (already existing between Sacalaz and Arad) – Arad (onshore). Moreover, the project includes the extension of 220/110 kV substation Timisoara with 400 kV and replacement of 220 kV substation Sacalaz with 400 kV	<b>3.22.1.:</b> Permitting <b>3.22.2.:</b> Permitting <b>3.22.3., 3.22.4.:</b> Final Investment Decision (FID)	<b>3.22.1.:</b> 2015 <b>3.22.2.:</b> 2016 <b>3.22.3., 3.22.4.:</b> 2022

					substation.		
3.23.	28	PCI 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 PSHPP 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 PSHPP 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 volume of the lower reservoir Chaira - 5.6 mln m <sup>3</sup> . 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 <sup>3</sup> .	Pre-feasibility Feasibility/FEED Permitting	2020
3.24.	114	PCI 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	2018
3.25.	171	PCI battery storage systems in Central South Italy	Central South Italy Connection point to transmission network: study in progress to determine the exact sites where the benefits of these innovative batteries are greater	Terna - Rete Elettrica Nazionale SpA (IT)	Installation of 250 MW of storage systems (Batteries) on critical 150 kV transmission network in South Italy. Batteries are characterized by removable, modular and flexible installations; these characteristics allow installations in a wide variety of sites and the possible replacement depending on the needs that could arise in the medium / long term. Permitting has already started for the first experimental stage concerning 35 MW, while the remaining part of the project is under pre-feasibility studies.	Permitting	2015
3.26.	306	PCI hydro-pumped storage in Poland - Mloty	Lower Silesian Region, Bystrzyca Kłodzka Commune, Poland Connection point to transmission network Ząbkowice Śląskie	EDF Polska Centrala Sp. z o.o	The Mloty project is a Pumped Storage Power Plant of 750 MW power in generation mode and 804 MW in pumping mode that can be used to stabilise the energy system. Due to its location in the Lower Silesian Region in Poland, close to German and the Czech Republic border it can stabilise the energy flow in the region caused as well by wind farms.	Feasibility/FEED	2020

#### 4. Baltic Energy Market Interconnection Plan ("BEMIP Electricity")

No.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
4.1.	E96	PCI Denmark – Germany interconnection between Ishøj/Bjæverskov (DK) and Bentwisch/Güstrow (DE) via offshore windparks Kriegers Flak (DK) and Baltic 2 (DE) [currently known as Kriegers Flak Combined Grid Solution]	Bentwisch / Güstrow (DE) to Ishøj / Bjæverskov (DK)	50Hertz Transmission (DE) Energinet.dk (DK)	The Kriegers Flak Combined Grid Solution is the new offshore multi-terminal connection between Denmark and Germany used for both grid connection of offshore wind farms Kriegers Flak and interconnection. Exact technical features still have to be determined, but the project envisages 270 km of mainly offshore and partially onshore HVDC cables with a voltage of ±320 kV and a capacity around 600 MW.	Feasibility/FEED Final Investment Decision (FID) at the end of 2012 Permitting	2018
4.2.	E98  E281	Cluster Estonia – Latvia between Kilingi-Nõmme and Riga [currently known as 3 <sup>rd</sup> interconnection] including the following PCIs:  4.2.1. Interconnection between Kilingi-Nõmme (EE) and Riga CHP2 substation (LV) 4.2.2. Internal line between Harku and Sindi (EE)	<b>4.2.1.:</b> Kilingi-Nomme (EE) RigaCHP2 (LV) <b>4.2.2.:</b> Harku to Sindi (EE)	<b>4.2.1.:</b> AS Augstsprieguma Tikls/AS Latvijas Elektriskie Tikli, Elering AS (ER) <b>4.2.2.:</b> Elering AS	<b>4.2.1.:</b> 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). <b>4.2.2.:</b> 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 connection will be established on existing lines on the Western part of Estonian mainland (onshore).	<b>4.2.1.:</b> Permitting <b>4.2.2.:</b> Permitting	<b>4.2.1.:</b> 2020 <b>4.2.2.:</b> 2019
4.3.	Replacing E194	PCI Estonia / Latvia / Lithuania synchronous interconnection with the Continental European networks	-	LITGRID AB (LT), AS Augstsprieguma tikls (LV), Elering AS (EE)	The Lithuania – Latvia – Estonia power system and market integration: Synchronous interconnection of Lithuania, Latvia and Estonia with the Continental European networks project is aimed at infrastructure development for deeper market integration and synchronous interconnection of the power systems of the Baltic States with the Continental European networks.  Lithuanian, Latvian and Estonian TSOs are currently implementing the Feasibility Study “Interconnection Variants for the Integration of the Baltic States to the EU Internal Electricity Market. Further E194 project development, including notably further studies on synchronisation, will be subject to the result of the Feasibility Study “Interconnection Variants for the Integration of the Baltic States to the EU Internal Electricity Market”.	Further studies depending on the results of the current one.	-
4.4.	E282	Cluster Latvia - Sweden capacity increase [currently known as the NordBalt project] including the following PCIs:  4.4.1. Internal line between	<b>4.4.1.:</b> Ventspils to Imanta (LV) <b>4.4.2.:</b> Part 1: Ekhyddan to Nybro	<b>4.4.1.:</b> AS Augstsprieguma Tikls/AS Latvijas Elektriskie Tikli	<b>4.4.1.:</b> 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	<b>4.4.1.:</b> Permitting <b>4.4.2.:</b> Feasibility/FEED	<b>4.4.1.:</b> 2018 <b>4.4.2.:</b> 2019

	E254	Ventspils, Tume and Imanta (LV) 4.4.2. Internal line between Ekhyddan and Nybro/Hemsjö (SE)	Part 2: Nybro to Hemsjö	4.4.2.: Svenska Kraftnät	Latvia, connecting Grobina with Riga 330 kV network. The PCI covers the section Ventspils-Tume-Imanta (Riga), that is necessary to implement in order to close 330 kV AC transit OHL from Grobina to Imanta (Riga) with a length of 210 km and a capacity of 940 MVA (onshore). 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).		
4.5.	E283  E201 + E204  E202  E203	Cluster Lithuania – Poland between Alytus (LT) and Elk (PL) including the following PCIs: 4.5.1. LT part of interconnection between Alytus (LT) and LT/PL border 4.5.2. Internal line between Stanisławów and Olsztyn Mątki (PL)  4.5.3. Internal line between Kozienice and Siedlce Ujrzanów (PL) 4.5.4. Internal line between Płock and Olsztyn Mątki (PL)	4.5.1.: Alytus (LT) to PL-LT border 4.5.2.: Stanisławów to Ostrołęka to Olsztyn Mątki (PL) 4.5.3.: Kozienice to Siedlce Ujrzanów (PL) 4.5.4.: Płock to Olsztyn Mątki (PL)	4.5.1.: LITGRID AB (LT) 4.5.2.: PSE Operator S.A.(PL) 4.5.3.: PSE Operator S.A.(PL) 4.5.4.: PSE Operator S.A.(PL)	4.5.1.: 400 kV AC double circuit OHL on 51 km and with a capacity of 2x1870 MVA between Alytus and PL-LT border (onshore), with construction of Back-to-Back converter station near Alytus (2x500 MW capacity). 4.5.2.: 220 kV single circuit line between Ostrołęka and Miłosna will be partly upgraded to 400 kV AC double circuit line with a length of 106 km and a capacity of 2x1870 MVA between Ostrołęka and Stanisławów (onshore). Moreover, development of Ostrołęka 400 kV substation and new substation 400 kV Stanisławów will be connected by splitting and extending existing line between Miłosna and Narew and that between Miłosna and Siedlce. Existing 220 kV line of 138 km between Ostrołęka and Olsztyn Mątki will be upgraded to 400 kV AC double circuit OHL with a capacity of 2x1870 MVA (onshore). 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. 4.5.3.: Existing 220 kV single circuit OHL between Kozienice and Siedlce Ujrzanów will be upgraded to AC 400 kV double circuit line (OHL) with a length of 90 km and a capacity of 2x1870 MVA (onshore). Moreover, Kozienice substation will be upgraded to connect the new lines. 4.5.4.: New 400 kV AC single circuit line (OHL) of 180 km between Płock and Olsztyn Mątki with a capacity of 1870 MVA (onshore) and the development of Olsztyn Mątki 400 kV substation.	4.5.1.: Permitting 4.5.2.: The part between Stanisławów to Ostrołęka: Feasibility/FEED The part between Ostrołęka to Olsztyn Mątki: Final Investment Decision (FID) 4.5.3.: Final Investment Decision (FID) 4.5.4.: Pre-feasibility	4.5.1.: 2015 (first stage - 500 MW Back-to-Back and OHL) 2020 (second stage- additional 500 MW Back-to-Back) 4.5.2.: 2020 4.5.3.: 2020 4.5.4.: 2020
4.6.	97	PCI 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 <sup>3</sup> /s. Normal static head is 500 m. Lower reservoir is on the level -500 m in Muuga granite massif. Energy rating of	Pre-feasibility  The detail planning (DP) and Strategic Environmental Impact Assessment (SEIA) is on-going	2020

					storage is 12 hours. The excavated granite will be used for road construction.	and planned to end in December 2013.	
4.7.	300	PCI 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%.	Feasibility study and technical specifications are prepared. <ul style="list-style-type: none"> <li>• Around 75% of civil works are already performed while building the 4 units of Kruonis PSPP.</li> <li>• The new penstock and electromechanical equipment need to be installed.</li> <li>• Environmental assessment is performed.</li> </ul>	2019

