



European Gas Pricing Trends

Trends over the last 12 months & outlook for the next 12 months

FLAME – The Global Gas Pricing Forum

Amsterdam, 13 May 2019

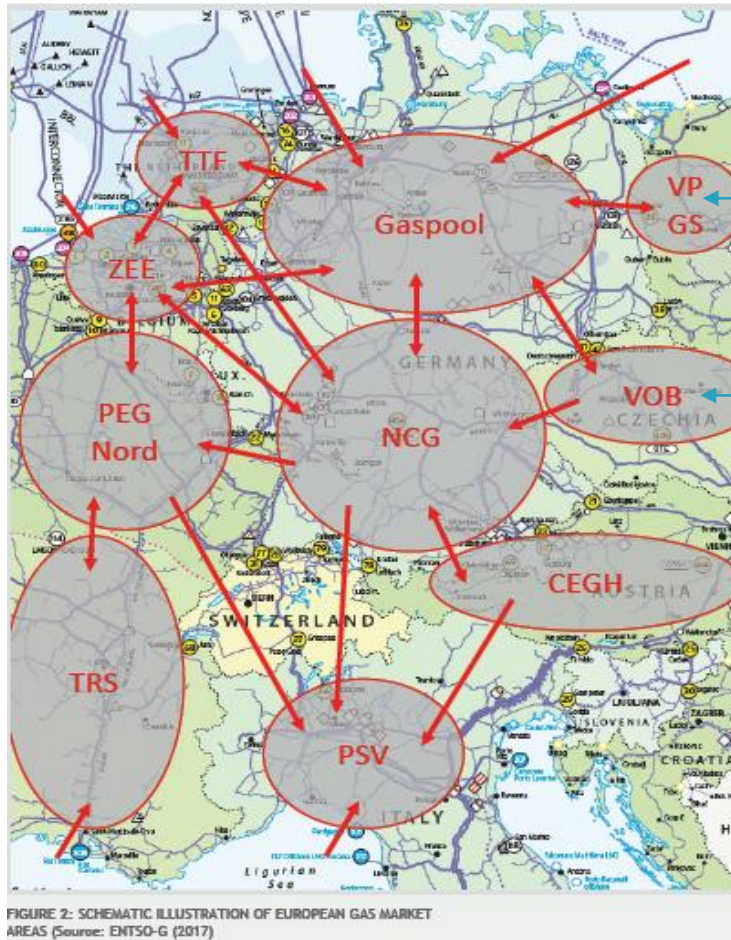
Dr. Wolfgang Peters, MBA

Managing Director, The Gas Value Chain Company GmbH, Germany

Agenda

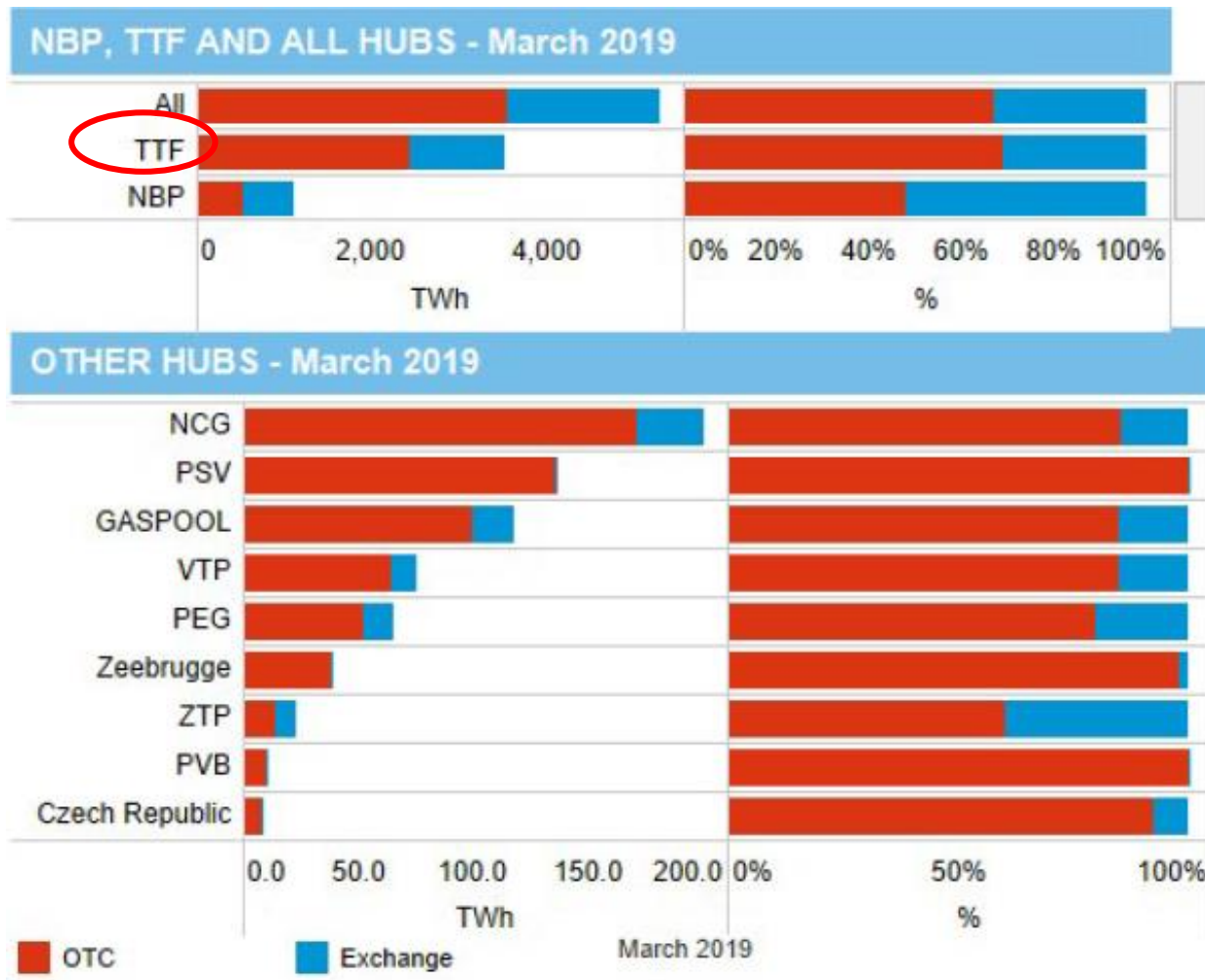
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Refresher 1: European Henry Hub' almost accomplished OIES: 'transnational market behaving like a single price area'



Source: GVC Marktstudie Polen <http://gasvaluechain.com/cms/wp-content/uploads/2018/07/GVC-Market-Study-Poland-06-18.pdf>

Refresher 1: 'European Henry Hub' almost accomplished TTF largest & most liquid hub – record 3,527 TWh in March 2019



Source: ICIS Heren GIF 26.07 of 15 April 2019

Refresher 1: 'European Henry Hub' almost accomplished TTF now 'benchmark' beyond Northwest-Europe like e.g. Brent for crude

