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Gas Wholesale Market Volume

February 2018

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Figure 1, Page 14: EU gas gross inland consumption – 2016 (TWh/year)
Source: ACER based on Eurostat

	EU Annual Consumption (TWh/year)
EU 2011	5,135
EU 2012	5,025
EU 2013	4,962
EU 2014	4,459
EU 2015	4,638
EU 2016	4,970

	MS Annual Consumption (TWh/ year)
DE	957
UK	895
IT	751
FR	495
NL	366
ES	324
PL	188
BE	185
RO	123
HU	104
AT	93
CZ	91
IE	54
PT	58
SK	51
DK	37
FI	27
GR	45
BG	34
LT	24
HR	30
LV	15
LU	0
SE	11
SI	9
EE	6

Figure 2, Page 15: EU gas supply portfolio by origin - 2016 (100% = 498 bcm, %)
Source: ACER based on International Energy Agency (IEA), Eurostat and GIGNL (International Group of LNG importers)

EU gas origin	bcm/y	% of Gas Supplied
Russian pipeline imports	167.28	33.60
EU domestic production	132.94	26.70
Norwegian pipeline imports	108.76	21.85
Algerian pipeline imports	34.30	6.89
LNG imports Qatar	23.36	4.69
LNG imports Algeria	10.37	2.08
LNG imports Nigeria	8.13	1.63
LNG imports other	7.90	1.59
Lybia pipeline imports	4.81	0.97

Figure 3, Page 16: Evolution of international wholesale gas prices (€/MWh), Jan 2009 - May 2017
Source: ACER based on ICIS Heren and BAFA (German Federal Office for Economic Affairs and Export

	NBP MA (UK)	Henry Hub MA (US)	LNG spot NE Asia	Exchange USD/EUR	Germany average import price (BAFA)
Jan-09	21.65	13.08	36.25	0.76	30.03
Feb-09	17.84	11.69	35.07	0.78	29.01
Mar-09	12.03	10.48	32.52	0.77	26.87
Apr-09	11.06	9.22	25.81	0.76	22.29
May-09	10.65	9.83	23.32	0.73	20.54
Jun-09	10.40	9.59	21.23	0.71	19.57
Jul-09	9.09	8.60	21.18	0.71	17.49
Aug-09	8.74	7.91	20.60	0.70	16.84
Sep-09	9.26	8.11	21.42	0.69	16.89
Oct-09	12.34	10.99	24.00	0.67	17.40
Nov-09	11.61	10.59	24.14	0.67	17.94
Dec-09	11.92	12.49	25.63	0.68	18.34
Jan-10	14.03	13.39	27.25	0.70	18.71
Feb-10	13.40	13.00	28.46	0.73	19.21
Mar-10	11.44	10.82	29.04	0.74	19.40
Apr-10	12.38	10.40	29.34	0.75	19.36
May-10	15.16	11.29	32.56	0.80	19.76
Jun-10	17.47	13.37	29.84	0.82	20.25
Jul-10	18.46	12.28	29.93	0.78	20.94
Aug-10	16.38	11.17	28.72	0.78	20.79
Sep-10	17.55	10.18	28.43	0.77	21.07
Oct-10	18.37	8.84	26.28	0.72	22.24
Nov-10	19.65	10.10	26.49	0.73	23.03
Dec-10	23.75	11.05	26.73	0.76	23.02
Jan-11	22.44	11.50	27.05	0.75	23.71
Feb-11	21.61	10.07	28.20	0.73	23.98
Mar-11	23.84	9.92	28.35	0.71	24.25
Apr-11	23.02	10.10	27.89	0.69	24.98
May-11	22.25	10.32	28.90	0.70	25.30
Jun-11	22.22	10.71	30.43	0.70	25.08
Jul-11	21.18	10.42	34.62	0.70	25.63
Aug-11	20.54	9.48	35.39	0.70	25.82
Sep-11	24.39	9.54	37.02	0.73	24.94
Oct-11	25.30	9.03	37.24	0.73	26.52
Nov-11	24.91	8.96	39.72	0.74	29.08
Dec-11	23.00	8.41	42.11	0.76	29.63
Jan-12	22.32	7.16	42.40	0.78	29.74
Feb-12	23.91	6.50	41.75	0.76	29.13
Mar-12	24.31	5.94	42.84	0.76	29.63
Apr-12	24.21	5.32	42.39	0.76	29.84
May-12	23.36	6.66	45.46	0.78	29.76
Jun-12	23.11	6.81	45.12	0.80	28.45
Jul-12	23.73	8.23	46.11	0.81	28.14