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

Projects allowing bidirectional flows between Ireland and the United Kingdom

No.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
5.1	G136  G133  G135	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 (Ireland/United Kingdom) 5.1.2 Upgrade of the SNIP (Scotland to Northern Ireland) pipeline to accommodate physical reverse flow between Ballylumford and Twynholm 5.1.3 Development of the Islandmagee Underground Gas Storage (UGS) facility at Larne (Northern Ireland)	<b>5.1.1:</b> Moffat Entry Point in South West Scotland (UK) <b>5.1.2:</b> Northern Ireland and Scotland, nearest interconnection point is 23 (UK) <b>5.1.3:</b> 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	<b>5.1.1:</b> Gaslink <b>5.1.2:</b> Premier Transmission Limited <b>5.1.3:</b> Islandmagee Storage Ltd	<b>5.1.1:</b> 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 is 38.5 GWh/d. <b>5.1.2:</b> 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. <b>5.1.3:</b> New salt cavity gas storage Islandmagee UGS at Larne (UK). The project will provide a working as volume of 500 MCM/day allowing for a withdraw capacity of 22 MCM/day and an injection capacity of 12 MCM/day.	<b>5.1.1:</b> Pre-feasibility studies <b>5.1.2:</b> Feasibility studies <b>5.1.3:</b> Pre-feasibility studies Feasibility studies Permitting – final planning approval expected August 2012	<b>5.1.1:</b> 2017 <b>5.1.2:</b> 2016 <b>5.1.3:</b> First gas cavern for gas injection due in 2017
5.2	G82	PCI Twinning of Southwest Scotland onshore system between Cluden and Brighthouse Bay (United Kingdom)	Cluden to Brighthouse Bay in South West Scotland (UK)	Gaslink	Reinforcing the 50 km single section of the SWSOS transmission system (onshore). The planned capacity is 375 GWh/d.	Pre-feasibility studies Feasibility studies Permitting	2012-2015
5.3	G80	PCI Shannon LNG Terminal located between Tarbert and Ballylongford (Ireland)	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 capacity is 117.7 GWh/d.	Pre-feasibility studies Feasibility studies Permitting - In 2008 Shannon LNG received planning approval (An Bord Pleanála Reference Number: PL 08.PA0002).	2017

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

No.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
5.4	G114	PCI 3 <sup>rd</sup> interconnection point between Portugal and Spain	Celorico da Beira to Braganza (PT) and Zamora (ES)	ENAGAS REN	Extension of the existing pipeline through a 3 <sup>rd</sup> stage of the project between Celorico da Beira and Braganza (PT) and Zamora (ES), on a total length of 310 km (225 km in PT and 85 km in ES) and with a total capacity of 142 GWh/d (11.88 MCM/day) for each direction ES-PT and PT-ES). The planned capacity is 142 GWh/d.	Pre-feasibility studies Feasibility studies	2018 (corresponding to the first stage of the infrastructure)
5.5	G60	PCI Eastern Axis Spain-France – interconnection point between Iberian Peninsula and France at Le Perthus [currently known as Midcat]	ES to FR at the interconnection point Le Perthus	ENAGAS	New onshore pipeline of 184 km interconnecting Spain and France at Le Perthus Interconnection point. The power of the compressor stations is of 46 MW for LE PERTHUS IP and of 30 MW for GRTGAZ SOUTH-TIGF subproject. The planned capacity is 230 GWh/d.	Pre-feasibility studies Feasibility studies	2020
5.6	G59	PCI Reinforcement of the French network from South to North – Reverse flow from France to Germany at Obergailbach/Medelsheim Interconnection point (France)	FR-DE border, 20 km far from Saarbrücken and 80 km from Strasbourg  Additional compression stations in 3 locations in France.  The pipeline section is deemed to be developed in relationship with the pipe between Morelmaison and Laneuvelotte (FR).	GRTgaz	Removing existing odourisation stations and setting up new ones at the entry of regional one-way pipelines in the French gas network and setting up additional compression stations in 3 locations in France. The pipeline section is deemed to be developed in relationship with the pipe between Morelmaison and Laneuvelotte (FR).  Change of the metering facility in Medelsheim and reverse gas flow from FR to DE via MEGAL pipeline. The planned capacity from FR to DE is 150 GWh/d.	Pre-feasibility studies	2018 for compression power
5.7	G48	PCI Reinforcement of the French network from South to North on the Bourgogne pipeline between Etrez and Voisines (France)	Etrez to Voisines (FR)	GRTgaz	New onshore pipeline of 190 km between Etrez (FR) and Voisines (FR) and new compressor station of 9 MW at Etrez (FR).	FID	2016
5.8	G47	PCI Reinforcement of the French network from South to North on the east Lyonnais pipeline between Saint-Avit and Etrez (France)	Saint-Avit to Etrez (FR)	GRTgaz	Upgrade 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.	Pre-feasibility studies	2018-2019

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

5.9	G58	PCI Reverse flow interconnection between Switzerland and France	Morelmaison to Voisines (FR)	GRTgaz	New pipeline section built on a distance of 87 km between Morelmaison and Voisines and with a daily capacity of 9 MCM/day, as part of the South North Reverse Flow project, from IT to FR, DE and BE via CH (onshore).	Feasibility studies	September 2016 for interruptible capacity September 2018 for firm capacity (conditional to pressure level)
5.10	G5	PCI Reverse flow interconnection on TENP pipeline in Germany	TENP pipeline from interconnection point at Walbach (DE) to Bocholtz (DE)	Fluxys TENP GmbH	Reverse flow at the pipeline section between the interconnection point at Walbach and Bocholtz, with a daily capacity of 22 GWh and with a possible later expansion to 60 GWh (onshore).The power of the compressor station is 8 MW.	Pre-feasibility studies: in progress	2017
5.11	G91	PCI Reverse flow interconnection between Italy and Switzerland at Passo Gries interconnection point	Passo Gries interconnection point, North area of IT	Snam Rete Gas	Reverse flow at Passo Gries interconnection point on a pipeline section of 450 km between Italy and Switzerland, that will determine a daily capacity of 5 MCM/day in a first phase (from 1/1/2016) and that of 38 MCM/day in a second phase (from 1/1/2017). The power of the compressor station(s) is 95 MW.	Phase 1: FID – under construction Phase 2: FID - permitting	Phase 1: 2015 Phase 2: 2016
5.12	G6	PCI Reverse flow interconnection on TENP pipeline to Eynatten interconnection point (Germany)	TENP pipeline (DE) to Eynatten (BE) - interconnection point 8.	Fluxys TENP GmbH / Fluxys Belgium	Reverse flow interconnection at Eynatten on TENP pipeline (on a distance of 11 km), determining an additional daily capacity of 5.5 to 22.8 MCM/day from DE to BE and that of 5.5 to 41 MCM/day from BE to DE (onshore). The power of the compressor station(s) will be between 12 and 36 MW, depending on the chosen alternative.	Pre-feasibility studies : in progress	2017