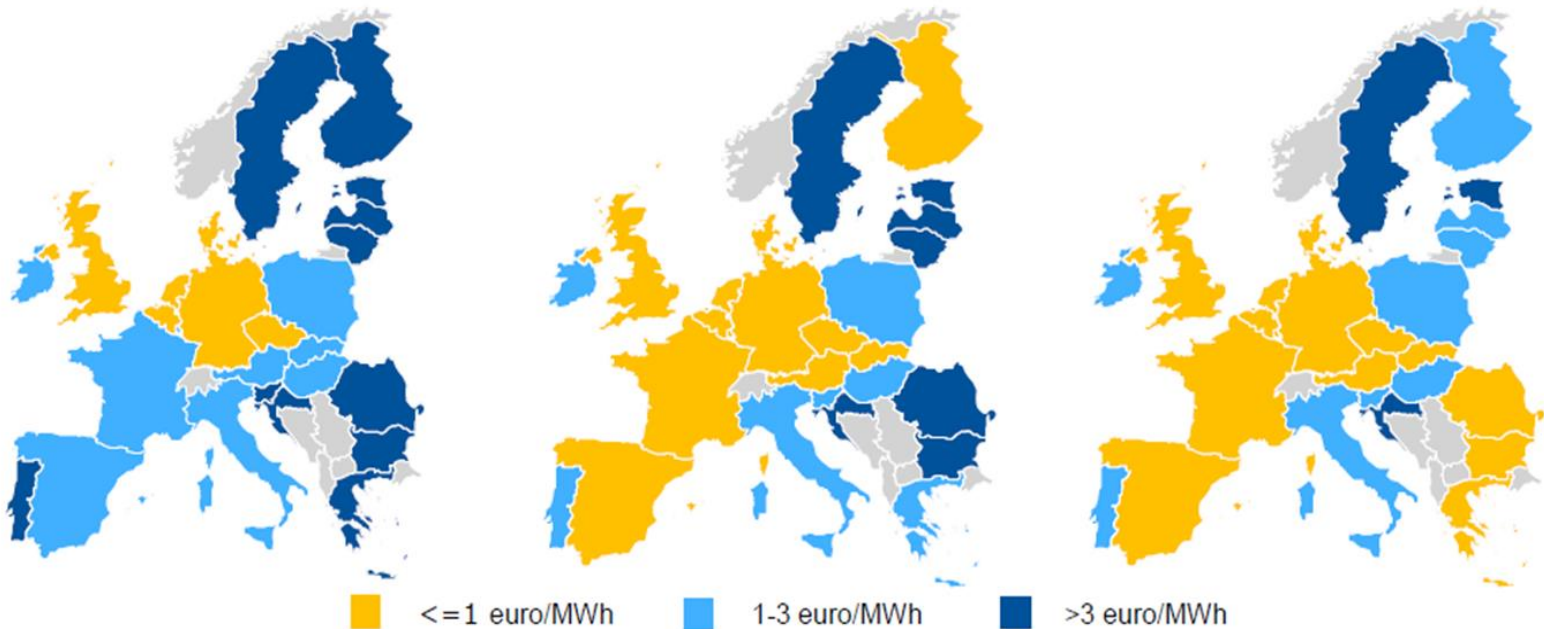
Gas supply sourcing costs continue to decrease and converge

Calculated gas sourcing cost* compared to TTF - estimates

2014: TTF = 23.7 € /MWh

2015: TTF = 21 € /MWh

2016: TTF = 15.5 € /MWh



Source: ACER Presentation Gas Market Monitoring Report 2016

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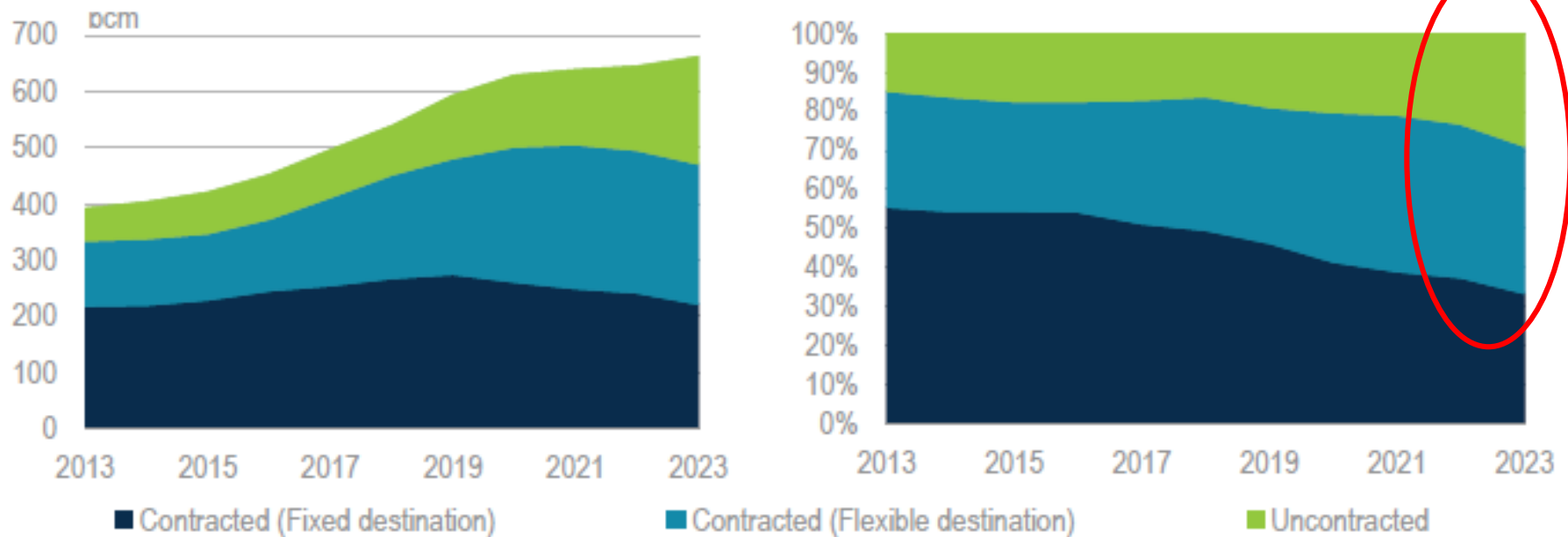
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Refresher 2: Global gas market affects European prices

LNG 'policeman' for maximum price of pipeline gas

'Uncontracted' and 'destination-flexible' LNG >400 bcm in 2023

Figure 2.13 • LNG export capacity contracted by destination flexibility, 2013-23



Source: IEA analysis based on ICIS (2018), *ICIS LNG Edge* (subscription required).

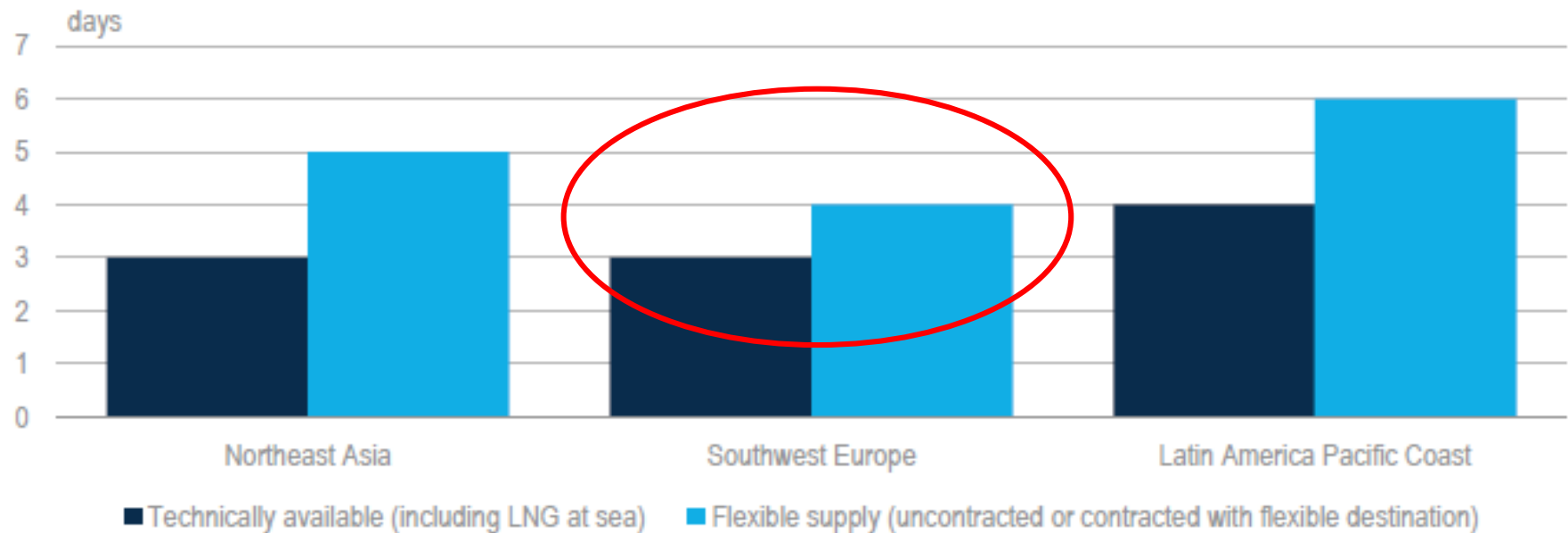
Source: IEA Global Gas Security Review 2018

Refresher 2: Global gas market affects European prices

LNG ‘policeman’ for maximum price of pipeline gas

IEA: response time down to 3 to 4 days

Figure ES.1 • Number of days needed to receive and regasify an unplanned additional LNG cargo