Aug-12	24.39	7.73	48.14	0.81	28.88
Sep-12	25.46	7.75	44.56	0.78	28.48
Oct-12	27.48	9.21	41.85	0.77	28.31
Nov-12	28.30	9.81	41.55	0.78	28.80
Dec-12	28.21	8.96	42.04	0.76	28.50
Jan-13	27.44	8.61	45.90	0.75	28.50
Feb-13	26.40	8.47	49.89	0.75	28.23
Mar-13	27.73	10.71	42.78	0.77	28.12
Apr-13	26.84	11.26	39.60	0.77	28.00
May-13	26.05	10.46	37.35	0.77	28.04
Jun-13	25.39	9.35	38.27	0.76	27.68
Jul-13	26.04	8.84	41.13	0.76	27.42
Aug-13	25.61	9.24	40.42	0.75	27.02
Sep-13	26.73	8.98	39.46	0.75	26.37
Oct-13	27.72	9.00	41.01	0.73	27.35
Nov-13	28.83	9.93	46.01	0.74	26.96
Dec-13	28.90	10.50	47.01	0.73	27.03
Jan-14	27.26	12.51	47.65	0.73	27.70
Feb-14	24.42	11.39	45.23	0.73	26.58
Mar-14	23.29	10.83	38.27	0.72	25.22
Apr-14	18.74	11.85	36.69	0.72	23.98
May-14	17.99	11.37	32.56	0.73	22.43
Jun-14	16.50	11.12	28.88	0.74	22.45
Jul-14	16.23	9.79	26.47	0.74	20.55
Aug-14	17.76	10.56	32.81	0.75	20.18
Sep-14	20.34	11.13	39.68	0.78	21.10
Oct-14	23.33	10.55	35.01	0.79	22.84
Nov-14	23.51	11.20	26.00	0.80	23.52
Dec-14	23.85	8.15	27.95	0.81	24.10
Jan-15	20.66	8.14	22.83	0.89	23.04
Feb-15	22.83	8.33	21.95	0.92	21.64
Mar-15	22.26	8.40	23.93	0.89	22.35
Apr-15	21.48	8.36	21.56	0.91	21.11
May-15	19.98	8.21	23.99	0.89	20.47
Jun-15	20.20	8.68	22.68	0.91	20.83
Jul-15	20.75	8.43	25.05	0.89	19.80
Aug-15	19.15	8.18	23.33	0.89	20.57
Sep-15	19.07	7.71	20.49	0.91	19.35
Oct-15	18.89	7.20	22.09	0.95	18.59
Nov-15	18.28	7.22	23.50	0.92	18.30
Dec-15	16.83	7.34	21.55	0.92	17.61
Jan-16	14.59	7.24	15.92	0.92	16.10
Feb-16	12.86	5.37	13.92	0.89	15.69
Mar-16	12.55	5.87	12.85	0.88	15.23
Apr-16	12.09	6.49	13.61	0.90	14.43
May-16	12.87	7.01	14.44	0.90	13.01
Jun-16	14.56	8.99	16.03	0.90	14.44
Jul-16	14.23	8.79	18.31	0.90	14.36
Aug-16	12.73	8.83	16.62	0.89	14.16
Sep-16	13.21	8.82	17.93	0.89	14.30
Oct-16	17.35	9.40	21.66	0.91	16.46
Nov-16	19.50	10.81	23.15	0.93	17.00
Dec-16	17.03	12.09	28.56	0.95	17.60
Jan-17	21.09	9.85	25.29	0.94	17.72
Feb-17	20.62	8.95	21.46	0.94	18.15

Mar-17	16.35	10.22	19.87	0.94	17.35
Apr-17	14.25	10.46	20.00	0.93	16.53

Figure 4, Page 19: NBP and TTF forecasted and actual summer/ winter spreads 2010-2017 (euros/MWh)
Source: ACER based on Platts data

Forecasted summer/ winter spreads by date of publication		
	TTF (euros /MWh)	NBP (euros/ MWh)
2010	3.66	3.91
2011	3.07	3.70
2012	4.01	5.64
2013	1.35	2.56
2014	2.42	3.80
2015	1.48	2.90
2016	1.70	2.50

Actual summer/ winter spreads		
	TTF (euros /MWh)	NBP (euros/ MWh)
2010	3.96	5.30
2011	0.88	1.77
2012	3.20	4.31
2013	-0.93	-0.04
2014	1.33	2.05
2015	-5.67	-5.27
2016	3.99	4.50

Figure 5, Page 20: EU cross-border gas flows in 2016 and main differences from 2015 (bcm/year)
Source: ACER based on IEA (2016)