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

5.13	G56	PCI New interconnection between Pitgam (France) and Maldegem (Belgium)	Dunkirk (FR) to Maldegem (BE)	GRTgaz Fluxys Belgium	New pipeline Pitgam (FR) and Maldegem (BE) with a daily capacity of 24 MCM/day (onshore). The power of the compressor station is yet to be determined.	In France FID: 14/05/2012 - subject to permitting Permitting: expected no later than 2nd semester 2013 In Belgium FID: subject to permitting	December 2015
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						Permitting: validation plan MER for Q3/2014	
5.14	G45	PCI Reinforcement of the French network from South to North on the Arc de Dierrey pipeline between Cuvilly, Dierrey and Voisines (France)	Arc de Dierrey pipeline between Cuvilly, Dierrey and Voisines (FR)	GRTgaz	Reinforcement of the French network from South to North on the Arc de Dierrey pipeline between Cuvilly, Dierrey and Voisines on a distance of 308 km (onshore).	FID Under construction	End of 2015
5.15	G104	Cluster implementing gas compressor optimisation in the Netherlands including the following PCIs: 5.15.1 Emden (from Norway to the Netherlands) 5.15.2 Winterswijk/Zevenaar (from the Netherlands to Germany) 5.15.3 Bocholtz (from the Netherlands to Germany) 5.15.4 's Gravenvoeren (from the Netherlands to Belgium) 5.15.5 Hilvarenbeek (from the Netherlands to Belgium)	Emden, Winterswijk/Zevenaar, Bocholtz, 's Gravenvoeren, Hilvarenbeek (NL)	GasTransport Services B.V.	Optimisation of gas compressor stations in Emden, Winterswijk/Zevenaar, Bocholtz, 'sGravenvoeren, Hilvarenbeek (NL) with a power of 540 MW (onshore).	Feasibility studies	in parts between 2017 and 2024
5.16	G7 G8	PCI Extension of the Zeebrugge LNG terminal	Zeebrugge LNG - interconnection point 60	Fluxys LNG LSO	LNG/ CNG terminal with an annual send-out capacity/additional send-out capacity of 3 BCM/year, a storage capacity/ additional storage tank of 180000 CM and a maximum ship size of 266000 CM. The new LNG tank, send-out and the new jetty will increase the capacity of LNG supply to Belgium (and to NW Europe) by about 25%.	Feasibility studies (new LNG Tank & Jetty) Permitting : new LNG tank & Jetty (in progress ) Construction : marine works for Jetty	- new jetty and send-out : 2015 - new LNG tank: 2017
5.17	G61 G10	Cluster between Luxembourg, France and Belgium including one or more of the following PCIs: 5.17.1 Interconnection between France and Luxembourg 5.17.2 Reinforcement of the interconnection between Belgium and Luxembourg	<b>5.17.1:</b> FR to LU <b>5.17.2:</b> BE to LU	GRTgaz / CREOS/ Fluxys	<b>5.17.1:</b> New pipeline of 15 or 56 km in FR and 2 km in LU with a daily capacity of 0.8 or 3.5 MCM/day (onshore). <b>5.17.2:</b> Upgrade of existing IP Pétange with the construction of 50 km pipeline in BE	<b>5.17.1:</b> Feasibility studies : 1st quarter 2013, after the result of the open season FID: Expected 1Q2013 <b>5.17.2:</b> Pre-feasibility studies	<b>5.17.1:</b> 1Q 2018 <b>5.17.2:</b> 2016

Other projects

5.18	G28	PCI Reinforcement of the German network to reinforce interconnection capacities with Austria [currently known as Monaco pipeline phase I (Haiming/Burghausen-Finsing,)]	Haiming/Burghausen (AT) Finsing (DE)	bayernets GmbH	New pipeline of 90 km with a daily capacity of 52.8 MCM/day, including two steering and metering stations. Off-take points are located in Haiming, and Finsing have as annual volumes values 3.7 and 2.8 BCM/year respectively.	FID : outstanding Permitting: 2013-2014 Construction: 2015-2017	01.10.2017
5.19	G103	PCI Connection of Malta to the European Gas network (gas pipeline with Italy at Gela and Floating LNG Storage and Regasification Unit (FSRU))	MT to IT – interconnection point at Gela	Ministry of Finance, the Economy and Investment Malta	New pipeline of 150 km from an offshore Floating Storage and Regasification Unit/FSRU (MT) to Sicily (IT) 4.4 MCM/day and 12 km from FSRU to Delimara (MT) with a daily capacity of 1.1 MCM/day. The characteristics of the FSRU are: Daily send-out capacity 5.5 MCM/day Annual send-out capacity 2 BCM/year LNG storage capacity 200000 CM LNG Reloading facility 135000 CM LNG Maximum ship size 135000 CM LNG	Pre-feasibility studies	December 2018
5.20	G93 G49	PCI Gas Pipeline connecting Algeria to Italy (Sardinia) and France (Corsica) [currently known as Galsi & Cyréné pipelines]	Algerian coast via Sardinia to Tuscany landfall Corsica (both from Bastia and Ajaccio) to Sardinia, connection to Galsi pipeline	GALSI SPA GRTgaz	New transcontinental gas pipeline project between Algeria to Italian via Sardinia island and Italian mainland. The project can be divided into 2 sections: international section (288 km offshore pipeline from Algeria to Sardinia) and a national section (overall 563 km pipeline of which: 285 km onshore pipeline crossing Sardinia + 275 km offshore pipeline from Sardinia to Tuscany + 3 km onshore pipeline in Tuscany). The capacity of the project is $8 \times 10^9 \text{ Sm}^3/\text{year}$ (equal to 7.6 BCM/year) and the power of the compressor station in Algeria (Kouthie Draouche) is of 3x33 MW and of that one in Sardinia (Olbia) of 2x26 MW. New pipeline of 300 km (220 km onshore and 100 km offshore) and with a daily capacity of 3.15 MCM/day that would plug Corsica to the Galsi project, laying an offshore pipeline between Sardinia and Corsica and building onshore connection to the two main cities of Corsica, Bastia and Ajaccio.	Galsi pipeline: Pre-feasibility studies (completed) Feasibility studies (completed) FID (exp. 4Q2012) Permitting (in finalization – exp. 3Q2012) Cyréné: Pre-feasibility studies	Galsi: 4Q2016 - 1Q 2017 Cyréné: pending Galsi timeframe

## 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.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
6.1	G27  G108	Cluster Czech – Polish interconnection upgrade (Stork II) and related internal reinforcements in Western Poland, including the following PCIs: 6.1.1 Poland - Czech Republic Interconnection [currently known as Stork II] between Libhošť – Hať (CZ/PL) – Kędzierzyn (PL) 6.1.2 Lwówek-Odolanow pipeline 6.1.3 Odolanow compressor station 6.1.4 Czeszów-Wierzchowice pipeline 6.1.5 Czeszów-Kielczów pipeline 6.1.6 Zdzeszowice-Wrocław pipeline 6.1.7 Zdzeszowice-Kędzierzyn pipeline 6.1.8 Tworog-Tworzen pipeline 6.1.9 Tworóg-Kędzierzyn pipeline 6.1.10 Pogorska Wola-Tworzen pipeline 6.1.11 Strachocina – Pogórska Wola pipeline	<b>6.1.1:</b> Libhošť (CZ) – Kędzierzyn (PL) <b>6.1.2. -6.1.11.:</b> Kędzierzyn, Tworóg, Tworzen, Pogorska Wola, Strachocina, Zdzeszowice, Lwówek, Odolanow, Wrocław, Wierzchowice, Czeszów, Kielczów	<b>6.1.1:</b> Gas Transmission Operator GAZ-SYSTEM S.A.; NET4GAS, s.r.o. <b>6.1.2. -6.1.11.:</b> Gas Transmission Operator GAZ-SYSTEM S.A.	<b>6.1.1:</b> New onshore pipeline with a length of 107.6 km and a maximum daily capacity of 13.7 MCM/day in the direction PL-CZ and that of 19.6 MCM/day in the direction CZ-PL (Stage I) and 30.1 MCM/day (Stage II). <b>6.1.2. -6.1.11.:</b> Upgrade of onshore pipelines in Greater Poland, Silesia, Subcarpathian regions (PL). Closest cities: Poznan, Katowice, Krakow, Rzeszow Total length of 739 km, namely: Lwówek-Odolanow pipeline – 162 km; Czeszów-Wierzchowice pipeline – 13 km; Czeszów-Kielczów pipeline – 32 km; Zdzeszowice-Wrocław pipeline – 130 km; Zdzeszowice-Kędzierzyn pipeline – 19 km; Tworog-Tworzen pipeline – 56 km; Tworóg-Kędzierzyn pipeline – 47 km; Pogorska Wola-Tworzen pipeline – 160 km; Strachocina – Pogórska Wola pipeline – 120 km. The power of the compressor station in Odolanow is of 7 MW.	<b>6.1.1:</b> Feasibility studies (PL) Pre-feasibility studies – routing study – completed; EIA – issued (CZ) <b>6.1.2.-6.1.11.:</b> Pre-feasibility studies	<b>6.1.1:</b> 2017 at the earliest <b>6.1.2. -6.1.11.:</b> Lwówek-Odolanów: 2017 Odolanów compressor station: 2018 Czeszów-Wierzchowice: 2016 Czeszów-Kielczów: 2017 Zdzeszowice-Wrocław: 2017 Zdzeszowice-Kędzierzyn: 2016 Tworog-Tworzeń: 2016 Tworóg-Kędzierzyn: 2016 Pogórska Wola-Tworzeń: 2018 Strachocina-Pogórska Wola: 2018
6.2	G112  G109	Cluster Poland – Slovakia interconnection and related internal reinforcements in Eastern Poland, including the following PCIs: 6.2.1 Poland – Slovakia interconnection 6.2.2 Rembelszczynna compressor station 6.2.3 Rembelszczynna-Wola	<b>6.2.1.:</b> PL (Strachocina) – SK (Veľké Kapušany) <b>6.2.2.-6.2.9.:</b> Strachocina, Hermanowice, Jarosław, Rozwadów, Końskowola, Wronów, Wola Karczewska, Rembelszczynna	<b>6.2.1.:</b> Gas Transmission Operator GAZ-SYSTEM S.A. eustream, a.s. <b>6.2.2.-6.2.9.:</b> Gas Transmission Operator GAZ-SYSTEM S.A.	<b>6.2.1.:</b> New onshore pipeline of approximately 164 km and with a maximum daily capacity of 17.9 MCM/day (Stage I) and 29.9 MCM/day (Stage II) in the direction SK-PL and 14.8 MCM/day in the direction PL-SK. <b>6.2.2.-6.2.9.:</b> Upgrade of onshore pipelines in the Masovian, Subcarpathian regions (PL). Closest cities: Warsaw, Lublin, Rzeszow Total length of 409 km and namely: Rembelszczynna-Wola Karczewska pipeline – 37 km;	<b>6.2.1.:</b> Feasibility studies FID: 2014 <b>6.2.2.-6.2.9.:</b> Pre-feasibility studies	<b>6.2.1.:</b> 2018 <b>6.2.2.-6.2.9.:</b> Rembelszczynna compressor station: 2015-2018 Rembelszczynna-Wola Karczewska: 2023 Wola Karczewska-Wronow: 2023

