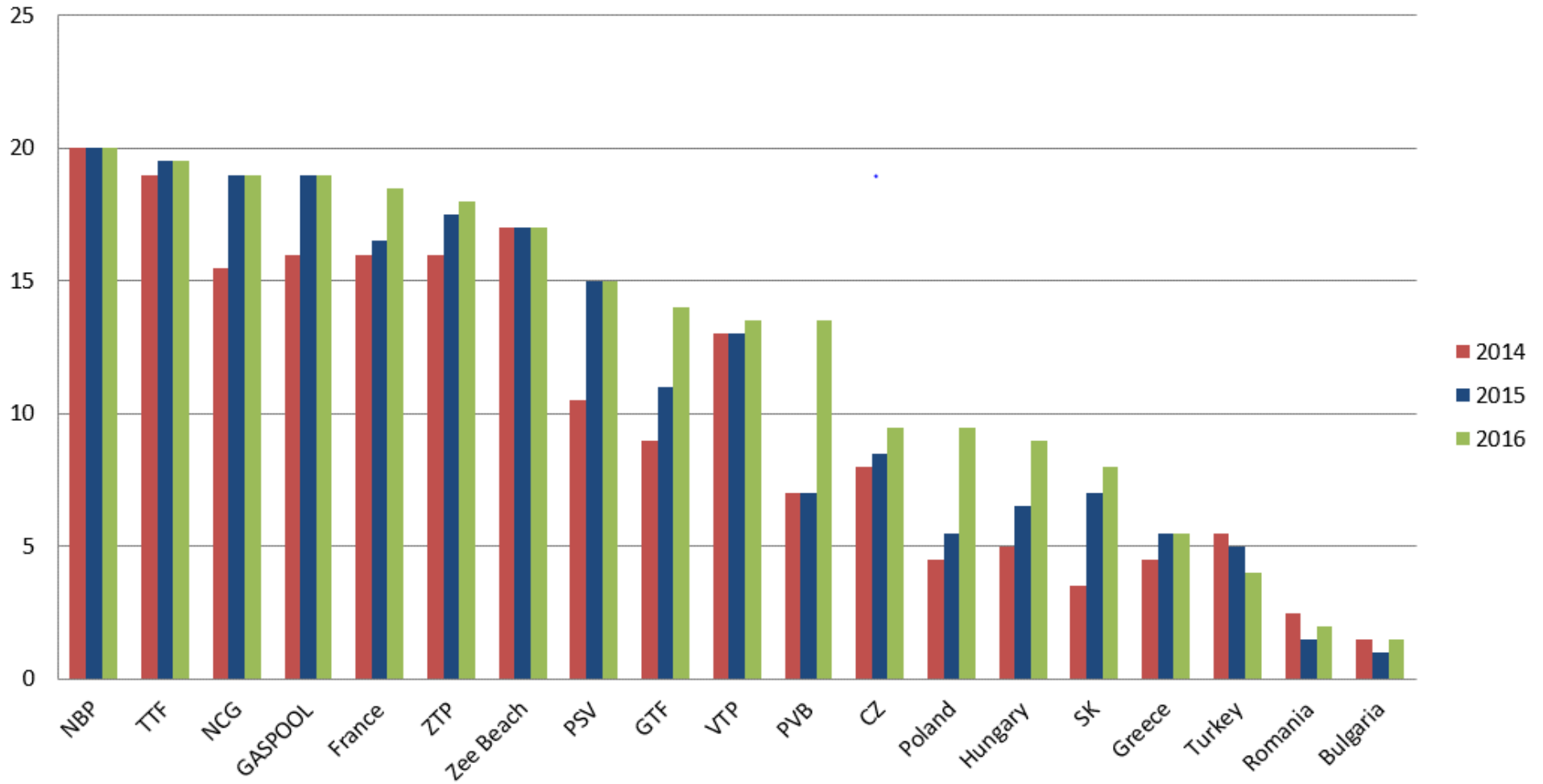


Analysis



Hub Score NBP

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	1	UNC governance, transmission workstreams	1	Liquidity has dropped, but it has not gone backwards on any of the steps.	1	Liquidity has dropped, but it has not gone backwards on any of the steps.
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	1	Entry-exit with single VTP	1		1	
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)	1 if shippers' short/long positions can be traded out	1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		1	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	1		1		1	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	2	Fully firm through OTD market	2		2	
TSO	Credit arrangements non punitive		1		1		1	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	1	Previously instituted, no longer required	1		1	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	2	TSO role in Transp Licence; APX in Fin Reg	2		2	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Single jurisdiction under Ofgem	1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	1	SMP clearly defined on every day	1		1	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	1	NBP 97	1		1	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	2	Platts, ICIS Heren, Argus	2		2	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	1		1		1	
Market	Brokers	½ if voice or few ; 1 if systems and many	1	Several brokers through Traypoint	1		1	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	1	ICE	1		1	
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	1	NBP – globally traded	1		1	
Total	Total		20		20		20	

Hub Score TTF

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	½	Shippers day, GEN, but not in English	0,5	consultation still mainly in Dutch	0,5	consultation still mainly in Dutch
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	1	Entry-exit with single VTP	1		1	
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		1	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	1		1		1	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	1,5	Bid ladder and OTC market to merge	2	the new balancing regime is more market based than the bidladder system of the past	2	
TSO	Credit arrangements non punitive		1		1		1	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	1	No longer required	1		1	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	2	Defined in Gas Act	2		2	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Single jurisdiction under ACM	1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	1	Price established by market or deemed	1		1	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	1	EFET Appendix	1		1	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	2	Platts, ICIS Heren, Argus	2		2	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	1		1		1	
Market	Brokers	½ if voice or few ; 1 if systems and many	1	Several brokers through Trayport	1		1	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	1	Endex	1		1	