Source: IEA Global Gas Security Review 2018

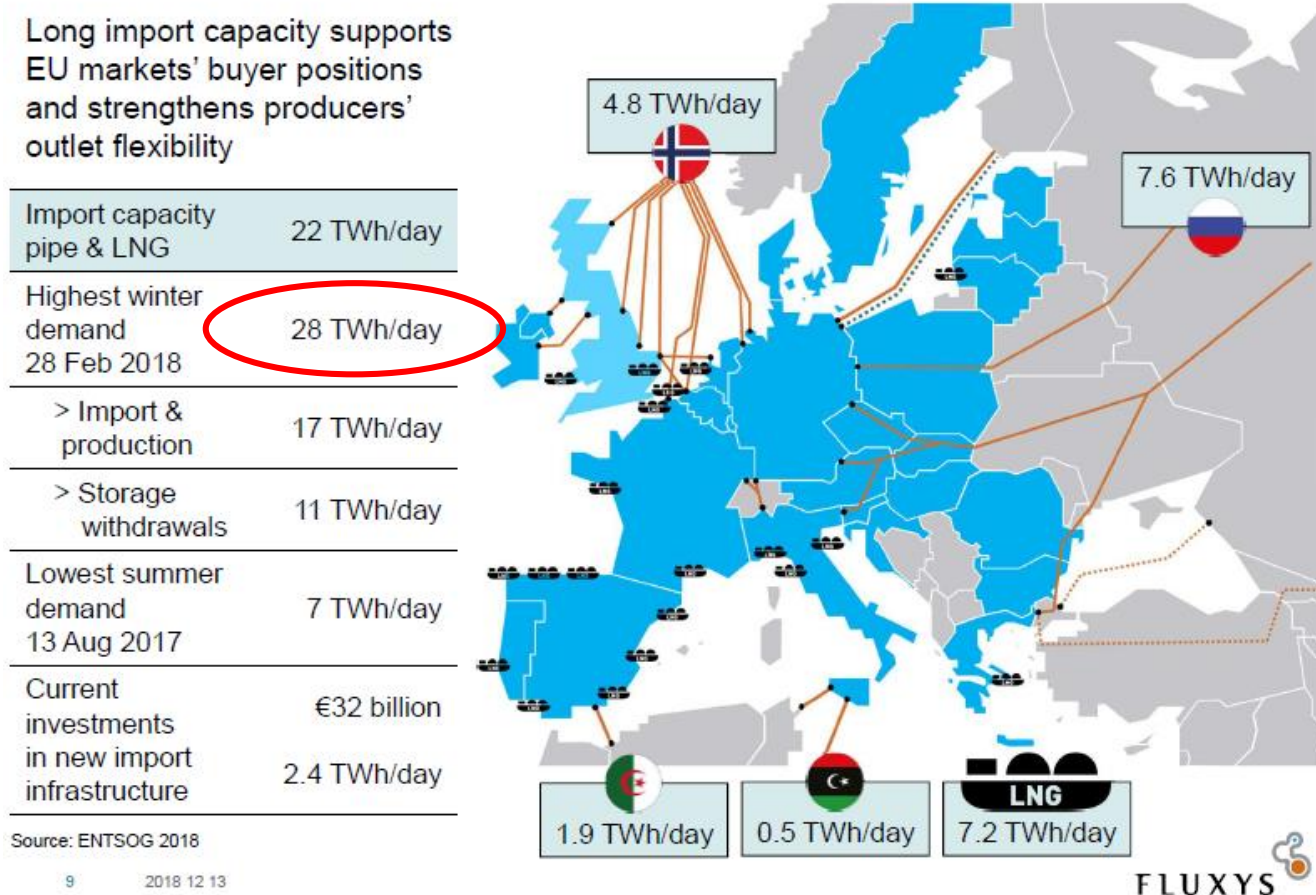
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Refresher 3: Europe's optionality (redundant LNG and pipeline capacities plus storages) benefits price levels

Highest daily demand on 28-02-2018 covered: pipe + storage & little LNG

INFRASTRUCTURE CREATING ROOM FOR OPTIONALITY



Source: Fluxys

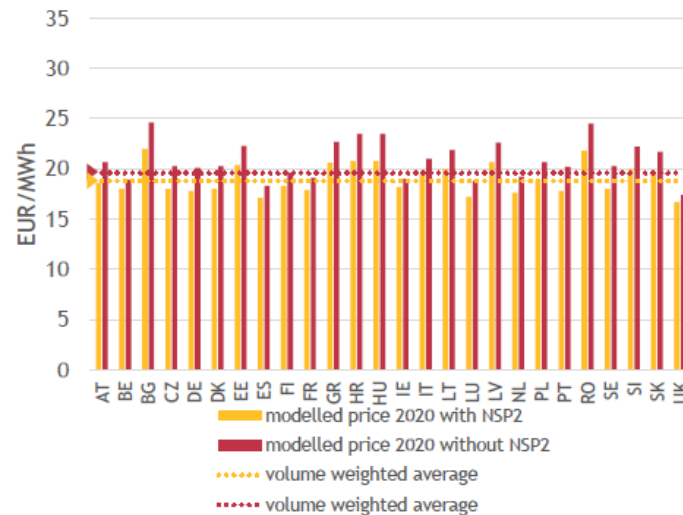
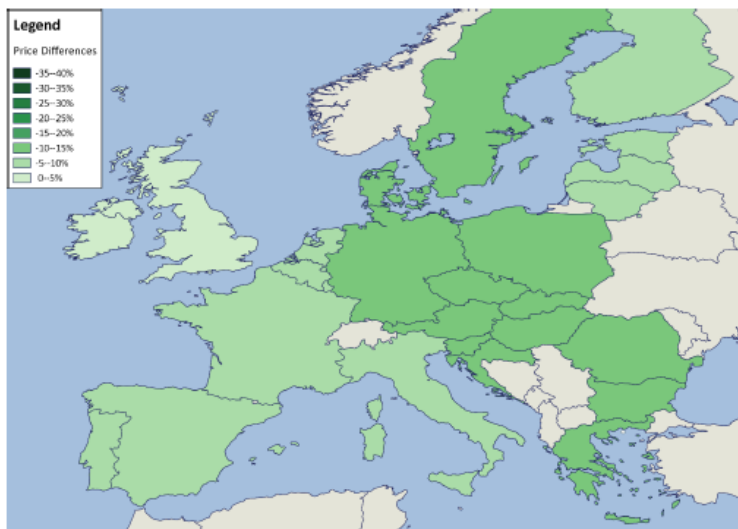
Refresher 3: Europe's optionality (redundant LNG and pipeline capacities plus storages) benefits price levels

ewi: NS2 price benefit 7.9 billion € to > 20 billion € (conservative)

GVC: Permanent LNG reliance at 3.3 \$/MMBtu = 50 billion € extra cost

Nord Stream 2 senkt Gaspreise (Großhandel) in jedem EU-Land durch den verstärkten Wettbewerb mit LNG

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➔ NSP2 drückt LNG-Preis

➔ Geringerer LNG-Preis + gute und weiter steigende europäische Marktintegration bewirkt geringere Preise in jedem EU-Mitgliedsstaat

➔ Bei entspanntem LNG-Markt ergibt sich in 2020 im europäischen Durchschnitt ein Preiseffekt von 1,6 EUR/MWh, d.h. EU-Konsumenten profitieren um 7,9 Mrd. EUR jährlich, bei einem engen LNG-Markt ist der Effekt 2-3x so hoch