		Karczewska pipeline 6.2.4 Wola Karczewska-Wronów pipeline 6.2.5 Wronów node 6.2.6 Rozwadów-Końskowola-Wronów pipeline 6.2.7 Jarosław-Rozwadów pipeline 6.2.8 Hermanowice-Jarosław pipeline 6.2.9 Hermanowice-Strachocina pipeline			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. The power of the compressor station in Rembelszczyzna is 18.3 MW.		Wronów node: 2023 Rozwadów-Końskowola-Wronów: 2023 Jarosław-Rozwadów: 2023 Hermanowice-Jarosław: 2023 Hermanowice-Strachocina:2017
6.3	G131	PCI Slovakia – Hungary Gas Interconnection between Vel'ké Zlievce (SK) – Balassagyarmat border (SK/HU) – Vecsés (HU)	Vecsés-Szada/Balassagyarmat (SK/HU border) to Vel'ké Zlievce (SK/HU border)	Magyar Gáz Tranzit ZRt., eustream, a. s.	New onshore pipeline with a length of 115 km and a daily capacity of 11.375 MCM/day in the direction SK-HU and 4.55 MCM/day in the direction HU-SK. The power of the compressor station(s) is of 2 x 3.5 MW.	Permitting	2015
6.4	G26	PCI Bidirectional Austrian – Czech interconnection (BACI) between Baumgarten (AT) – Reinthal (CZ/AT) – Brečlav (CZ)	Břeclav (CZ) to Reinthal (CZ/AT border) Reinthal (AT/CZ border) to Baumgarten (AT)	Gas Connect Austria GmbH, NET4GAS, s.r.o.	New onshore bidirectional AT-CZ Interconnection (formerly LBL project) with a length of approximately 12 km on the CZ side and of approximately 46 km on the AT side and with a daily capacity of 18-22.8 MCM/day. The power of the compressor station in AT is of 24 MW.	Permitting - under preparation (CZ) Feasibility studies – under preparation (AT)	2019

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

6.5	G63 G64 G69 G68	Cluster Krk LNG Regassification Vessel and evacuation pipelines towards Hungary, Slovenia and Italy, including the following PCIs: 6.5.1 LNG Regasification vessel in Krk (HR) 6.5.2 Gas pipeline Zlobin – Bosiljevo – Sisak – Kozarac – Slobodnica (HR) 6.5.3 LNG evacuation pipeline Omišalj – Zlobin (HR) – Rupa (HR)/Jelšane (SI) - Kalce (SI) or 6.5.4 Gas pipeline Omišalj (HR) – Casal Borsetti (IT)	6.5.1: Omišalj, on the island of Krk (HR) 6.5.2: Zlobin via Bosiljevo, Sisak, the gas node Kozarac to Slobodnica (CZ) 6.5.3: Omišalj, on the island of Krk (HR) to Rupa (SI) 6.5.4: Omišalj, on the island of Krk (HR), via Adriatic Sea to Casal Borsetti (IT)	Plinacro Ltd	6.5.1: LNG terminal based on a migration concept: 1 <sup>st</sup> Phase: - LNG RV – installation of receipt of LNGRV, with the correspondent annual send-out capacity of 1-2 BCM/year; 2 <sup>nd</sup> 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 <sup>rd</sup> Phase: LNG terminal onshore, with a correspondent annual send-out capacity of 4-6 BCM/year. 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;	6.5.1: Feasibility studies including EIA/SIA, Cost Benefit Analysis and Conceptual Design – completion in 2013 FID: 2013 6.5.2: Pre-feasibility studies FID planned in 2015 6.5.3: Feasibility studies – Cost – Benefit Analysis FID in 2013 6.5.4: Pre-feasibility studies	6.5.1: 2015 6.5.2: 2016 6.5.3: 2015 6.5.4: 2018
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					Bosiljevo – Sisak pipeline - 100 km; Sisak – Kozarac pipeline – 22 km; Kozarac – Slobodnica pipeline – 128 km. The daily capacity is of 30 MCM/day. <b>6.5.3:</b> Onshore and offshore pipeline with a total length of 103 km and a daily capacity of 46 MCM/day. <b>6.5.4:</b> New onshore pipeline with a total length of 220 km (146 km to the epicontinental zone border – HR part and 74 km on IT side) and a daily capacity of 46 MCM/day.		
6.6	G70	PCI Interconnection Croatia – Slovenia (Bosiljevo – Karlovac – Lučko – Zabok – Rogatec (SI))	Bosiljevo via Karlovac, Lučko and Zabok (HR), to the HR/SI border and to the gas node Rogatec (SI)	Plinacro Ltd	Construction of new sections, upgrade and extension of the pipeline interconnection between HR and SI on a distance of 150 km (onshore) and with a daily capacity of 15 MCM/day.	Pre-feasibility studies FID 2014	Not specified
6.7	G120	PCI Interconnection Slovenia – Italy (Gorizia (IT)/Šempeter (SI) – Vodice (SI))	Gorizia (IT)/Šempeter (SI) to Vodice (SI)	Plinovodi d.o.o.	New onshore pipeline of 100 km with a total daily capacity of 30,44 MCM/day and built in sections: - Section M3/1a Gorizia/Šempeter-Ajdovščina – 29 km; - Section M3/1b Ajdovščina-Kalce – 24 km; - Section M3/1c Kalce-Vodice - 47 km; Power of the compressor station(s) is of 20 MW.	Feasibility studies	2017

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

6.8	G38  G13	Cluster Interconnection between Greece and Bulgaria and necessary reinforcements in Bulgaria, including the following PCIs: 6.8.1 Interconnection Greece – Bulgaria [currently known as IGB] between Komotini (EL) – Stara Zagora (BG) 6.8.2 Necessary rehabilitation, modernization and expansion of the Bulgarian transmission system	<b>6.8.1.:</b> Komotini (EL) to Stara Zagora (BG) <b>6.8.2.:</b> BG	<b>6.8.1.:</b> ICGB AD <b>6.8.2.:</b> Bulgartransgaz EAD	<b>6.8.1.:</b> 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. <b>6.8.2.:</b> Upgrade and extension of onshore pipelines in Bulgaria, including projects for rehabilitation, modernization and expansion of the existing national transmission system (modernization and rehabilitation of compressor stations, intelligent pig inspections, expansion and replacement of some sections of the existing transmission system).	<b>6.8.1.:</b> Permitting <b>6.8.2.:</b> Feasibility studies	<b>6.8.1.:</b> 2015 <b>6.8.2.:</b> 2017
6.9	G36	Cluster LNG terminal in Greece, including one of the following PCIs: 6.9.1 Independent Natural Gas	<b>6.9.1.:</b> Region of Thrace (EL) – Sea of Thrace (NE part of EL), SW from	<b>6.9.1.:</b> GASTRADE S.A. <b>6.9.2.:</b> PUBLIC	<b>6.9.1.:</b> New offshore LNG FSRU near Alexandroupolis (mooring position 17.6 km) and a system of subsea and onshore pipeline with a length of 29 km (4 km onshore	<b>6.9.1.:</b> Permitting - in progress <b>6.9.2.:</b> Feasibility study - On-going	<b>6.9.1.:</b> 4Q 2015 <b>6.9.2.:</b> early 2016