Exit	Entry	Sum of 2015	Sum of 2016
Algeria	Spain	6770.17	6725.47
	Tunisia	8867.32	21352.90
Austria	Germany	1368.89	2238.92
	Hungary	2773.14	3965.38
	Italy	29918.00	28266.00
	Slovenia	1836.83	2158.39
	Switzerland	64.70	62.71
Belarus	Lithuania	4149.90	3046.00
	Poland	35993.64	37908.13
Belgium	France	17666.00	17361.22
	Germany	3814.19	1842.97
	Luxembourg	549.12	566.50
	Netherlands	4473.01	3242.08
	United Kingdom	128.42	1387.92
Bulgaria	Greece	1948.40	2630.12
	Macedonia, Former Yugoslav Republic	133.93	209.98
Croatia	Italy	232.00	249.00
Czech Republic	Germany	17257.00	23194.85
	Poland	17.34	6.06
	Slovak Republic	10935.00	2677.00
Denmark	Germany	918.71	580.88
	Netherlands	461.10	616.46
France	Sweden	811.58	916.64
	Belgium	9.02	69.42
	Spain	2694.00	2674.00
	Switzerland	2974.99	1029.62
Germany	Austria	6801.01	6101.36
	Belgium	1196.47	3801.00
	Czech Republic	35669.00	32327.00
	Denmark	113.74	196.74
	France	6069.00	7581.00
	Luxembourg	325.65	237.51
	Netherlands	14085.02	13889.87
	Poland	796.33	521.97
	Switzerland	10726.38	8936.47
Hungary	Croatia	29.32	43.96
	Romania	20.09	15.34
	Serbia	1875.42	1928.48
	Slovak Republic	19.29	0.09

	Ukraine	455.94	1008.43
Italy	Austria	68.00	81.00
	Slovenia	48.00	17.00
	Switzerland	107.00	111.00
Latvia	Estonia	382.35	324.83
	Lithuania	42.10	37.10
	Russia	401.68	287.66
Libya	Italy	7108.00	4808.00
Liquefied Natural Gas	Belgium	2410.58	1033.31
	France	5611.00	6871.00
	Greece	600.23	790.83
	Italy	6037.00	6384.00
	Lithuania	408.80	1307.90
	Netherlands	1025.20	451.98
	Poland	126.20	1098.86
	Portugal	1434.41	1616.73
	Spain	12540.27	13642.46
	United Kingdom	13620.79	11050.04
Lithuania	Latvia	96.40	42.50
	Russia	2031.40	2173.60
Morocco	Spain	8827.79	8709.41
Netherlands	Belgium	19433.49	19561.42
	Germany	33437.00	28491.35
	Norway	2932.73	0.00
	United Kingdom	3890.57	4289.85
Norway	Belgium	14099.82	14415.13
	Denmark	545.13	484.98
	France	17153.67	16601.38
	Germany	31944.77	31614.21
	Liquefied Natural Gas	5962.67	6062.26
	Netherlands	21883.01	18763.35
	United Kingdom	27107.49	30594.73
Poland	Germany	28534.84	29291.00
	Ukraine	146.69	950.96
Portugal	Spain	0.00	15.77
Romania	Bulgaria	16212.59	17385.10
	Moldova	1.10	0.60
Russia	Estonia	88.82	191.74
	Finland	2709.00	2490.00
	Germany	37683.96	43666.98
	Latvia	1954.76	1488.53
Slovak Republic	Austria	34835.22	37723.00
	Czech Republic	13.00	1649.00
	Hungary	21.61	15.65
	Ukraine	9535.54	8929.87
Slovenia	Croatia	1000.10	1277.10
	Italy	25.00	7.00
Spain	Portugal	3123.00	3230.53
Switzerland	France	394.00	63.00
	Italy	10533.46	6624.62
Tunisia	Italy	7242.00	18873.00
Turkey	Greece	614.29	642.88

Ukraine	Hungary	5839.26	6564.59
	Poland	3656.29	4455.49
	Romania	16436.18	18924.69
	Slovak Republic	37026.77	47846.25
United Kingdom	Belgium	7781.96	6062.69
	Ireland	4233.84	2002.98
	Liquefied Natural Gas	0.00	463.79
	Netherlands	1794.11	1654.74
	Norway	0.22	-0.32

Figure 6, Page 22: Overview of EU MSs AGTM market health metrics - 2016
Source: ACER based on ENTSOG capacity data, Eurostat, NRAs and Frontier Research

	HHI	RSI	Number of supply sources
Finland	10000	0.00	1
Latvia	10000	1.40	1
Bulgaria	9359	0.04	2
Lithuania	3357	1.38	2
Estonia	8603	3.53	2
Romania	3781	1.55	2
Denmark	2598	1.43	3
Sweden	1789	2.35	2
Ireland	2356	2.47	2
Slovenia	8256	0.95	3
Hungary	6347	1.02	3
Austria	6303	1.27	3
Greece	6478	1.25	4
Portugal	5167	0.99	4
Poland	4394	0.79	4
Croatia	4889	1.34	5
Czech Republic	4952	1.58	5
Germany	2949	1.20	5
Be-Lux	1941	4.18	5
United Kingdom	1109	1.25	6
Slovakia	3800	3.26	7
Spain	4215	1.77	8
France	1865	1.74	7
Netherlands	2662	3.17	9
Italy	3065	1.10	11