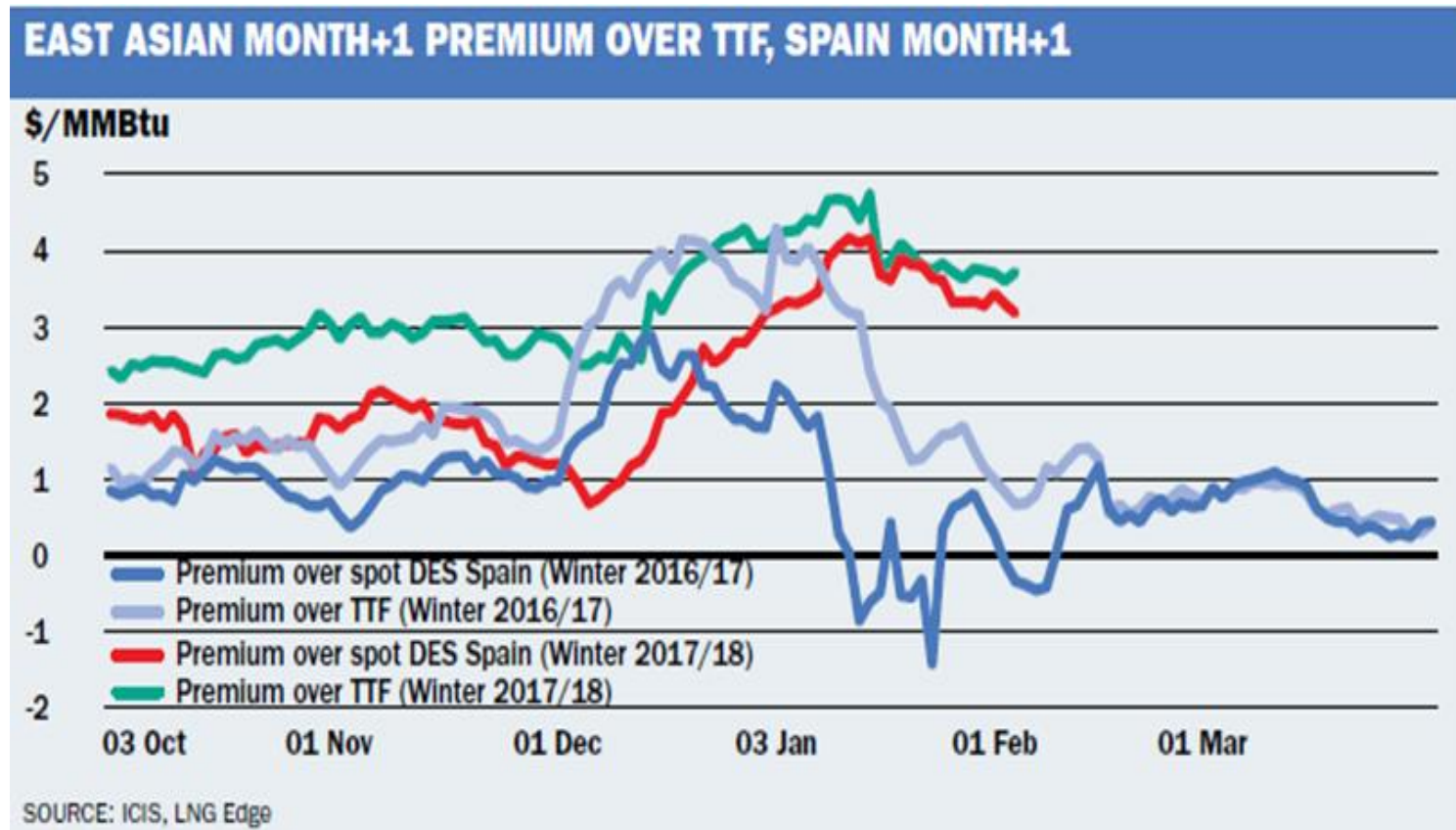
Source: ewi

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Price developments winter 2017/2018: a painful experience

Asian premium over European hubs > 4 \$/MMBtu



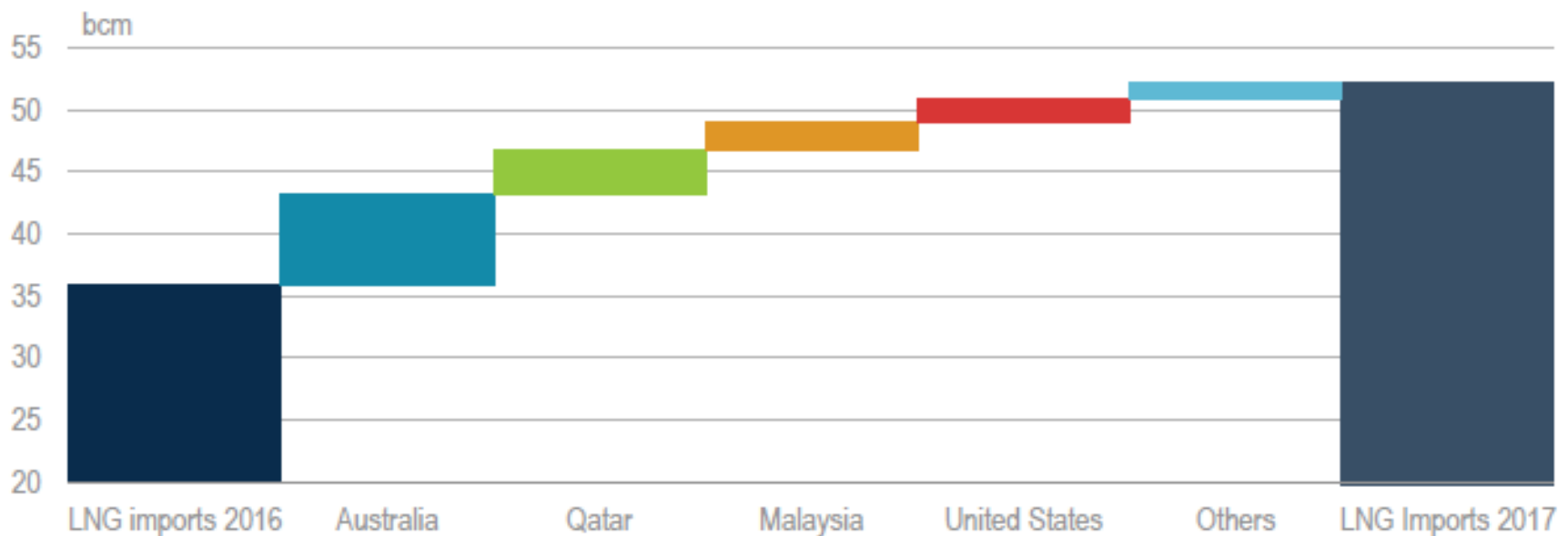
Source: ICIS Heren, EGM 25.03

Price developments winter 2017/2018: a painful experience

High European demand (cold spell) but ...

All spare LNG went to China - demand surge by 46% yoy

Figure 1.5 • Incremental LNG imports, China, 2016-17



Source: Data from Argus Media (2018a), *Argus Direct* (subscription required).

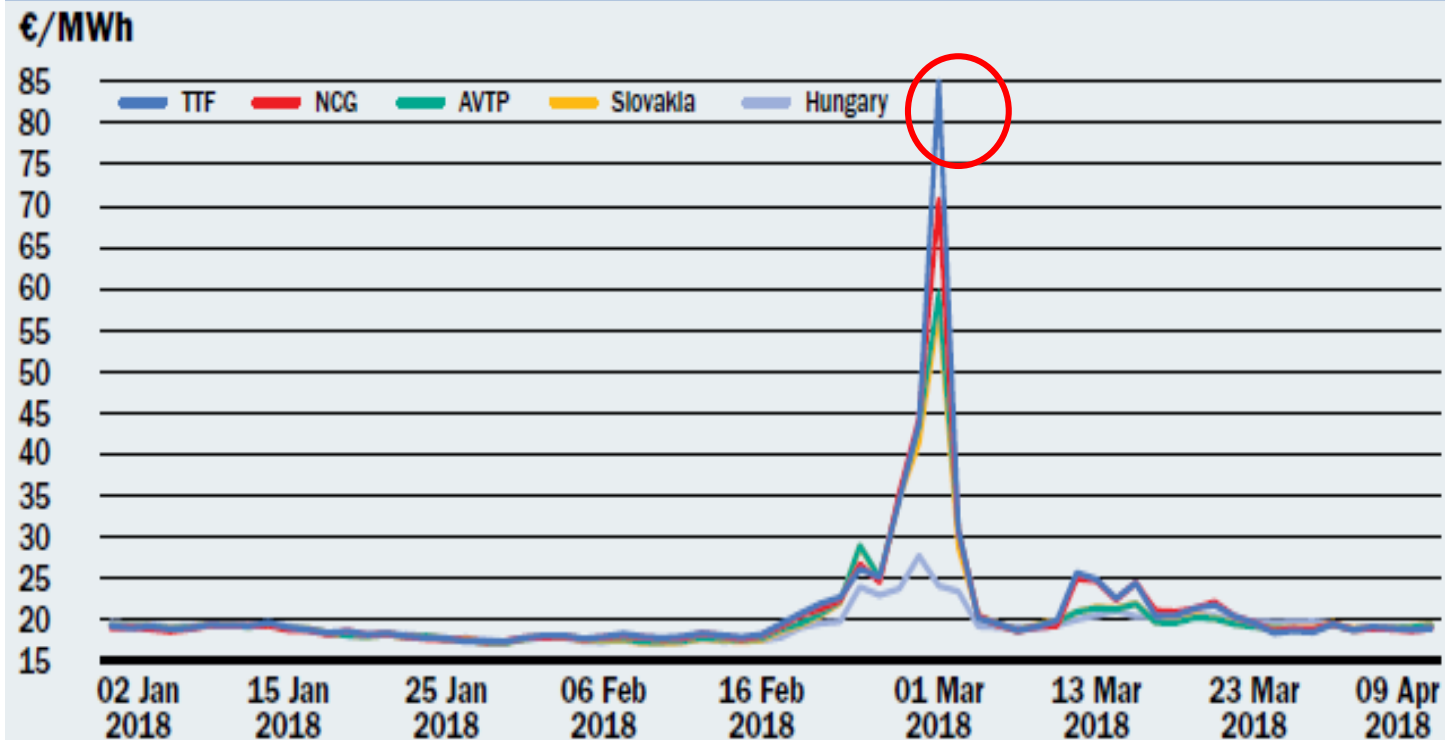
Source: IEA Global Gas Security Review 2018