	G37	System LNG Greece 6.9.2 Aegean LNG import terminal	Alexandroupolis) 6.9.2.: 9 km of the city of Kavala	GAS CORPORATION SA (DEPA SA)	and 25 km offshore), with a daily capacity of 16.8 MCM/day. 6.9.2.: New floating LNG terminal in the Northern Greek region of Macedonia in the Bay of Kavala, with an annual send-out capacity of 3-5 BCM/year, a LNG storage capacity of 170.000 CM LNG).		
6.10	G11	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 Economy, Energy and Tourism of Bulgaria	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	2015
6.11	G39	PCI Permanent reverse flow at Greek – Bulgarian border between Kula (BG) – Sidirokastro (EL)	Kula (BG) to Sidirokastro (EL)	BULGARTRANSGAZ	The project consists in interventions on the already existing transmission pipelines and above ground installations in BG and EL and, in addition, construction of new above ground installations.	Pre-feasibility studies	2014
6.12	G14	PCI Increase the transmission capacity of the existing pipeline from Bulgaria to Greece	BG to EL	Bulgartransgaz EAD	The project consists of interventions on the already existing transmission gas pipeline and above ground installations in BG.	Pre-feasibility studies	2015
6.13		Cluster Romania – Hungary – Austria transmission corridor, including the following PCIs: 6.13.1 Városföld-Ercsi– Győr pipeline + enlargement of Városföld Compressor station + modification of central odorization 6.13.2 Ercsi-Százhalombatta pipeline 6.13.3 Csanádpalota or Algyő compressor station	Százhalombatta, Ercsi, Győr, Városföld, Algyő, Csanádpalota	FGSZ Ltd	New onshore pipelines: - 210 km of pipeline between Városföld-Ercsi and Győr (HU) and the enlargement of Városföld Compressor station with a power of 5.7 MW; - 6 km of pipeline between Ercsi and Százhalombatta and an increase of the power of the compressor station with 52 MW; - 188 km of pipeline between Győr, Mosonmagyaróvár and the HU/AT border and an increase of the power of the compressor station with 5.7 MW. The daily capacity of the pipelines will be of 4.55-31.2 MCM/day.	Feasibility studies	Városföld - Ercsi: 2015 Ercsi – Százhalombatta: 2018 Győr - Mosonmagyaróvár: 2021
6.14	G74	PCI Romanian – Hungarian reverse flow at Csanádpalota or Algyő (HU)	RO to HU - Csanádpalota or Algyő (HU)	FGSZ Ltd.	New onshore pipeline of 6 km and with a daily capacity of 4.55 MCM/day. The power of the compressor station located in either Algyő or Csanádpalota will be of 17.1 MW.	Feasibility studies	Not specified
6.15	G116	Cluster Integration of the transit and transmission system and implementation of reverse flow in Romania, including the following PCIs: 6.15.1 Integration of the Romanian	Isaccea, Dobrogea region (RO)	SNTGN TRANSGAZ SA	Works within GMS Isaccea and the upgrade (amplification) of Compressor Station Silistea. The project also implies the construction of a connection pipeline between the DN 1000 Pipeline (Transit 1 Bulgaria) and the NTS with a daily capacity of	Feasibility studies	2013

		transit and transmission system 6.15.2 Reverse flow at Isaccea			14 MCM/day and with the possibility to meter the natural gas volumes transmitted in both directions.		
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Projects allowing gas from the Southern Gas Corridor and/or LNG terminals reaching Italy to flow towards the north to Austria, Germany and Czech Republic (as well as towards the NSI West Corridor)

6.16	G2	PCI Tauerngasleitung (TGL) pipeline between Haiming (AT)/Überackern (DE) – Tarvisio (IT)	Salzburg, Carinthia (AT) Closest city: Salzburg, Villach, Tarvis - crossing the Alps	Tauerngasleitung GmbH (TGL)	New onshore pipeline with a total length of approximately 290 km crossing the Alps via 10 tunnels with an approximate length of 25 km. The daily capacity in both flow directions will be of maximum 31.2 MCM/day. The power of the compressor station(s) in Auerbach and Feistritz will be of approximately 2 x 33 MW.	Permitting: in progress FID: planned 2014	2018
6.17	G24	PCI Connection to Oberkappel (AT) from the southern branch of the Czech transmission system	South Bohemia region (CZ) to Upper Austria, District Rohrbach (AT) - Oberkappel (AT)	NET4GAS, s.r.o.	New onshore pipeline of approximately 110 km and with a daily capacity of up to approximately 5 -10 MCM/day. The power of the compressor station(s) will be of approximately 2-5 MW.	Pre-feasibility studies	2018-2022
6.18	G95	PCI 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.	Feasibility studies Permitting Construction works on the Massafra-Biccari section in Puglia	post 2015
6.19	G142	PCI Onshore LNG terminal in the Northern Adriatic (IT)	The precise location of the LNG terminal in the Northern Adriatic will be decided by Italy in agreement with Slovenia.	GAS NATURAL RIGASSIFICAZIONE ITALIA S.P.A.	New onshore LNG terminal with an annual send-out capacity of 8 BCM/year, a LNG storage capacity of 280.000 CM LNG. The maximum ship size is estimated at 145.000 CM.	Pre-/Feasibility	After 2018

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

6.20	G12 G15 G35	Cluster increase storage capacity in South-East Europe, including one or more of the following PCIs: 6.20.1 Construction of new storage facility on the territory of Bulgaria 6.20.2 Chiren UGS expansion 6.20.3 South Kavala storage in Greece	<b>6.20.1.:</b> BG <b>6.20.2.:</b> Chiren (BG) <b>6.20.3.:</b> South Kavala (EL) <b>6.20.4.:</b> Depomures (RO)	<b>6.20.1.:</b> Bulgartransgaz EAD <b>6.20.2.:</b> Bulgartransgaz EAD <b>6.20.3.:</b> DESFA S.A.	<b>6.20.1.:</b> Extension of depleted gas field storage facility in Bulgaria, with a projected working gas volume of between 720 MCM and 1000 MCM; Projected withdrawal capacity maximum 10 MCM/day; Projected injection capacity 10 MCM/day. <b>6.20.2.:</b> New gas storage facility interconnected with the existing gas transmission system on the territory of	<b>6.20.1.:</b> Feasibility studies <b>6.20.2.:</b> Pre-feasibility studies <b>6.20.3.:</b> Pre-feasibility studies <b>6.20.4.:</b> Feasibility studies	<b>6.20.1.:</b> 2017 <b>6.20.2.:</b> 2017 <b>6.20.3.:</b> 2018 <b>6.20.4.:</b> 2015
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	G76	6.20.4 Depomures storage in Romania		6.20.4.: Depomures S.A.	BG. <b>6.20.3:</b> New underground storage facility in depleted gas field, connected via a 34 km pipeline (of which 32 km offshore) to the National Natural Gas System (NNGS) operated by DESFA. The facility is planned to have the following technical characteristics: Working Gas Volume 360 MCM; Withdraw capacity 4 MCM/day; Injection capacity 5 MCM/day; Cycling rate 2 times/year. <b>6.20.4.:</b> 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 6 (2 existing + 4 new) MCM/day; Injection capacity 6 (2 existing + 4 new) MCM/day; Cycling rate 1 times/year.		
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#### Other projects

6.21	G62	PCI Ionian Adriatic Pipeline (Fieri (AB) – Split (HR))	Fieri (AB), along the Adriatic coast via Montenegro to Split (HR)	Plinacro Ltd	New pipeline mainly onshore, but also partly offshore with a total length of 540 km (250 km in HR, 110 in ME, and 180 in AB) and with a daily capacity of 14 MCM/day.	Feasibility studies, including EIA/SIA and Cost Benefit Analysis - in progress FID – mid-2014	2018
6.22	G75	Cluster Azerbaijan-Georgia-Romania Interconnector project, including the following PCIs: 6.22.1 Gas pipeline Constanta (RO) – Arad – Csanádpalota (HU) [currently known as AGRI] 6.22.2 LNG terminal in Constanta (RO)	Constanta, via Arad (RO) to Csanádpalota (HU)	MVM,SOCAR,GOG C,ROMGAZ	Upgrade and extension of the AGRI pipeline between Constanta, Arad (RO) and Csanádpalota (HU), with sections both onshore and offshore. LNG terminal in Constanta (RO).	Feasibility studies	It has not been decided yet.
6.23	G77	PCI Hungary – Slovenia interconnection (Nagykanizsa – Tornyiszentmiklós (HU) – Lendava (SI) – Kidričevo)	Nagykanizsa - Tornyiszentmiklós (HU) to Lendava and Kidričevo (SI)	FGSZ Ltd.	New onshore pipeline with a length of 113 km and a non-interruptible daily capacity of 1.14 MCM/day and an interruptible daily capacity of 2.28 MCM/day. The combined power of the compressor station will be of	Feasibility studies	Not specified