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	1	TTF – increasingly used as reference	1		1	
Total			19		19,5		19,5	

Hub Score Zee beach

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	1	Zee hub group; Fluxys shipper meetings, IUK	1		1	
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	0	Physical hub, entry-exit in discussion	0		0	Physical hub. Wheeling service available
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		1	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	1		1		1	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	1		1		1	back up/down service (2014/15 revised accordingly - has been 2)
TSO	Credit arrangements non punitive		1		1		1	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	1	No longer required	1		1	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	2	Defined in Gas Act and Fin reg	2		2	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Single jurisdiction under CREG	1		1	n/a
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	1	Price established by market	1		1	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	1	Zee	1		1	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	2	Platts, ICIS Heren, Argus	2		2	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	1		1		1	
Market	Brokers	½ if voice or few ; 1 if systems and many	1	Several brokers through Trayport	1		1	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	1	Endex	1		1	
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0	Losing liquidity	0		0	
Total			17		17		17	

Hub Score ZTP

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	1	Fluxys shipper meetings	1		1	
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	1	Fluxys terms	1		1	
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		1	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	1		1		1	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	2	Market based	2		2	
TSO	Credit arrangements non punitive		1		1		1	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	1	No longer required	1		1	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	2	Defined in Gas Act and Fin reg	2		2	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Single jurisdiction under CREG	1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	1	Price established by market	1		1	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0	EFET master only	1		1	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	2	Limited liquidity	2		2	Liquidity at the ZTP has picked up slightly comared to 2014
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		0,5	multiple market maker agreements from 1st April 2015, however, these agreements are on the ZTP(L) hub	0,5	
Market	Brokers	½ if voice or few ; 1 if systems and many	1	Several brokers through Trayport	1		1	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0	Limited liquidity	0		0,5	Liquidity at the ZTP has picked up slightly comared to 2014
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0	Limited liquidity	0		0	
Total			16		17,5		18	