Figure 7, Page 23: Estimated number and diversity of supply sources in terms of the geographical origin of the gas - 2016. EU 28 and selected EnC Contracting Parties
Source: ACER based on Eurostat, IEA, British Petroleum, NRAs and EnC Secretariat

MS	% of Gas from Country of Primary Supply	Primary Gas Supplier	% of Gas from Country of Secondary Supply	Secondary Gas Supplier	% of Gas from Country of Tertiary Supply	Tertiary Gas Supplier	Other supply origins (number)
Italy	40%	RU	29%	DZ	9%	D.P.	8
Netherlands	51%	D.P.	23%	NO	17%	RU	6
Spain	59%	DZ	15%	NI	9%	NO	5
Slovakia	44%	RU	21%	UK*	15%	AT*	4
France	41%	NO	25%	RU	15%	DZ	4
United Kingdom	48%	D.P.	34%	NO	11%	QT	3
Croatia	57%	D.P.	18%	RU	15%	AT*	2
Czech Republic	46%	RU	34%	DE*	16%	SK*	2
Germany	43%	RU	28%	NO	22%	NL	2
Be-Lux	39%	NL	35%	NO	15%	UK*	2
Portugal	69%	DZ	21%	NI	8%	QT	1
Greece	66%	RU	16%	DZ	16%	TR	1
Poland	57%	RU	23%	D.P.	14%	DE*	1
Austria	66%	RU	20%	DE*	14%	D.P.	
Slovenia	63%	AT*	36%	RU	1%	IT*	
Hungary	57%	RU	24%	AT*	19%	D.P.	
Denmark	96%	D.P.	4%	DE*			
Sweden	75%	DK	25%	DE*			
Bulgaria	97%	RU	3%	D.P.			
Estonia	93%	RU	7%	NO			
Romania	87%	D.P.	13%	RU			
Lithuania	60%	NO	40%	RU			
Ireland	56%	UK*	44%	D.P.			
Finland	100%	RU					
Latvia	100%	RU					
EnC							
Ukraine	63%	D.P.	37%	EU*			
Serbia	82%	RU	18%	D.P.			
Moldova	100%	RU					
FYR of Macedonia	100%	RU					
BiH	100%	RU					

Figure 9, Page 26: Traded volumes at EU hubs via market platforms – 2012 to 2016 (TWh/year)
Source: ACER based on REMIT data, Trayport and hub operators

	Sum of OTC (TWh/ year)	Sum of Exchange (TWh/ year)
NBP (UK)		
2012	12850	5258
2013	10809	4662
2014	11043	8137
2015	9993	9079
2016	11068	9540
TTF (NL)		
2012	7150	470
2013	7838	512
2014	12043	1398
2015	13820	2961
2016	18655	5303
NCG (DE)		
2012	1029	55
2013	1340	61
2014	1646	140
2015	1600	191
2016	1969	326
GPL (DE)		
2012	510	10
2013	873	31
2014	964	71
2015	852	100
2016	1082	128
ZEE+ZTP (BE)		
2012	742	
2013	825	1
2014	838	1
2015	926	2
2016	954	2
PSV (IT)		
2013	282	
2014	524	
2015	718	6
2016	937	20
PEGs (FR)		
2012	411	102
2013	431	184
2014	384	256
2015	355	295
2016	524	190
VTP (AT)		
2012	432	23

2013	390	21
2014	438	23
2015	478	18
2016	531	35
PVB (SP)*		
2012	453*	
2013	400*	
2014	534*	
2015	444*	
2016	434* (22)	7
CZ VOB		
2013	107	1
2014	135	2
2015	144	3
2016	114	3
Polish VTP (PO)		
2013		64
2014		107
2015		110
2016		87
GPN-GTF (DK)		
2012	38	7
2013	26	9
2014	22	10
2015	11	17
2016	10	24

*Note: Statistics solely refer to volumes traded via transparent market platforms with a price reference and some kind of product standardisation; OTC refers to physically settled volumes traded among parties via brokers - with either the parties managing credit risk or trading being cleared by the broker - and exchange execution denotes those volumes supervised and cleared by an organised central market operator. In some markets, sizeable volumes are traded, although not on transparent market platforms. These bilateral deals or swaps can also lack a price reference (e.g. Spain, 434 TWh in 2016 while 22 TWh in OTC and 7 TWh in Exchange)

Figure 10, Page 27: Breakdown of traded volumes per product at EU hubs -2016 (TWh/year)
Source: ACER calculations based on REMIT data. Values consist of OTC broker and exchange trade