Price developments winter 2017/2018: a painful experience

Spot prices reach unprecedented levels in 1Q'18

Never seen before: TTF spot ~15 €/MWh higher than NCG

COMPARISON OF SPOT TTF, NCG, AVTP, SLOVAK, HUNGARIAN PRICES



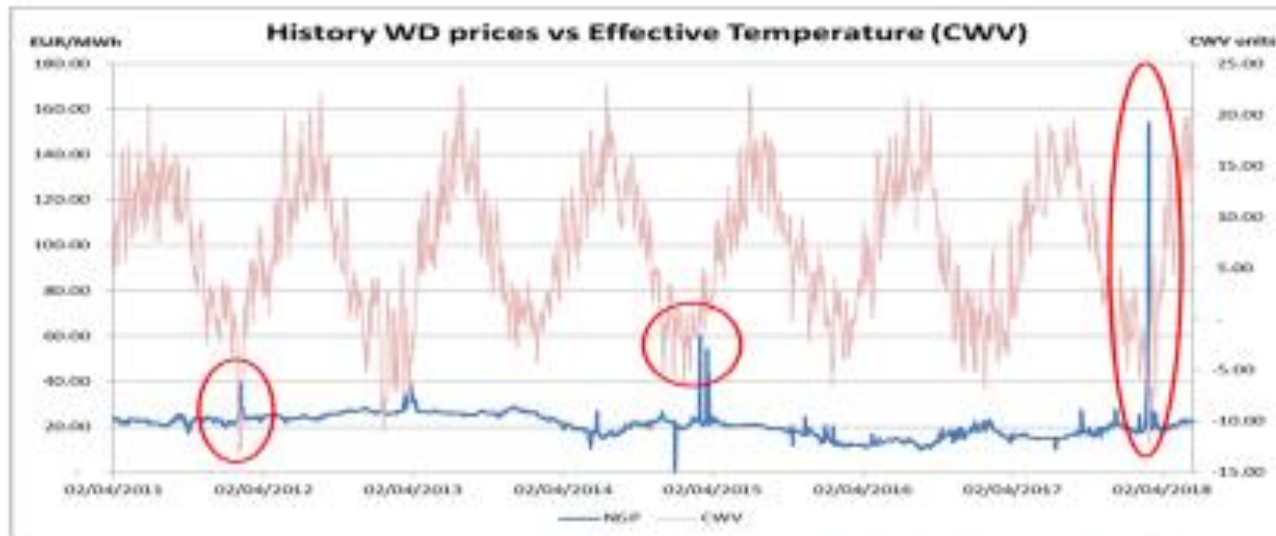
SOURCE: ICIS, CEEGEX

Source: ICIS Heren, EGM 25.07

Price developments winter 2017/2018: a painful experience

Balancing: WD hits 400 €/MWh, Endex 'neutral gas price' 160 €/MWh

But price spikes like 2018 were not seen in 2012
What has changed?



NGP = neutral gas price as published by Ice Index: <https://www.theice.com/marketdata/reports/168>

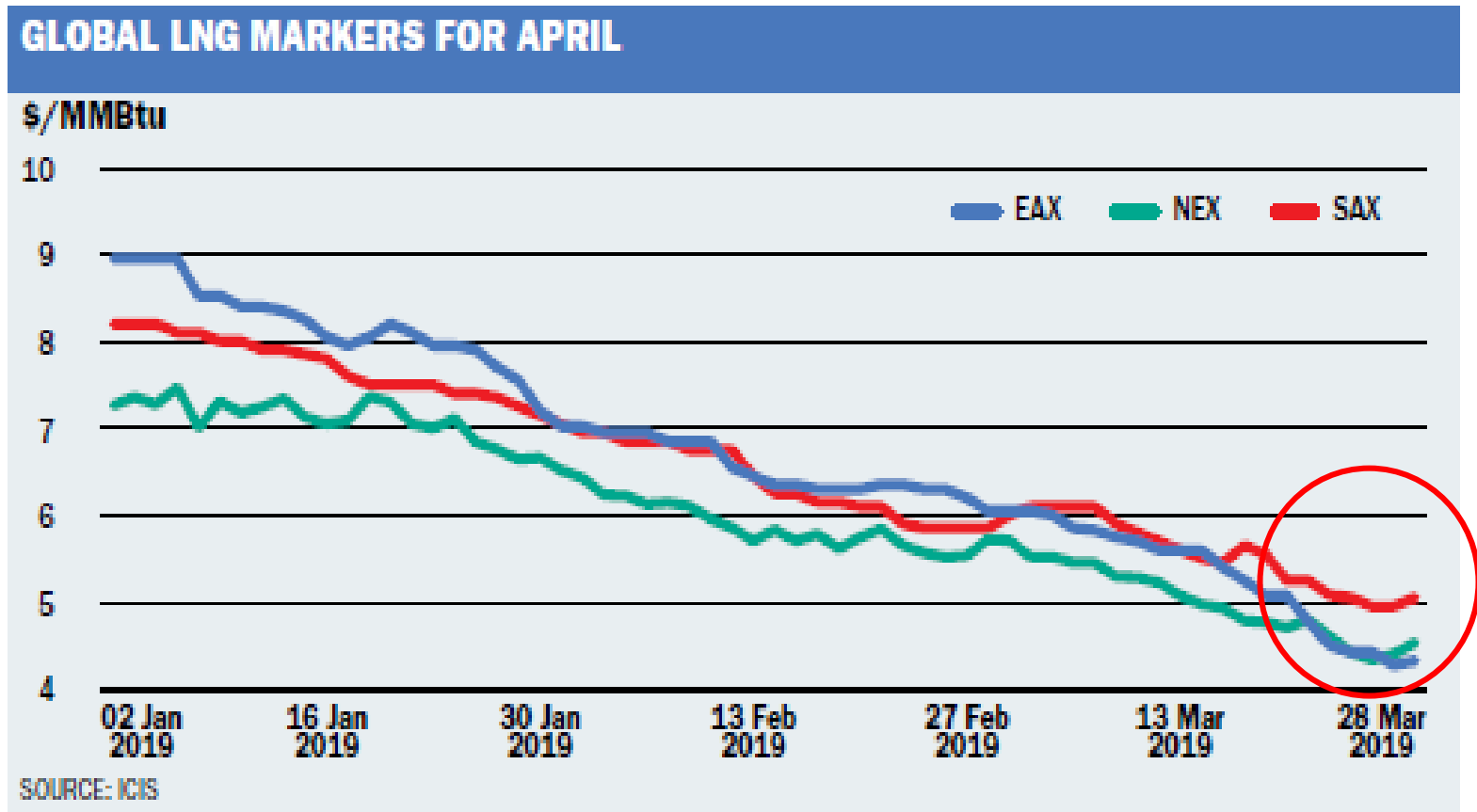
CWV = combined weather variable including temperature, wind and radiation. The data is detrended (thus, corrected for the global warming).