Hub Score NCG

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0,5	Closed meetings, some consultation, German language only	0,5	Most consultation in DE, but at least docs in EN	0,5	still most consultation documents in German only
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	0,5	Low/High cal markets not fully integrated	0,5	Trading of Low/High cal not fully integrated	0,5	L/H separation most likely to persist until final depletion
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		1	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	1		1		1	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	2	Market based	2	Market based	2	
TSO	Credit arrangements non punitive		1		1		1	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0	None	1	Not necessary anymore	1	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	2	Defined in EnWG	2	Defined in EnWG	2	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Single jurisdiction under BNetzA	1	Single jurisdiction under BNetzA	1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	1	Price established by market	1	Price established by market	1	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0	EFET master only	1	EFET master only	1	still no appendix for NCG
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	2		2		2	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		1		1	
Market	Brokers	½ if voice or few ; 1 if systems and many	1	Several brokers through Trayport	1	Several brokers through Trayport	1	Several brokers through Trayport
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	1	EEX	1	EEX	1	EEX
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0,5	Some requests	1	yes, on request standard within Germany	1	on request
Total			15,5		19		19	

Hub Score Gaspool

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0,5	Closed meetings, some consultation, German language only	0,5	Most consultation in DE, but at least docs in EN	0,5	still most consultation documents in German only
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	0,5	Low/High cal markets not fully integrated	0,5	Trading of Low/High cal not fully integrated	0,5	L/H separation most likely to persist until final depletion
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		1	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without sign up to physical rules	1		1		1	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	2	Market based	2	Market based	2	
TSO	Credit arrangements non punitive		1		1		1	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0	None	1	Not necessary anymore	1	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	2	Defined in EnWG	2	Defined in EnWG	2	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Single jurisdiction under BNetzA	1	Single jurisdiction under BNetzA	1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	1	Price established by market	1	Price established by market	1	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	1	EFET appendix	1	EFET appendix	1	EFET appendix
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	2		2		2	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		1		1	
Market	Brokers	½ if voice or few ; 1 if systems and many	1	Several brokers through Trayport	1	Several brokers through Trayport	1	Several brokers through Trayport
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	1	EEX	1	EEX	1	EEX
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0	Not requested	1	yes, on request standard within Germany	1	on request
Total			16		19		19	

Hub Score PEGs

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	1	GRTgaz, Concertation Gaz	1	Group set up, meetings in French but usually slides in English language	1	Group set up, meetings in French but usually slides in English language; open access to documents after registration on the Concertation gas platform
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	0	Multiple VTPs, Lo/Hi cal mkts not fully integrated	0	Not yet a single EE system but merger of South zones + merger of North H and L-Cal zones beneficial	0.5	Not yet a single EE system but merger of South zones implemented, although only superficially, planned in 2018 + merger of North H and L-Cal zones beneficial
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		1	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	1		1	New module contract introduced in 2013 (?) allows trading without signing up to all physical rules	1	New module contract introduced in 2013 (?) allows trading without signing up to all physical rules
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	2	Market based	2		2	
TSO	Credit arrangements non punitive		1		1		1	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0	None	0	At least as GDF SUEZ have been subject to capacity and gas release programs. Not a market maker though...	0.5	At least as Engie have been subject to capacity and gas release programs. Not a market maker though...
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov/hce addressed	2	TSO and PowerNext	2		2	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Single jurisdiction under CRE	1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	1	Price established by market	1		1	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	1	EFET appendix	1		1	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	2		2		2	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		0		1	not required
Market	Brokers	½ if voice or few; 1 if systems and many	1	Several brokers through Trayport	1	Everything is on trayport, but you can use also powernext's platform. Most brokers active at the PEGs	1	Everything is on trayport, but you can use also powernext's platform. Most brokers active at the PEGs
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	1	PowerNext	1		1	
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0	Not requested	0.5	Index are reliable, and many customers use it for invoicing purposes	0.5	Index are reliable, and many customers use it for invoicing purposes
Total			16		16,5		18,5	

Hub Score AU VTP(CEGH)