					8.1 MW (3.5 MW on the Slovenian side).		
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## 7. Priority corridor Southern Gas Corridor ("SGC")

No.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
7.1	TCP SCP-(F)X TANAP TAP ITGI Kipi CS Nabucco-West	<p>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 final EU markets through two possible routes: one crossing South-East Europe and reaching Austria, the other one reaching Italy through the Adriatic Sea, and including one or more of the following PCIs:</p> <p>7.1.1 Gas pipeline from the EU to Turkmenistan via Turkey, Georgia, Azerbaijan and the Caspian [currently known as the combination of the "Trans Anatolia Natural Gas Pipeline" (TANAP), the "Expansion of the South-Caucasus Pipeline" (SCP-(F)X) and the "Trans-Caspian Gas Pipeline" (TCP)]</p> <p>7.1.2 Gas compression station at Kipi (EL)</p> <p>7.1.3 Gas pipeline from Greece to Italy via Albania and the Adriatic Sea [currently known as the "Trans-Adriatic Pipeline" (TAP)]</p> <p>7.1.4 Gas pipeline from Greece to Italy via the Adriatic Sea [currently known as the "Interconnector Turkey-Greece-Italy" (ITGI)]</p> <p>7.1.5 Gas pipeline from Bulgaria to Austria via Romania and Hungary</p>	<p><b>TCP:</b> 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</p> <p><b>SCP-(F)X:</b> From the vicinity of Baku (Azerbaijan) to the vicinity of Tbilisi (Georgia) to the Georgia/Turkey border with subsequent tie-in to TANAP</p> <p><b>TANAP:</b> From the Georgia/Turkey border (tie-in to the SCP-(F)X) to the Greece/Turkey border at Kipi (tie-in to TAP)</p> <p><b>TAP:</b> 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</p> <p><b>Compressor Station at Kipi:</b> Located in the vicinity of Kipi (Greece)</p> <p><b>ITGI:</b> From Komotini (Greece) to Otranto (Italy) and crossing the Adriatic Sea (offshore section starting in the Thesprotia region)</p> <p><b>Gas pipeline from Bulgaria to Austria via Romania and Hungary:</b> From Bulgaria to the vicinity of Baumgarten</p>	<p><b>TCP:</b> W-Stream Caspian Pipeline Company Ltd</p> <p><b>SCP-(F)X:</b> Azerbaijan South Caucasus Pipeline Ltd.</p> <p><b>TANAP:</b> State Oil Company of Azerbaijan (SOCAR)</p> <p><b>TAP:</b> Trans Adriatic Pipeline A.G.</p> <p><b>Compressor Station at Kipi:</b> DESFA S.A.</p> <p><b>ITGI:</b> IGI POSEIDON S.A. &amp; DESFA S.A.</p> <p><b>Gas pipeline from Bulgaria to Austria via Romania and Hungary:</b> Nabucco Gas Pipeline International GmbH or its shareholders (OMV, FGSZ, Transgaz, BEH, BOTAS)</p>	<p><b>TCP:</b> Offshore pipeline in the Caspian sea with a length of 300 km and a capacity of 32 BCM/year 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.</p> <p><b>SCP-(F)X:</b> Upgrade of the existing pipeline system between Azerbaijan and Turkey via Georgia system with throughput capacity upgrades of 16 BCM/year by 2018 (SCP-X) and 5 BCM/year by 2019 (SCP-(F)X).</p> <p><b>TANAP:</b> 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/year.</p> <p><b>TAP:</b> 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/year. The power of the compressor station(s) is 90 MW.</p> <p><b>Compressor Station at Kipi:</b> Compression station to upgrade the capacity of the interconnector between Turkey and Greece up to 33.5 MCM/day. The power of the compressor station is 9.7 x 3 MW – layout: 2+1.</p> <p><b>ITGI:</b> New onshore and offshore pipeline between Greece and Italy with a total length of 823 km (613 km onshore and 210 km offshore) with a daily delivery capacity of 2.2 MCM/day in Komotini (Greece), 0.55 in Western Greece and of 27.4 in Otranto (Italy). Initial throughput capacity of 10 BCM/year. The power values of the compressor stations are: Komotini: 9.7 x 3 MW – layout: 2+1; Near Messimvria: 9.7 x 3 MW – layout: 2+1; Thesprotia: 25 x 4 MW – layout: 3+1.</p>	<p><b>TCP:</b> Pre-feasibility studies</p> <p><b>SCP-(F)X:</b> Pre-feasibility studies</p> <p><b>TANAP:</b> Pre-feasibility/feasibility studies</p> <p><b>TAP:</b> Permitting (FID expected Q3 2013)</p> <p><b>Compressor Station at Kipi:</b> Pre-feasibility/feasibility studies (EIA has been completed)</p> <p><b>ITGI:</b> FEED &amp; Permitting</p> <p><b>Gas pipeline from Bulgaria to Austria via Romania and Hungary:</b> Feasibility studies/Permitting</p>	<p><b>TCP:</b> 2018</p> <p><b>SCP-(F)X:</b> 2018-2019</p> <p><b>TANAP:</b> 4 Q 2017</p> <p><b>TAP:</b> October 2018</p> <p><b>Compressor Station at Kipi:</b> 2018</p> <p><b>ITGI:</b> 2018</p> <p><b>Gas pipeline from Bulgaria to Austria via Romania and Hungary:</b> October 2018</p>

			(Austria) via Romania and Hungary		<b>Gas pipeline from Bulgaria to Austria via Romania and Hungary:</b> New onshore pipeline with a length of 1318 km and with the following daily delivery capacity of 6.1 MCM/day in Bulgaria, 6.1 in Romania, 6.1 in Hungary and 52 in Austria. Initial throughput capacity of 23 BCM/year. The power of the compressor station(s) amount to a total of 345 MW.		
7.2	TCP SCP-(F)X White Stream	PCI consisting of integrated, dedicated and scalable transport infrastructures and associated equipment for the transportation of a minimum of 8 bcm/a of new sources of gas from the Caspian Region (Azerbaijan and Turkmenistan) to Romania, including the following projects: 7.2.1 Sub-marine gas pipeline in the Caspian Sea from Turkmenistan to Azerbaijan [currently known as the "Trans-Caspian Gas Pipeline" (TCP)] 7.2.2 Upgrade of the pipeline between Azerbaijan and Turkey via Georgia [currently known as the "Expansion of the South-Caucasus Pipeline" (SCP-(F)X)] 7.2.3 Sub-marine pipeline linking Georgia with Romania [currently known as "White Stream"]	<b>TCP:</b> (see above) <b>SCP-(F)X:</b> (see above) <b>White Stream:</b> From Georgia (tie-in to the SCP-(F)X) to Constanta (Romania), via the Black Sea	<b>TCP:</b> (see above) <b>SCP-(F)X:</b> (see above) <b>White Stream:</b> White Stream Ltd	<b>TCP:</b> (see above) <b>SCP-(F)X:</b> (see above) <b>White Stream:</b> Onshore and offshore pipeline from Georgia to Romania via the Black Sea with a total length of 1250 km (1115 offshore and 135 onshore) and with a daily capacity of 46 MCM/day. The power of the compressor station for 16 BCM/year is of 375 MW.	<b>TCP:</b> (see above) <b>SCP-(F)X:</b> (see above) <b>White Stream:</b> Pre-feasibility studies	<b>TCP:</b> (see above) <b>SCP-(F)X:</b> (see above) <b>White Stream:</b> 2019
7.3	East Med/Trans Med Mediterranean Gas Storage	Cluster of gas infrastructures and associated equipment for the transportation of new sources of gas from the offshore fields in the East Mediterranean including one or more of the following PCIs: 7.3.1 Pipeline from offshore Cyprus to Greece mainland via Crete 7.3.2 LNG storage located in Cyprus [currently known as the "Mediterranean Gas Storage"]	<b>Pipeline from offshore Cyprus to Greece mainland via Crete (East Mediterranean pipeline):</b> From Cyprus to Greece Mainland via Crete with two routing options: 1) to the gas network on the Adriatic coast in Greece and connection to the planned interconnector with Italy (tie-in to ITGI) 2) to the gas network in Northern Greece and connection to the planned interconnector with Bulgaria	<b>Pipeline from offshore Cyprus to Greece mainland via Crete (East Mediterranean pipeline):</b> DEPA S.A. in collaboration with the Ministry of Energy Commerce, Industry and Tourism of Cyprus <b>Mediterranean Gas Storage:</b>	<b>Pipeline from offshore Cyprus to Greece mainland via Crete (East Mediterranean pipeline):</b> New onshore and offshore pipeline linking the newly discovered fields in Levantine Basin (CY, IL) via Crete to Greece Mainland with 2 routing options: the first is a pipeline of approximately 1700 km (1200 km offshore, 500 km onshore), while the second proposes a pipeline with the length of approximately 1550 km (1530 km offshore, 20 km onshore). The pipeline will have a throughput capacity of 24.5 MCM/day, with a delivery capacity of 2.5 to Cyprus and 22 to Greece Mainland. The total power for the options will be around 390 MW. <b>Mediterranean Gas Storage:</b> LNG storage facility associated with the LNG terminal in Vassilikos aiming at the storage of gas from the Levantine Basin (Israel and Cyprus) in liquefied form onshore Cyprus, for further transport namely to LNG Receiving and Regasification Terminals located in the Mediterranean	<b>Pipeline from offshore Cyprus to Greece mainland via Crete (East Mediterranean pipeline):</b> Pre-feasibility studies <b>Mediterranean Gas Storage:</b> Feasibility studies	<b>Pipeline from offshore Cyprus to Greece mainland via Crete:</b> 2019 <b>Mediterranean Gas Storage:</b> 4Q 2019