Source: Endex, own illustrations

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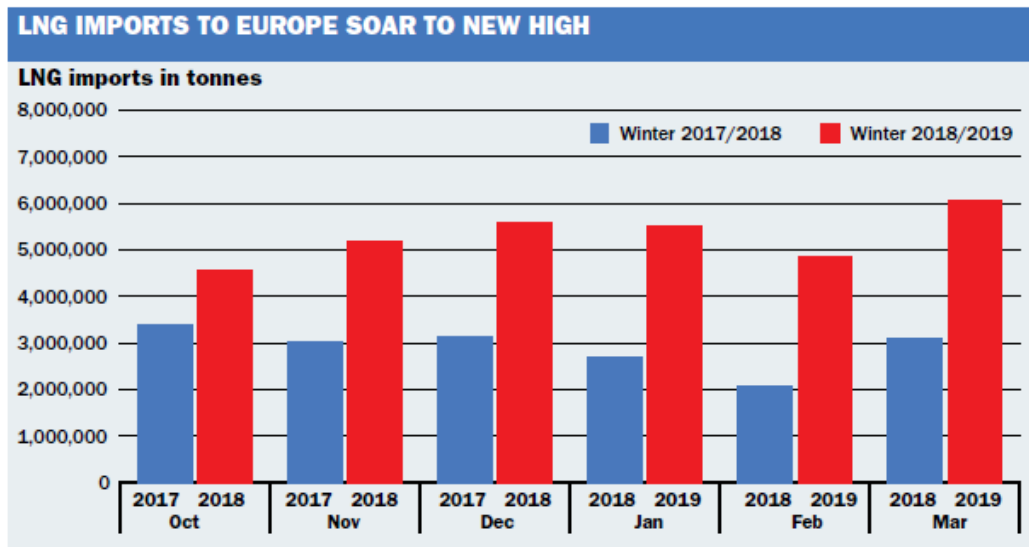
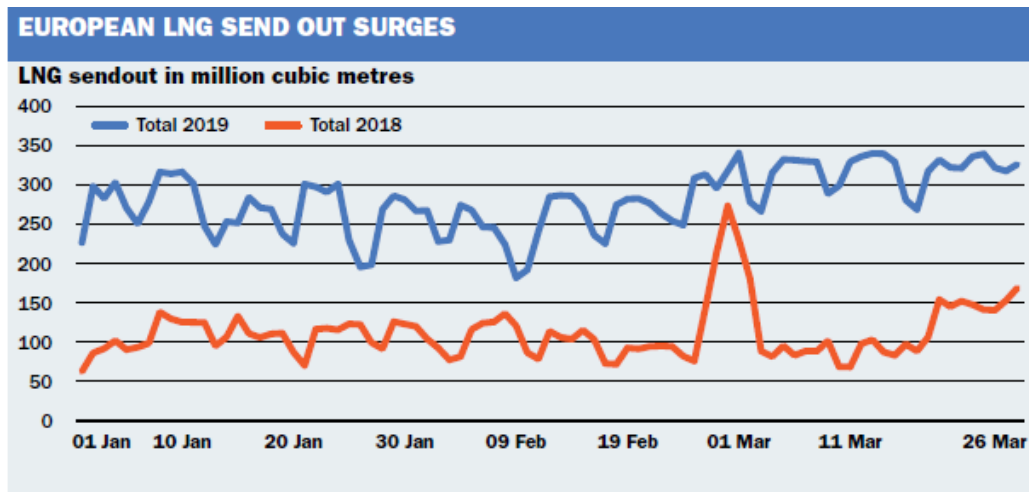
Price developments winter 2018/2019: LNG ante portas Asian premium collapsed