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0,5	Frequent CEGH consultation	0,5		0,5	CEGH in English, but e-control and Ministry not entirely; was 1 in 2015 and 14
TSO	Entry-exit system established	0,5 for Entry Exit, 1for a single VTP	0,5	VTP but limited transfer between transit /domestic	0,5		0,5	NTS vs. DZ
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		0,5		0,5		0,5	revised assessment: no option for financial settlement (ex ante balancing); was 1 in 2015 and 14
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	0	Limited arrangements for non-physical traders	0		0	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	1	Firmness limited	1		1	
TSO	Credit arrangements non punitive		0,5	Mandatory exchange prohibits smaller cos	0,5		0,5	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0	None	0		0	complex, not sufficiently unbundled market structure
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	1	Complex split role CEGH / AGCS / GCA / WB	1		1	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Single jurisdiction under Econtrol	1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	1	Price established by market/deemed	1		1	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	1	EFET appendix	1		1	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	2		2		2	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	1		1		1	
Market	Brokers	½ if voice or few ; 1 if systems and many	1	Several brokers through Trayport	1		1	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	1	Wiener Borse	1		1	
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0	Not requested	0		0,5	
Total			13		13		13,5	

Hub Score PSV

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0,5	Tavola, but short notice and Italian language only	0,5		0,5	
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	1	Single VTP	1		1	
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		1	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	1		1		1	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	0	Firmness still controlled by TSO	1	TSO managed, not fully market based	1	
TSO	Credit arrangements non punitive		0,5	Mandatory exchange prohibits smaller cos	0,5		0,5	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0	Previous gas release, some ENI participation	0,5	release measures	0,5	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	1	SRG/GME	1	bbc by TF Italy; letter to AEEG on lack of governance addressed	1	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Single jurisdiction under AEEG	1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	1	Yes but illiquid/unreliable	1		1	EFET MTA Appendix to be updated.
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0,5	EFET appendix – but not used	1		1	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	1	Limited	2		2	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		0,5		0,5	
Market	Brokers	½ if voice or few; 1 if systems and many	0,5	Limited	1		1	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0,5	GME/Mgas/Pgas/Mgas	0,5	the situation slightly improved this year as EEX launched PSV financial futures, even though they are still early stage and liquidity is low	0,5	
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0	Not requested	0,5	some contracts indexed to the MAGI index published by Italian PRA Alba Soluzioni and generally PSV indices are a good reflection of the market fundamentals. TTF is still considered as benchmark for the regulated tariff for protected customers. However, the Authority intends to evaluate the opportunity to consider the PSV as price benchmark, in so far as the PSV will reach given liquidity and reliability levels. They intend to design a precise roadmap in this sense.	0,5	
Total			10,5		15		15	

Hub Score PVB

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0	Consultation discontinued	0		0,5	not in English
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	1	Single VTP, but trading at storage and LNG	1		0,5	trading is still fragmented between VTP and LNG terminals
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		1	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules for full product range	0		0		0,5	relevant Master Contract entered into into force from October
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	0	Firmness still controlled by TSO	0		1	
TSO	Credit arrangements non punitive		0,5	High exposures	0,5		1	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker or not needed anymore	0	None	0		1	not needed anymore
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	0	Undefined	0		1	legislation finalised in July
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Single jurisdiction under CNMC	1		1	Currently, each country has its own contract to book capacity. A bundled contract should be created, a single contract to book capacity on both sides. PRISMA is pushing for this initiative.
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	0,5	Deemed	0,5		0,5	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	1	EFET appendix	1		1	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	0,5	Limited	0,5		2	HEREN, ARGUS
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		0		0	
Market	Brokers	½ if voice or few ; 1 if systems and many	0,5	Limited	0,5		1	ICAP, TulipPrebon, CIMD, IberianGasHub,
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0		0		0,5	
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0	Not requested	0		0	
Total			7		7		13,5	