			(tie-in to IGB) <b>Mediterranean Gas Storage:</b> located on the site of the LNG terminal in the vicinity of Vassilikos	Ministry of Commerce, Industry and Tourism	Sea. The storage will have a working gas volume of approximately 109 MCM/day and withdrawal/injection capacity of 18.1 MCM/day at initial capacity		
7.4	Compressor Station at Kipi ITB	Cluster of interconnections with Turkey, including the following PCIs: 7.4.1 Gas compression station at Kipi (EL) with a minimum capacity of 3bcm/a 7.4.2 Interconnector between Turkey and Bulgaria with a minimum capacity of 3 bcm/a [currently known as "ITB"]	<b>Compressor Station at Kipi:</b> Located in the vicinity of Kipi (Greece) <b>ITB:</b> Bulgaria/Turkey, South-East Region, Yambol	<b>Compressor Station at Kipi:</b> DESFA S.A. <b>ITB:</b> Bulgartransgaz EAD	<b>Compressor Station at Kipi:</b> Compressor station to upgrade the capacity of the interconnector between Turkey and Greece to 3 BCM/year. The power of the compressor station in Kipi is estimated at 4.5 x 2 MW – layout: 1+1. <b>ITB:</b> 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.	<b>Compressor Station at Kipi:</b> Pre-feasibility studies/ Feasibility studies <b>ITB:</b> Pre-feasibility studies	<b>Compressor Station at Kipi:</b> 2018 <b>ITB:</b> First phase 2014

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

No.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
8.1	G42b    G41 G32 G31 G101	Cluster LNG supply in the Eastern Baltic Sea Region, including the following PCIs:  8.1.1 Interconnector between Estonia and Finland "Balticconnector" and 8.1.2 One of the following LNG terminals: 8.1.2.1 Finngulf LNG 8.1.2.2 Paldiski LNG 8.1.2.3 Tallinn LNG 8.1.2.4 Latvian LNG	<b>8.1.1.:</b> 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 <b>8.1.2.1.:</b> Inkoo (FI) <b>8.1.2.2.:</b> near Paldiski city, Harju county (EE) <b>8.1.2.3.:</b> near Tallinn, at Muuga harbour (EE) <b>8.1.2.4.:</b> Riga (LV)	<b>8.1.1.:</b> Gasum Oy in cooperation with AS EG Vörguteenus <b>8.1.2.1.:</b> Gasum Oy <b>8.1.2.2.:</b> Balti Gaas LLC <b>8.1.2.3.:</b> Vopak /ELERING AS <b>8.1.2.4.:</b> AS LATVENERGO	<b>8.1.1.:</b> 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 expected to be 50 km as a part of Finnish transmission system and 30 km as a part of Estonian transmission system. <b>8.1.2.1.:</b> New LNG terminal in Inkoo with an annual send-out capacity of 8 BCM/year at full utilisation rate. Development in stages: first part includes conventional on-shore storage tank of 165.000 m <sup>3</sup> storage capacity (working volume 150.000 m <sup>3</sup> ), connection to Finnish and Estonian (via Balticconnector) transmission pipelines, process equipment for pipeline send-out, reloading facility for bunker use and truck loading. Second stage includes enlargement of storage capacity to total of 330.000 m <sup>3</sup> (working volume 300.000 m <sup>3</sup> ). Possible to enlarge to 495.000 m <sup>3</sup> storage capacity. The maximum ship size is about 150.000 m <sup>3</sup> . The pipeline connecting the LNG terminal to the Finnish gas transmission grid from Inkoo is of a length of about 20 km and with a daily capacity 19.2 MCM/day (includes 7.2 MCM/day to EE via Balticconnector). Connecting pipelines, metering and compressor stations are included as a part of Balticconnector project. <b>8.1.2.2.:</b> New onshore LNG terminal near Paldiski (including a reloading facility for bunkering or small scale distribution) with an annual send-out capacity of 2.5 BCM/year. The LNG storage capacity is of about 180.000 – 320.000 CM LNG and the maximum ship size of 165.000 CM LNG (or any standard LNG tanker capable to pass through the Danish Straits).	<b>8.1.1.:</b> Pre-feasibility studies completed Feasibility studies on going EIA started 09/2013 <b>8.1.2.1.:</b> Pre-feasibility studies completed Feasibility studies on going Front end engineering and design (FEED) started 09/2013 Permitting on going EIA completed, approval 08/2013 Site preparation started (excavation) <b>8.1.2.2.:</b> Pre-feasibility studies Feasibility studies FID (for national terminal) Completion of General Planning Approval of EIA - 19th of July 2012 Permit for building - expected Q4 2012 <b>8.1.2.3.:</b> Pre-feasibility studies - completed Feasibility studies – ongoing Permitting – ongoing <b>8.1.2.4.:</b> Pre-feasibility studies	<b>8.1.1.:</b> EE on-shore part 31.12.2015 and FI on-shore & Balticconnector part 31.12.2016 <b>8.1.2.1.:</b> Terminal with 165.000 m <sup>3</sup> storage capacity - 31.12.2016 Terminal with 330.000 m <sup>3</sup> storage capacity - 31.12.2018 <b>8.1.2.2.:</b> Expected 2015 <b>8.1.2.3.:</b> 2015 – Phase 0 (small scale) 2018 – Phase 1 (4 BCM/y) 2025 – Phase 2 (8 BCM/y) <b>8.1.2.4.:</b> the end of 2016