Source : ICIS Heren, GLM 15.13 of 28 March 2019

Price developments winter 2018/2019: LNG ante portas

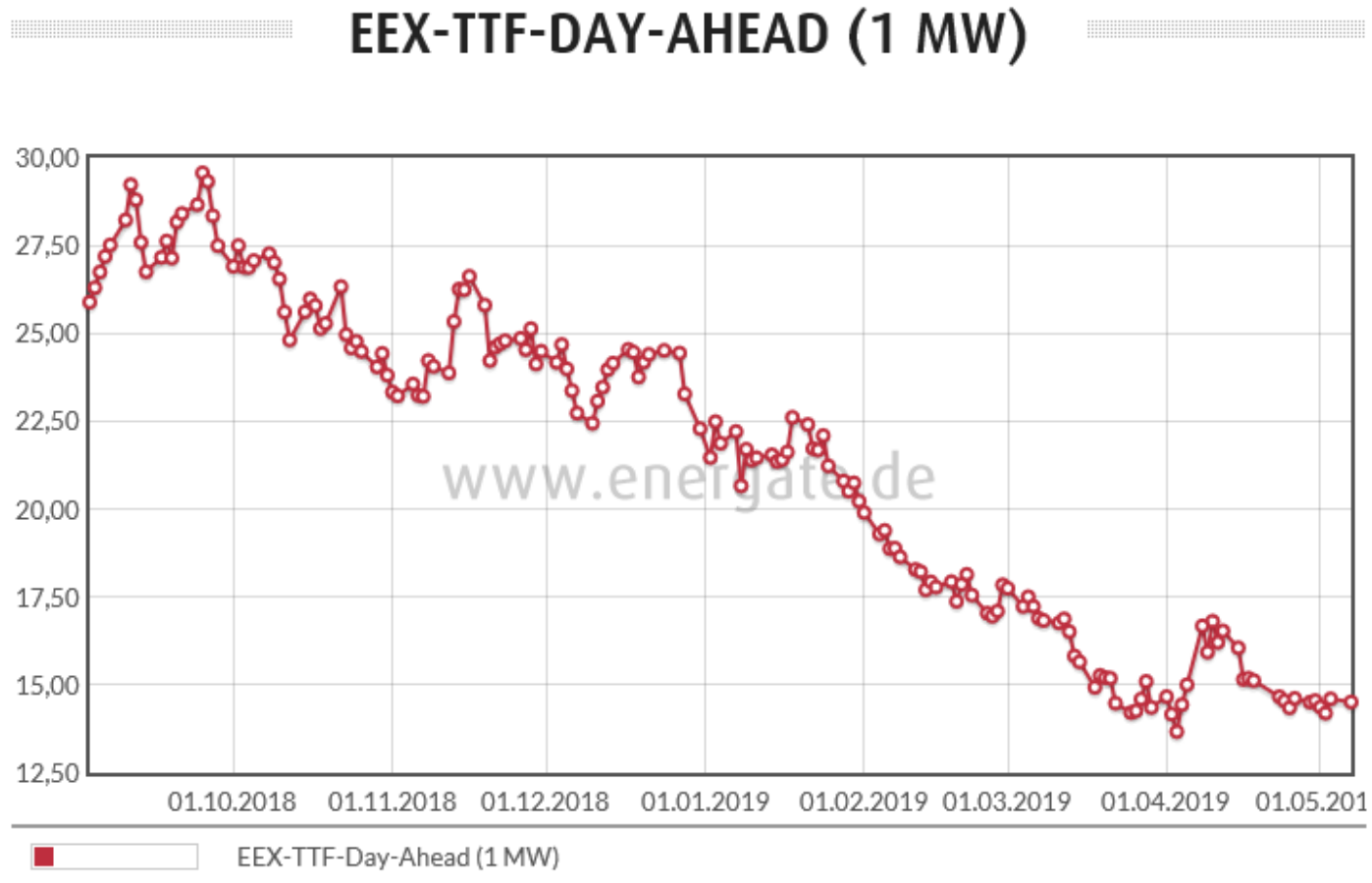
Massive influx of LNG into Europe



Source: : ICIS Heren, GLM 15.13 of 28 March 2019

Price developments winter 2018/2019: LNG ante portas

LNG surge sends prices plummeting

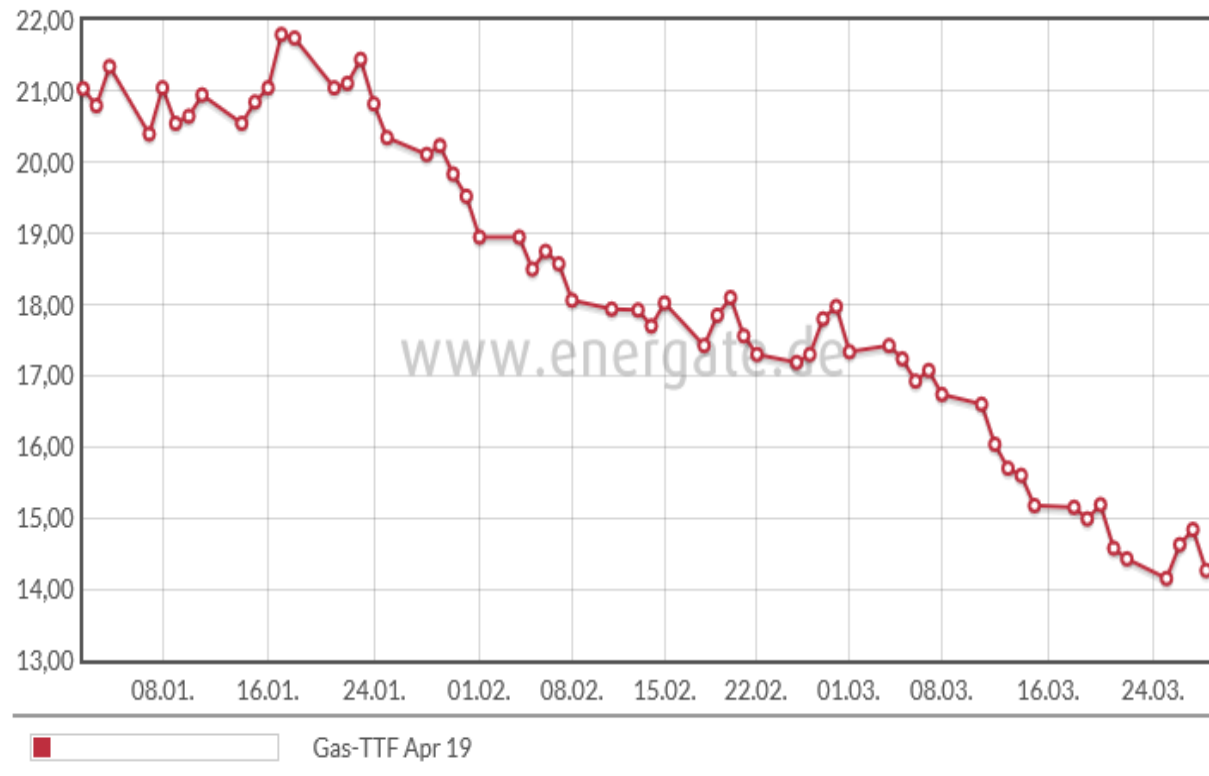


Source: <https://www.energate-messenger.de/markt/preise/121152>

Price developments winter 2018/2019: LNG ante portas

LNG surge sends prices plummeting

GAS-TTF APR 19

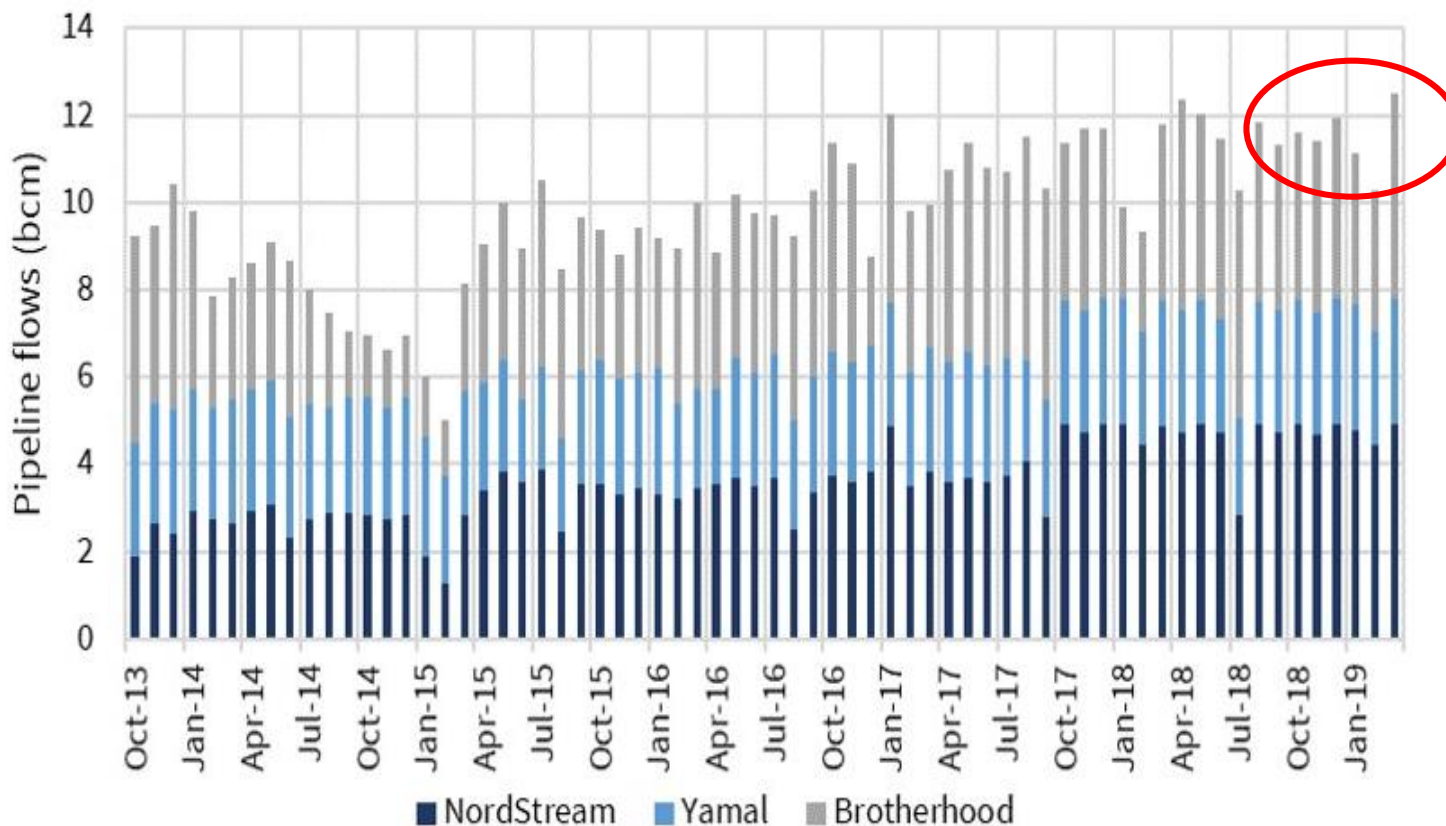


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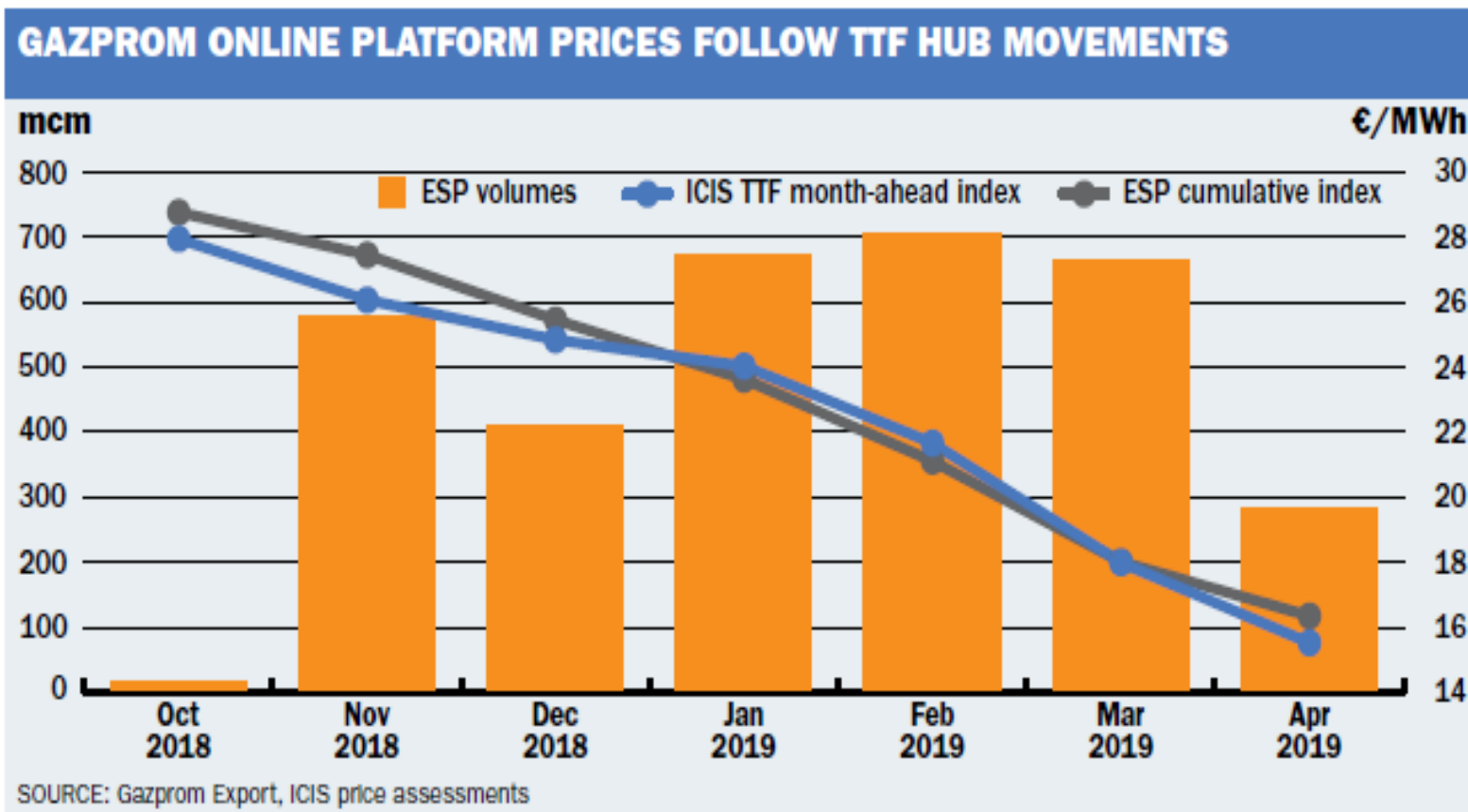
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Supplier competition at work: how Gazprom makes up min-take Russian volumes holding up despite LTC down-nominations