Hub Score Mibgas

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Score 20152	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0	Consultation discontinued	0		0	
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	0	In discussion	0		0	
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		0	no title transfer yet	0	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		0		0	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	0		0		0	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market based	0	Firmness still controlled by TSO	0		0	Firmness still controlled by TSO
TSO	Credit arrangements non punitive		0	Not established	0		0	Not established
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0	None	0		0	None
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	0	Undefined	0		0	Undefined
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	0	In discussion	0		0	In discussion
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	0	No	0		0	No
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0		0		0	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	0		0		0	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		0		0	
Market	Brokers	½ if voice or few ; 1 if systems and many	0		0		0	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0		0		0	
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0		0		0	
Total			2		0		0	

Hub Score CZ

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0,5	Established process in local language; some documents published in English	0,5		0,5	Established process in local language; almost all documents published in English (almost!)
TSO	Entry-exit system established	1/2 for Entry Exit; 1 if a single VTP	1	Yes	1	distinction VTP vs OTE not precise	1	EE already established for some time
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1	Yes	1		1	yes
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		0,5	Balancing in kind; rules are complex, cashout can be expensive, not very liquid / matching difficult.	0,5	ex-post balancing	1	cash out principles applied from mid 2016
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without sign up to physical rules	0	Must sign up as physical	0	to our understanding one needs to be registered beside TSO also at OTE for Trading CZ, but E/E Capacities do not necessarily be contracted	0	contract with TSO and Market operator required, physical flow not required
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if BUBD; 2 if fully market-based	0	Firmness still controlled by TSO	0,5	balancing platform existent, but magnitude of balancing and liquidity still to be improved	0,5	balancing platform existent, but magnitude of balancing and liquidity still to be improved
TSO	Credit arrangements non punitive		0	Not established	0		0	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0	No gas release, no market maker obligation	0		0	No gas release, no market maker obligation
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	1	OTE market operator for power and gas	0	distinction VTP vs OTE not precise, stricter interpretation this year	1	clear role of TSO and Market operator (OTE), one Market operator for power and gas
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Currently national market; regional in discussion	1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	0	No	0		0	no CZ index, NCG or Gaspool index mainly used
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0	EFET, No 'Czech' appendix	1	EFET Gas Master, without appendix	1	EFET Gas Master, without appendix
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	1	Heren, Platts and Argus	1	Heren, + ??	1	Heren, Argus
Market	Market makers	½ if voice or few ; 1 if systems and many	0,5	Yes, one exclusively for PXE; CEZ, MND, RWE, Vemex active	0,5		0	Yes, but exclusively for PXE;
Market	Brokers		1	42F, ICAP, TFS	1		1	42FS, TFS, ICAP
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0,5	PXE CEEG since 12/2013 but illiquid	0,5	CEGH Czech Gas Spot Market launched on 4 May	0,5	EEX took over PXE, liquidity rather shallow, EEX members are going to get access to PXE
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0	No	0		0	no CZ index, NCG or Gaspool index mainly used
Total			8		8,5		9,5	

Hub Score SK

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language			0,5	not in English	0,5	consultation proces established in some cases, just some document in English
TSO	Entry-exit system established	1/2 for Entry Exit; 1 if a single VTP	0	Domestic / Transit separated	0	domestic VTP existent	0,5	EE established, 2 title transfer points, split between domestic and transit system
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	Yes but only at VTP SK
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		0,5	ex post balancing, hybrid model but cash out applied, long short positions set to certain limit (limits should be reflected in scoring)
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without sign up to physical rules	0		0	ibid	0	must sign up as physical
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	0	Firmness still controlled by TSO	1	back-up-back-down	1	back-up-back-down but to certain limit
TSO	Credit arrangements non punitive		0	Not established	0		0	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0	None	0		0	no gas release, no MM
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	0	Undefined	1	TSO = Hub Operator, role defined	1	TSO = Hub Operator, role defined
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1		1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	0	No	0		0	no
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0*		1	EFET Gas Master, without appendix	1	EFET Gas Master, without appendix
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	0		0		1	Heren, Argus
Market	Market makers		0		0		0	no
Market	Brokers	½ if voice or few ; 1 if systems and many	0,5	42F	0,5	on Trayport, but only few	0,5	42 FS, TFS
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0		0		0	no
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0		0		0	no, CEGH, NCG or TTF index used
Total			3,5		7		8	