	WD	DA	WK/W DNW/ BOM	MA	MA+	Q1	Q2	Q3	Q4+
NL-TTF	278	386	458	4112	1738	2002	664	410	380
UK-NBP	214	268	496	4016	3024	1180	440	106	66
DE-NCG	56	177	85	184	32	51	25	12	6
DE-GPL	17	190	98	270	32	80	25	16	6
IT-PSV	20	82	68	178	71	133	62	41	21
FR-PEG N	17	87	43	137	30	51	20	10	7
AT-AVTP	6	67	49	149	36	52	18	10	3
BE-ZEE	26	107	78	167	73	54	33	13	3
BE-ZTP	0	8	4	7	1	1	4	2	0
CZ-VOB	2	21	11	20	3	7	4	3	1
DK-GPN	2	19	8	2					
PL-VPGZ	4	8	17	10	6	6	6	8	3
FR-TRS	10	28	13	25	7	6	5	1	0
SP-PVB	3	4	2	13	3	7	4	1	0
SK-OTC	0	1	1	10	0	1	0	0	0
HU-MGP	0	0	0	0	0				
LI-GET	0	0							

	S1	S2	S3	S4+	Y1	Y2	Y3
NL-TTF	4210	2074	984	486	2152	978	268
UK-NBP	4102	2272	948	682	18	14	22
DE-NCG	126	61	29	28	108	69	14
DE-GPL	150	75	28	14	218	52	26
IT-PSV	149	66	8	1	100	20	0
FR-PEG N	84	80	41	31	8	14	4
AT-AVTP	96	48	13	1	18	5	1
BE-ZEE	182	162	15	11	0	0	0
BE-ZTP	0	0	0	1	0	0	0
CZ-VOB	11	2	0	1	25	1	0
DK-GPN							
PL-VPGZ	9	10	0	0	26	6	0
FR-TRS	12	2	1	0	0	0	0
SP-PVB	2	0	0	0	21	1	0
SK-OTC	0	0	0	0	0	0	0
HU-MGP	0						
LI-GET							



Figure 11, Page 28: Available median bid and ask-side volumes in the order book during the day for Day-Ahead products in selected EU hubs in ranges of MW - 2016
Source: ACER based on REMIT data

Underlying data are published in the document: AGTM metrics 2016 - statistical compendium



Figure 12, Page 28: Available median bid and ask-side volumes in the order book during the day for Month-Ahead products in selected EU hubs in ranges of MW - OTC and exchange aggregated - 2016
Source: ACER based on REMIT data

Underlying data are published in the document: AGTM metrics 2016 - statistical compendium



Figure 13, Page 29: Order book horizon in months for bids for forward products for different blocks of MWs - Source: ACER based on REMIT data

Underlying data are published in the document: AGTM metrics 2016 - statistical compendium



Figure 14, Page 30: Bid-ask spread: measure of the average delta between the lowest ask-price and the highest bid-price expressed as a percentage of the highest bid-price across the day - 2016
Source: ACER based on REMIT data

Underlying data are published in the document: AGTM metrics 2016 - statistical compendium



Figure 15, Page 32: Number of trades executed trades (daily average) for DA and MA products and average trading horizon in months for different number of daily trades in selected hubs - 2016
Source: ACER based on REMIT data

Underlying data are published in the document: AGTM metrics 2016 - statistical compendium



Figure 16, Page 32: Market concentration ranges of finalised transactions of MA products for selected EU hubs for the selling side - 2016
Source: ACER based on REMIT data

Underlying data are published in the document: AGTM metrics 2016 - statistical compendium

Figure 17, Page 33: Number of market participants at selected EU gas hubs and interlinks with consumption and concentration indicators - 2016
Source: ACER based on REMIT data.

MS	Market participants	Gas demand TWh/year	CR3 range in %
AT-VTP	95	93	25
BE-ZEE	46	185	35
CZ-VOB	98	91	35
DE-GPL	135	479	25
DE-NCG	200	479	35
FR-PEG NORD	68	371	35
IT-PSV	101	751	55
NL-TTF	192	366	25
UK-NBP	154	895	25
PL-VPGZ	23	188	75
SP-PVB	30	324	55
HU-MGP	10	104	75

Figure 18, Page 35: EU MSs assessed gas suppliers' sourcing prices - 2016 yearly average (euros/MWh)
Source: ACER based on REMIT data.