					<p><b>8.1.2.3.:</b> 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 trucks), with an annual send-out capacity of 4 - with further potential up to 8 BCM/year. The LNG storage capacity is of up to 320.000 CM LNG and the maximum ship size is of 280 m (LOA).</p> <p><b>8.1.2.4.:</b> New onshore LNG terminal (SCV, fuel gas evaporator) in Riga, with an annual send-out capacity of 5 BCM/year and a LNG storage capacity of 1 x 180.000 CM LNG). The maximum ship size is of 177.000 CM.</p>		
8.2	G102 G33 G98 G100a	<p>Cluster infrastructure upgrade in the Eastern Baltic Sea region, including the following PCIs:</p> <p>8.2.1 Enhancement of Latvia-Lithuania interconnection</p> <p>8.2.2 Enhancement of Estonia-Latvia interconnection</p> <p>8.2.3 Capacity enhancement of Klaipeda-Kiemenai pipeline in Lithuania</p> <p>8.2.4 Modernization and expansion of Incukalns Underground Gas Storage</p>	<p><b>8.2.1.:</b> Daugmale to Iecava (LV) Kiemenai GM station (LT)</p> <p><b>8.2.2.:</b> Viljandimaa, Karksi, Puiatu (EE)</p> <p><b>8.2.3.:</b> Klaipeda (LT) to the existing pipeline, West of Siauliai</p> <p><b>8.2.4.:</b> Incukalns underground gas storage in Vidzeme, 45 km from Riga (LV)</p>	<p><b>8.2.1.:</b> AS Latvijas Gaze, Amber Grid</p> <p><b>8.2.2.:</b> EG Vörguteenus AS</p> <p><b>8.2.3.:</b> Amber Grid</p> <p><b>8.2.4.:</b> JSC Latvijas Gaze</p>	<p><b>8.2.1.:</b> Construction of new parallel pipeline from Daugmale to Iecava (LV) with a length of 40 km and a daily capacity of 12 MCM/day (onshore) and upgrade of gas metering station in Kiemenai GM station (LT).</p> <p><b>8.2.2.:</b> Upgrade of onshore pipeline to a daily capacity of 10 MCM/day. The power of the compressor station(s) is of 35 MW.</p> <p><b>8.2.3.:</b> Upgrade of onshore pipeline with a daily capacity of 6 (capacity enhanced by – 5.5) MCM/day on a distance of 110 km.</p> <p><b>8.2.4.:</b> Upgrade and extension of an Aquifer storage facility with the following technical characteristics: Current working gas volume - 2300 MCM, and after expansion - 2635- 2835 MCM. Current withdraw capacity - up to 28-30 MCM/day, after modernization expected 34-35 MCM/day. Injection capacity - 17 MCM/day. Cycling rate - 1 time/year (seasonal storage).</p>	<p><b>8.2.1.:</b> -</p> <p><b>8.2.2.:</b> Pre-feasibility studies</p> <p><b>8.2.3.:</b> Pre-feasibility studies</p> <p><b>8.2.4.:</b> Feasibility studies - technical feasibility study completed , technical project will be elaborated in 2013</p>	<p><b>8.2.1.:</b> 2017 (3-4 year after FID is taken)</p> <p><b>8.2.2.:</b> 01.01.2016</p> <p><b>8.2.3.:</b> 2017</p> <p><b>8.2.4.:</b> 2025</p> <p>Modernization of the storage Stage 1 (2013-2017) Stage 2 (2018-2021) Stage 3 (2022-2025) Expansion of the storage: 4-6 years from start of injection of additional cushion gas</p>
8.3	G111	PCI Poland–Denmark interconnection "Baltic Pipe"	PL to DK (bi-directional) Closest cities: Niechorze, Płoty, Świnoujście (PL), Avedore, Copenhagen (DK)	Gas Transmission Operator GAZ-SYSTEM S.A.	New bi-directional pipeline with a total length of 324 km (Baltic Pipe, offshore section of 280 km and pipeline of 44 km between Niechorze and Płoty) and a daily capacity of min. 8.21 MCM/day. The power of the Avedore compressor station is to be determined at a later stage.	Feasibility studies FID: 2015	2020
8.4	G29	PCI Capacity expansion on DK-DE border	Region of Schleswig-Holstein (DE) Closest cities: Rendsburg, Schleswig, Flensburg	Gasunie Deutschland Transport Services GmbH	Extension of onshore pipeline with a length of approximately 63.5 km. The power of the compressor station is (2+1) x 7.69 MW.	Pre-feasibility studies Feasibility studies Permitting	Most probably 2016; however, Gasunie Deutschland is still aiming for a date of commissioning at the

							end of 2015
8.5	G99	PCI Poland-Lithuania interconnection [currently known as "GIPL"]	PL (Rembelszczyzna) – LT (Jauniunai) (bi-directional)	Gas Transmission Operator GAZ-SYSTEM S.A. Amber Grid	New onshore 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 a daily capacity increased in stages: Stage I – 6.6 and Stage II – 11.2 MCM/day. The power of the compressor station will be of: Stage I – 9.3 MW and Stage II – 24.4 MW.	Feasibility studies	end of 2018
8.6	G137	PCI Gothenburg LNG terminal in Sweden	Gothenburg Harbour, in close proximity to existing transmission pipeline Gothenburg – Stenungsund (SE)	Swedegas AB in cooperation with Vopak LNG Holding BV	New onshore LNG terminal with an annual send-out capacity of 0.5 BCM/year and a LNG storage capacity of 20.000 CM LNG. The maximum ship size is of 30.000 CM LNG.	Feasibility studies	2015
8.7	G106	PCI Capacity extension of Swinoujscie LNG terminal in Poland	Swinoujscie, Western Pomerania region (PL) Closest cities: Swinoujscie, Szczecin	Gas Transmission Operator GAZ-SYSTEM S.A.	Extension of onshore LNG terminal with an annual send-out capacity of 7.5 BCM/year and a total LNG storage capacity of 3 x 160.000 CM LNG, with the construction of the third storage tank. In the first stage of the project (currently under construction), the reloading on trucks is provided (two loading bays with capacity of 95.000 t/a) while reloading for vessels is also considered. The facility is designated to receive Carriers up to 216.000 CM (Q-flex vessels).	Pre-feasibility studies FID: 2014	2020
8.8	G107	PCI Upgrade of entry points Lwówek and Włocławek of Yamal-Europe pipeline in Poland	Lwówek to Gustorzyn node (PL) Closest cities: Poznan, Włocławek	Gas Transmission Operator GAZ-SYSTEM S.A.	Upgrade of the capacity of the entry points in Lwówek and Włocławek on the Yamal-Europe pipeline (onshore, length NA) from 6.46MCM/day up to 9.8 MCM/day (Lwówek) and from 8.38 MCM/day up to 25.2 MCM/day (Włocławek). Therefore, the total daily capacity will be of 35 MCM/day.	Pre-feasibility studies	2015 at the earliest

## 9. Priority corridor Oil Supply Connections in Central Eastern Europe (OSC)

No.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
9.1.	n/a	PCI Adamowo-Brody pipeline: pipeline connecting the JSC Ukrtransnafta's Handling Site in Brody (Ukraine) and Adamowo Tank Farm (Poland)	Ukrtransnafta's Handling Site in Brody (UA) to Adamowo Tank Farm (PL)	MPR Sarmatia Sp z o.o./PERN "Przyjaźń" S.A./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.	Feasibility Study	2015
9.2.	n/a	PCI Bratislava-Schwechat-Pipeline: pipeline linking Schwechat (Austria) and Bratislava (Slovak Republic)	Schwechat (AT) and Bratislava (SK)	BSP GmbH Transpetrol	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.	AT: Permitting SK: FID expected by the end of 2013	End of 2015
9.3.	n/a	PCI 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 (Croatia, Hungary, Slovak Republic)	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.	Feasibility study completed Permitting ongoing	From 2014 onwards
9.4.	n/a	PCI Litvinov (Czech Republic)-Spargau (Germany) pipeline: the extension project of the Druzhba crude oil pipeline to the refinery TRM Spargau	Litvinov (CZ) to Spargau (DE)	MERO	A pipeline between Litvinov (CZ) and Spargau (DE) with a diameter of 700 mm and a length of 160 km.	NA	NA
9.5.	n/a	Cluster Pomeranian pipeline (Poland), including the following PCIs: 9.5.1. Construction of Oil Terminal in Gdańsk 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	Plebanka Tank Farm (near Płock) and Gdańsk Handling Terminal	PERN "Przyjaźń" S.A.	A pipeline of 234 km with the maximum technical capacity still under consideration, depending on the development of the Litvinov-Spargau and Brody – Adamowo pipelines.	Activities for preparation of technical and cost analysis have already started	Depends on the situation on the market
9.6.	n/a	PCI TAL Plus: capacity expansion of the TAL Pipeline between Trieste (Italy) and Ingolstadt (Germany)	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.	Study for the increasing of the TAL pipeline capacity completed	3 years after FID

## 10. Priority thematic area Smart Grids Deployment

No.	Old no. as submitted	Definition	Details on location	Promoter(s)	Type / technology employed	Implementation status	Date of commissioning
10.1.	n/a	North Atlantic Green Zone Project (Ireland, UK): Lower wind curtailment by implementing communication infrastructure, enhance grid control and establishing (cross-border) protocols for Demand Side Management	The Green Project Zone is located to 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 (SONI)	A major cross border network infrastructure project delivering a 'smart grid'. This project comprising 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	2017
10.2.	n/a	Green-Me (France. Italy): Enhance RES integration by implementing automation, control and monitoring systems in HV and HV/MV substations, advanced communicating with the renewable generators and storage in primary substations	The project area starts at the North-East of Italy and goes to the French-Spanish border, involving: - two French administrative regions: Languedoc Roussillon (LARO) and Provence Alpes Côte d'Azur (PACA) crossed by HTB RTE links that interconnect Italy, France and Spain. - Five 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	2019