Hub Score Greece

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language			0,5	there is consultation procedure but not in English	0,5	
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	0,5	Under discussion	1	there is e/e system with a Virtual Nomination Point (VNP)	1	
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1	at VNP title transfer occurs	1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		0,5		0,5		0,5	Long / short positions are cashed out at the e.o.d.; should user's imbalance beyond pre-set tolerance punitive pricing is applied (use of tolerance should be reflected; 2014 and 2015 revised accordingly)
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without sign up to physical rules	0		0		0	Not accessible to non-physical traders
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	0,5	Allocated as nominated	0,5	firmness is managed by TSO	0,5	firmness managed by TSO
TSO	Credit arrangements non punitive		0	Not established	0		0	Not established
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0,5	Gas release 10% of imports – prob at VTG	0,5	gas release program	0,5	gas release program
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'noe addressed	0,5	Desfa runs VTP; HO not defined	0,5	TSO runs VNP, without specific rules/there is no hub operator	0,5	TSO runs VNP, rules specified by network code once approved by NRA
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1		1	there is no cross border transactions at VNP	1	no cross border jurisdiction
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	0	Imbalance published with 3 month delay	0		0	No contract financial settlement takes place
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0		0		0	No EFET Master Contract
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	0		0		0	no price reporting agency
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		0		0	no daily transactions
Market	Brokers	½ if voice or few ; 1 if systems and many	0		0		0	no brokers
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0		0		0	not established (Regulatory Authority has recently awarded a study about the gas exchange establishment)
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0		0		0	no index benchmark
Total			4,5		5,5		5,5	

Hub Score GTF

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language		?	1		1	
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	1		1		1	
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		1	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		1	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules		?	0		0	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	1		1		2	
TSO	Credit arrangements non punitive		1		1		1	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	1	Gas release	1		1	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	1	Energienet/dk	1		2	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1		1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	1		1		1	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0		1		1	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	0	Too small	0		0	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more		?			0,5	
Market	Brokers	½ if voice or few ; 1 if systems and many		?			0	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0		½		0,5	
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0		0		0	
Total			9		11		14	

Hub Score Turkey

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	1	Petform+EFET	1		0	consultation stopped
TSO	Entry-exit system established	1 for Entry Exit with single VTP	0	Under discussion	0		0	
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		0	reassessment
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		1		1		0	reassessment
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules			0		0	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based			0		0,5	managed by BOTAS
TSO	Credit arrangements non punitive				0		0	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker			0		0	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	½	BOTAS	0,5		1	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1		0		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed			0		0	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	½	Proposed, unclear if adopted	0,5		0,5	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	½	Limited	0,5		1	HEREN
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		0		0	
Market	Brokers	½ if voice or few ; 1 if systems and many	0		0		0	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0		0,5	Draft legislation designate EPIAŞ and Borsa Istanbul as organized wholesale market operators Draft legislation designate EPIAŞ and Borsa Istanbul as organized wholesale market operators	0	EPIAS announced in May that gas spot market will be launched till end of year
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0		0		0	
Total			5,5		5		4	