Price setting mechanism / Data source	MS	2016 referential price
Gas import prices at the border from IGU	AUSTRIA	17
Hub hedging procurement / Platts	AUSTRIA	16.39
Hub hedging procurement / Platts	BELUX	15.64
Gas import prices at the border / Eurostat Comext	BULGARIA	15.16
Gas import prices at the border / Eurostat Comext	CROATIA	19.51
Gas import prices at the border / Eurostat Comext	CZECH REPUBLIC	17.07
Gas import prices at the border	DENMARK	16.04
Gas import prices at the border / Eurostat Comext	ESTONIA	19.48
Gas prices from public tariffs information - NRA	FINLAND	17.35
Gas import prices at the border from IGU	FRANCE	17
Hub hedging procurement / Platts	FRANCE	15.83
Gas import prices at the border / BAFA	GERMANY	15.64
Hub hedging procurement / Platts	GERMANY	15.74
Gas import prices at the border / Eurostat Comext	GREECE	14.11
Gas import prices at the border / Eurostat Comext	HUNGARY	16.68
Gas import prices at the border / Eurostat Comext	IRELAND	16.74
Gas import prices at the border / Eurostat Comext	ITALY	16.57
Hub hedging procurement / Platts	ITALY	17.26
Gas import prices at the border / Eurostat Comext	LATVIA	17.56
Gas import prices at the border / Eurostat Comext	LITHUANIA	16.73
Hub hedging procurement / Platts	NETHERLANDS	15.52
Results from the POLPX gas auctions	POLAND	17.90
Gas import prices at the border / Eurostat Comext	PORTUGAL	17.42
Gas import prices at the border / Eurostat Comext	ROMANIA	16.21
Gas import prices at the border / Eurostat Comext	SLOVAKIA	15.90
Gas import prices at the border / Eurostat Comext	SLOVENIA	17.25
Gas import prices at the border / Eurostat Comext	SPAIN	15.89
Gas import prices at the border / Eurostat Comext	SWEDEN	19.15
Hub hedging procurement / Platts	UNITED KINGDOM	16.24

Figure 19, Page 36: Levels of DA price convergence between TTF and selected hubs year on year - 2014 - 2016
Source: ACER based on Platts, ICIS Heren and hub operators' data.

	Distribution of trading days according to predefined price spreads categories (euros/MWh)							correlation
	0.0-0.2	0.2-0.4	0.4-0.6	0.6-1.0	1.0-3.0	3.0-5.0	5.0>	
TTF - ZEE								
2014	67.59%	24.51%	5.53%	1.58%	0%	0%	0.79%	1.00
2016	69.57%	22.13%	4.74%	3.56%	0%	0%	0%	1.00
TTF - GPL								
2014	53.75%	30.83%	7.51%	6.32%	0.79%	0%	0.79%	1.00
2016	48.62%	33.99%	16.21%	1.19%	0%	0%	0%	0.99
TTF - NCG								
2014	35.57%	42.29%	11.07%	9.09%	1.19%	0%	0.79%	1.00
2016	55.73%	29.64%	13.44%	1.19%	0%	0%	0%	0.96
TTF - PEGN								
2014	32.02%	18.58%	15.02%	19.76%	13.83%	0%	0.79%	0.99
2016	44.27%	28.06%	13.83%	11.86%	1.98%	0%	0%	0.99
TTF - GPN								
2014	26.88%	24.11%	17.39%	18.97%	7.91%	0.40%	4.35%	0.98
2016	24.90%	25.69%	24.11%	18.97%	6.32%	0%	0%	0.98
TTF - VOB								
2014	15.02%	13.04%	14.23%	24.51%	30.04%	0.79%	2.37%	0.97
2016	26.48%	32.02%	28.85%	12.25%	0.40%	0%	0%	0.99
TTF - NBP								
2014	18.58%	19.76%	27.27%	29.64%	3.95%	0%	0.79%	0.99
2016	11.07%	22.92%	20.55%	35.57%	9.49%	0.40%	0%	0.97
TTF - AVTP								
2014	3.16%	6.72%	5.53%	24.90%	51.78%	7.11%	0.79%	0.95
2016	5.14%	12.65%	13.44%	30.04%	38.74%	0%	0%	0.98
TTF - FR								
2014 - PEG Sud	7.91%	3.95%	2.77%	3.95%	17.00%	24.51%	39.92%	0.74
2016 - TRS	10.28%	10.28%	10.67%	23.32%	26.09%	17.00%	2.37%	0.85
TTF - OTC								
2014	0%	0%	0%	0%	0%	0%	100%	0.00
2016	0%	0.40%	5.14%	22.13%	71.94%	0.40%	0%	0.97
TTF - VPGZ								
2014	7.11%	9.09%	7.91%	16.60%	30.04%	17.39%	11.86%	0.88
2016	3.16%	2.37%	4.35%	15.42%	70.36%	4.35%	0%	0.93
TTF - MGP								
2014	2.77%	1.19%	3.16%	7.51%	33.20%	36.36%	15.81%	0.77
2016	1.19%	1.98%	2.77%	11.86%	71.15%	11.07%	0%	0.92

Figure 20, Page 38: Day-ahead price convergence levels in EU hubs compared to daily and yearly transportation tariffs - 2016

Source: ACER based on Platts and hub operators data for prices and ENTSOG TP for transportation tariffs

hub pairs	0.0-0.2		0.2-0.4		0.4-0.6		0.6-1.0		1.0-3.0	
TTF - PSV	0%	0%	0%	0%	0%	0%	0%	8%	0%	87%
AVTP - PSV	2%	2%	2%	6%	0%	13%	0%	32%	0%	43%
NCG - PSV	0%	0%	0%	1%	0%	2%	0%	12%	0%	85%
VOB - OTC (SK)	3%	1%	6%	0%	9%	0%	26%	0%	55%	0%
AVTP - MGP(HU)	7%	9%	8%	4%	11%	1%	20%	0%	39%	0%
NCG - AVTP	3%	12%	0%	12%	0%	16%	0%	35%	0%	23%
GPL - VPGZ	0%	2%	0%	4%	1%	4%	1%	14%	0%	73%
ZEE - PEGN	8%	25%	0%	32%	0%	23%	0%	12%	0%	0%
PEGN - TRS	6%	18%	0%	11%	0%	8%	0%	14%	0%	28%
ZEE - NBP	2%	3%	2%	8%	4%	28%	2%	46%	3%	1%
TTF - NCG	18%	38%	3%	26%	1%	13%	0%	1%	0%	0%
TTF - PEGN	20%	25%	4%	24%	2%	12%	0%	12%	0%	2%
GTF (DK) - GPL	11%	13%	2%	19%	1%	18%	0%	27%	0%	9%
TTF - NBP	3%	8%	3%	20%	3%	18%	4%	32%	4%	6%
GPL - NCG	38%	33%	8%	13%	1%	6%	0%	1%	0%	0%
NCG - VOB	18%	24%	12%	32%	2%	10%	0%	2%	0%	0%
TTF - ZEE	47%	22%	19%	4%	4%	1%	2%	2%	0%	0%
PVB (SP) - TRS	6%	6%	5%	6%	4%	8%	9%	2%	28%	2%
OTC (SK) - CEGH	19%	11%	10%	0%	7%	0%	49%	0%	4%	0%

	3.0-5.0		5.0 +		Yearly Tarrifs		Daily tarrifs	
TTF - PSV	0%	4%	0%	0%	0%	94%	0%	6%
AVTP - PSV	0%	1%	0%	0%	2%	88%	0%	2%
NCG - PSV	0%	1%	0%	0%	0%	91%	0%	0%
VOB - OTC (SK)	0%	0%	0%	0%	37%	1%	55%	0%
AVTP - MGP(HU)	2%	0%	0%	0%	40%	0%	47%	0%
NCG - AVTP	0%	0%	0%	0%	3%	35%	0%	5%
GPL - VPGZ	0%	1%	0%	0%	2%	15%	0%	70%
ZEE - PEGN	0%	0%	0%	0%	8%	73%	0%	10%
PEGN - TRS	0%	13%	0%	2%	6%	36%	0%	0%
ZEE - NBP	0%	0%	0%	0%	11%	86%	0%	0%
TTF - NCG	0%	0%	0%	0%	21%	72%	0%	6%
TTF - PEGN	0%	0%	0%	0%	25%	70%	0%	4%
GTF (DK) - GPL	0%	0%	0%	0%	14%	70%	0%	13%
TTF - NBP	0%	0%	0%	0%	0%	83%	0%	0%
GPL - NCG	0%	0%	0%	0%	47%	52%	0%	1%
NCG - VOB	0%	0%	0%	0%	32%	60%	0%	6%
TTF - ZEE	0%	0%	0%	0%	68%	25%	4%	4%
PVB (SP) - TRS	23%	0%	1%	0%	30%	22%	26%	2%
OTC (SK) - CEGH	0%	0%	0%	0%	29%	12%	40%	0%

Figure 21, Page 39: Day-ahead price spreads compared to yearly transportation tariffs - 2016 (€/MWh)
Source: ACER based on Platts and hub operator's data for prices and ENTSOG TP for transportation tariffs

	75% percentile	Spread	25% percentile	Tariff
GPL -> NCG	0.20	0.14	0.05	0.69
NCG -> GPL	0.28	0.20	0.07	0.67
TTF -> PEGN	0.55	0.36	0.15	0.87
TTF -> NBP	0.80	0.58	0.35	1.99
TTF -> NCG	0.36	0.24	0.13	0.49
PEGN -> TRS	2.20	1.40	0.30	0.57
ZEE -> NBP	0.81	0.64	0.53	1.74
ZEE -> PEGN	0.48	0.36	0.19	0.52
NCG -> AVTP	0.98	0.71	0.40	0.52
NCG -> PSV	1.98	1.63	1.26	2.29
AVTP-> PSV	1.20	0.98	0.63	1.59
NCG -> VOB	0.35	0.26	0.14	0.44
VOB -> NCG	0.33	0.19	0.05	0.78
GPL->VPGZ	1.88	1.46	1.00	0.75
TTF -> PSV	2.15	1.80	1.41	2.79
TTF->ZEE	0.18	0.16	0.04	0.35
ZEE -> TTF	0.26	0.18	0.07	0.45
PVB ->TRS	0.54	0.66	0.19	0.98
TRS -> PVB	3.18	2.09	0.74	1.72
AVTP -> OTC	0.80	0.57	0.22	0.38
VOB -> OTC	1.40	1.07	0.70	0.86
AVTP -> MGP	1.60	1.12	0.56	0.92
GPN -> GPL	0.80	0.56	0.29	0.88