Hub Score HVP HU

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0	Some presentations in 2012 in English, but stopped; Hungarian workshops.	0,5	Re CAM and BAL NC there were consultations	0,5	
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	0,5	E-E has two VTPs depending on your licence	0,5	Capacity auctioning still intransparent. Technically there is one VTP in Hungary, from July 1st due to the launch of SK-HU interconnector a new VTP might be launched. Advise to ask TSO as the score might be 2 here.	0,5	MGP and MGP2, merged only in Oct 2016
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		0,5	Title transfer limited by licence	0,5	Limited trading license can be acquired with a valid EU certificate. On the virtual point of Hungary (MGP) title transfer gas can be traded, this is being traded on CEEGEX since January 1st, 2013. If the question is whether TT exists, it is a solid yes. Balancing groups do not exist, the whole country is one balancing group managed by the TSO.	0,5	tbc
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		0	Limited access to balancing system for int'l	0,5		1	http://tsodata.fgsz.hu/env/fgszszamoloar
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	0	Ineffective	0	Ineffective	0	tbc
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if BUBD; 2 if fully market-based	0,5	CEESEX firm; new trades suspended if crisis, balancing market illiquid and inaccessible	0,5	CEESEX firm; new trades suspended if crisis, balancing market illiquid and inaccessible	0,5	illiquid gas-x, FGSZ trading some STPS on separate trading platform; no within-day title product
TSO	Credit arrangements non punitive		0	Strict credit requirements	0	Strict credit requirements	1	similar to AU
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0	Release programme ended	0	Technically there are market makers at CEESEX. Gas release program was in place in the past.	0	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	0,5	FGSZ runs vtp and balancing; CEESEX; understood but not clearly defined	0,5		0,5	new legislation implemented in October 16
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1	Not applicable	1	n.a.	1	n.a.
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	0,5	CEESEX publishes price which could be used	0,5	Since January 1st, 2013, CEESEX provides index/reference/settlement price for spot and futures market products. TSO provides balancing price. BAL NC based balancing prices will be applicable from October 1st, 2015.	1	SMP
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0	EFET master not widely used	0	tbd (EFET Gas Master used?) EFET master not widely used	1	EFET MTA without appendix, is frequently used
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	0	None	0	None	0	tbc
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0,5	One (Axpo)	1	Three (Axpo, Jas, MET) for SPOT products	1	Three (Axpo, Jas, MET) for SPOT products; RWEST for futures
Market	Brokers	½ if voice or few; 1 if systems and many	0,5	Small voice brokers (42FS), no int'l or systems	0,5	Small voice brokers (42FS), no int'l or systems	0	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0,5	Yes, early establishment, illiquid	0,5	hub illiquid	0,5	hub illiquid
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0	No	0	No	0	
Total			5		6,5		9	

Hub Score RO

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0		0		0	
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	0		0	Entry - exit transport capacity booking in place as of August 1st 2014. 4 groups of entry points in place and 4 groups of exit points, each group with its separate tariff. Still, currently, no allocation/balancing made on entry /exit points, thus, entry - exit system not completely functional.	0,5	Entry/exit capacity sold at BG/RO IP but implicitly allocated at RO/UA IP. No VTP yet
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		0	No HuB, no title transfer	0	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		0		0		0	Some form of daily balancing was implemented from 1st Nov but it is not clear exactly how this works and it seems to involve ex-post trading of imbalances compared to daily cash-out
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules	0		0		0	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if BUBD; 2 if fully market-based	0		0	No hub in place; furthermore, not even a balancing market accessible; if built, such hub would be useful not only for regular trades but, also, for balancing purposes and coverage of peaks in case of daily consumption peaks.	0	
TSO	Credit arrangements non punitive		0		0		0	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0		0		0	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	0		0		0	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1		1		1	NRAs and TSOs are talking to each other more about cross-border issues and operation, including under the auspices of CESEC.
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	0		0		0	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0	Being discussed	0		0	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	0		0		0	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		0		0	
Market	Brokers	½ if voice or few; 1 if systems and many	0		0		0	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0,5		0,5		0,5	
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0		0		0	
Total			2,5		1,5		2	

Hub Score Bulgaria

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0,5	Document released in Bulgarian language	0	No recent consultations held	0	
TSO	Entry-exit system established	1 for Entry Exit with a single VTP	0		0		0	
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		0		0		0	
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)		0		0		0	
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without sign up to physical rules	0		0		0	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based	0		0		0	
TSO	Credit arrangements non punitive		0		0		0	
NRA	Resolve market structural issues (defined role for historical player: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker	0		0		0	
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov'nce addressed	0		0		0	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1		1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed	0		0		0	
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0	Being discussed	0		0	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	0		0		0	
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		0		0	
Market	Brokers	½ if voice or few ; 1 if systems and many	0		0		0	
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0		0		0,5	IBEX
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0		0		0	
Total			1,5		1		1,5	

Hub Score PL

Responsible party	What should be done	guideline for assessment	Score 2014	Comments 2014	Score 2015	Comments 2015	Score 2016	Comments 2016
NRA	Establish a consultation mechanism	1 if set up and English language	0,5	Limited discussion, Polish language	0,5		0,5	Generally good and mostly in English. Some concern about whether consultations are genuinely considered and lack of due process
TSO	Entry-exit system established with single VTP.	1/2 for Entry Exit; 1 if a single VTP	1		1		0,5	Firstly, score has rebalanced to max score of 1. PL has two VTPs, one in Gas System, one in Yamal, though this is a delivery point rather than a trading point. Also separate L Gas area.
TSO	Title Transfer (gas can be traded without physical delivery, usually by transfer between balancing groups)		1		1		0,5	Can't trade imbalances. Balancing groups are possible but rarely used.
TSO	Cashout rules (long short positions set to zero at the end of the balancing period against payment of penalty in €/MWh)						0,5	Settlement period is not daily, but can cash out
TSO	Accessible to non-physical traders (to trade gas you do not require to flow gas physically from entry to exit)	1 if trade without signup to physical rules					0	
TSO	Firmness of hub (cash out rules instead of pro rata curtailment of flows in case not enough gas is traded at the hub)	0 if not firm; 1/2 if firmness "managed" by TSO; 1 if Back-up-Back-down; 2 if fully market-based					0	Unclear how TSO balances the system
TSO	Credit arrangements non punitive						1	Procedure is unclear, but not too onerous
NRA	Resolve market structural issues (defined role for historical players: gas release programs, transport capacity release programs, market maker obligations, etc.)	½ for release etc; 1 if market maker					0,5	PGNIG is market maker on own volition, rather than mandated. PGNIG as buyer operates at arms length from retail division and volumes are offered (and bought as part of international companies' portfolios) via the exchange. But PGNIG still super-dominant, due to SOS obligations etc.
NRA	defined Role of Hub operator (what are its responsibilities in comparison with the TSO)	1 – role defined; 2 – gov/nce addressed					2	
NRA	Agree regulatory jurisdiction if cross border	0 if cross border and no agreement; 1 if not cross border or does have agreement	1		1		1	
Market	Establish a reference price at the hub for contract settlement	1 if price always available; ½ if deemed					0,5	There is a published reference price which is derived from the spot price
Market	Standardised contract (e.g. EFET Master Contract)	1 if specialised contract – EFET or equivalent (or standard is sufficient)	0	In progress	1	All big players (trading companies and very big offtakers) use EFET standard	1	
Market	Price Reporting Agencies active at the hub	2 if several, 1 if only one PRA	0		0		0	Trades almost exclusively done through exchange. This seems not relevant here.
Market	Market makers	1/2 if only 1 or 2; 1 if several or not necessary any more	0		0		0,5	Two market makers but very little OTC.
Market	Brokers	½ if voice or few ; 1 if systems and many	0,5	Polish Brokers (Courtesy of power trading no international brokers yet)	0,5		0,5	Brokers not very active as almost all trading goes via the exchange.
NRA	Establishment of exchange	1 if exchange appointed and hub is liquid; ½ if exchange appointed and hub illiquid	0,5	Mostly used by PGNIG and its distribution co's	0,5		0,5	Normally exchange is reasonably liquid, but not always reliable. PGNIG share of activity has reduced from 90% to 50-55%
Market	Index becomes reliable and used as benchmark	1 if Market parties frequently requested	0		0		0	
Total			4,5		5,5		9,5	