Figure 23, Page 43: Marketable and allocated Daily, Monthly, Quarterly and Gas Yearly bundled capacity for European cross-border Ips on the PRISMA platform - 2013 - 2016 (GWh/year and as a percentage of the respective products technical available capacity)

Source: ACER based on PRISMA reports

Product type offered in the respective year	Offered capacity	Allocated capacity	%
DA - 2013	8654.81	194.12	2.24
DA - 2014	24170.08	383.12	1.59
DA - 2015	32182.25	756.79	2.35
DA - 2016	69527.89	1186.64	1.71
MA - 2013	89.36	2.49	2.79
MA - 2014	494.06	19.07	3.86
MA - 2015	1138.21	25.47	2.24
MA - 2016	1693.15	61.91	3.66
Quarters - 2013	53.33	0.10	0.18
Quarters - 2014	273.33	10.02	3.67
Quarters - 2015	83.38	0.70	0.84
Quarters - 2016	723.77	2.91	0.40
Gas Years - 2013	3.19	0	0
Gas Years - 2014	48.24	8.78	18.19
Gas Years - 2015	62.73	4.53	7.23
Gas Years - 2016	4147.81	17.47	0.42

Figure 25, Page 46: Breakdown of capacity products at selected EU interconnection points sides in 2016 according to their duration (%)

Source: ACER based on PRISMA platform and ENTSOG TP

Ip side	>2YA	2YA	YA	QA	MA	DA	WD
Bacton IUK->UK (entry)	37%	0%	0%	0%	0%	35%	28%
Zelzate NL exit	98%	0%	2%	0%	0%	0%	0%
OPAL DE->CZ (entry)	95%	0%	0%	0%	0%	5%	0%
Oberkappel AT->DE (exit)	100%	0%	0%	0%	0%	0%	0%
Olbernhau DE->CZ (exit)	87%	12%	0%	0%	1%	0%	0%
FR_n>FR_s	48%	27%	20%	3%	0%	2%	0%
Oberkappel DE->AT (entry)	68%	0%	2%	3%	1%	25%	0%
VIP PIRINEOS FR->ES (exit)	83%	0%	0%	0%	15%	1%	0%
Zelzate BE->NL (exit)	100%	0%	0%	0%	0%	0%	0%
Taisnières (H) BE->FR (entry)	97%	0%	3%	0%	0%	0%	0%
Tarvisio AT->IT (entry)	92%	0%	4%	1%	0%	2%	0%
Waidhaus CZ->DE (exit)	100%	0%	0%	0%	0%	0%	0%
Medelsheim DE->FR (entry)	100%	0%	0%	0%	0%	0%	0%
s Gravenvoeren Dilsen NL->BE (entry)	97%	0%	0%	0%	0%	3%	0%
Hilvarenbeek NL->BE (entry)	99%	0%	0%	0%	1%	0%	0%
Lanžhot CZ->SK (exit)	97%	0%	0%	0%	2%	1%	0%
FR_s>FR_n	68%	0%	7%	0%	25%	0%	0%
Lanžhot SK->CZ (entry)	85%	0%	0%	0%	0%	15%	0%
Waidhaus DE->CZ (entry)	93%	0%	0%	0%	0%	7%	0%
Baumgarten SK->AT (exit)	100%	0%	0%	0%	0%	0%	0%
Rogatec SI->HR (exit)	43%	6%	17%	26%	9%	0%	0%
VIP PIRINEOS ES->FR (exit)	100%	0%	0%	0%	0%	0%	0%
VIP IBERICO ES->PT (entry)	34%	0%	55%	0%	9%	2%	0%
Cersak AT->SI (entry)	61%	6%	23%	10%	1%	1%	0%

Figure 29, Page 51: Number of balancing actions triggered by the TSO and percentage of days without TSO balancing actions at selected balancing zones in the gas year 2015 - 2016
Source: ACER based on ENTSOG data

Balancing zones	Number of balancing actions	Percentage of days without TSO balancing actions
NL-TTF	316	64%
UK-NBP	1261	72%
BELUX	758	0%
DE-NCG	7970	0%
DE-GPL	792	14%
DK-GPN	217	61%



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