Source: Timera Energy

Supplier competition at work: how Gazprom makes up min-take LTC down-nominations made up by more ESP sales - trailing TTF



Source: ICIS Heren, GIF 26.07

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Large-scale U.S. LNG to Europe: only half the story told

8 bcm in > 500 bcm/a – at present a somewhat unjustified ‘hype’

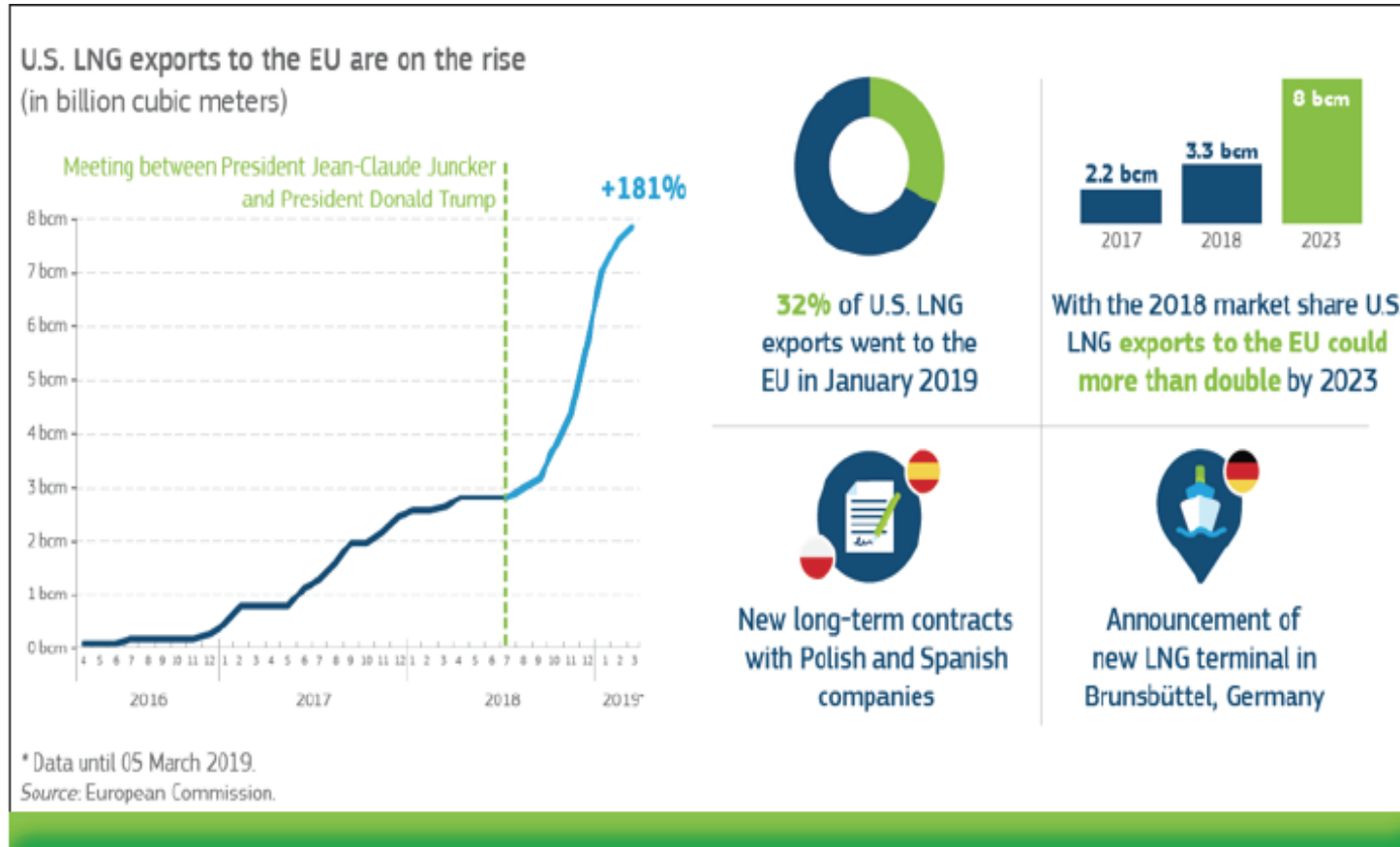


Figure 1: Source: European Commission 2019

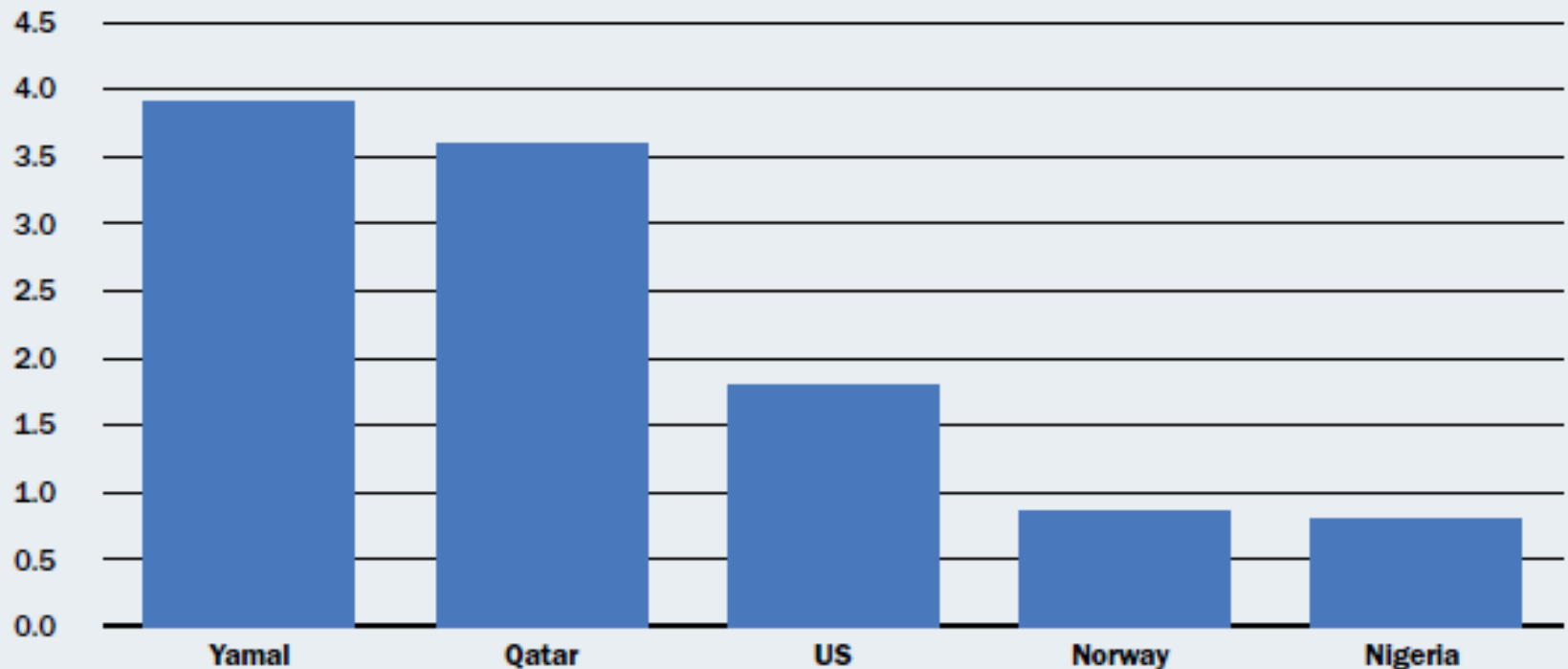
Source: CEEP Q1 (56) 2019 Report at: <https://www.ceep.be/www/wp-content/uploads/2019/04/CEEP-REPORT-Q1-2019-OK.pdf>

Large-scale U.S. LNG to Europe: only half the story told

Conveniently (?) overlooked: Russian Yamal LNG largest supplier

YAMAL TAKES LARGEST SHARE IN NORTHWEST EUROPE LNG

Million tonnes delivered this winter



SOURCE: LNG Edge

Source : ICIS Heren, GIF 26.05 of 15 March 2019

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Global Outlook: Chinese demand – will Asian spread widen?

High demand case: 829 bcm/a in 2025 – 1.050 bcm/a in 2030!

High case LNG demand: 140/bcm/a in 2025 – 167 bcm/a in 2030!

Million tonnes	Gas demand					
	2015	2016	2017	2020	2025	2030
Low line	193	206	230	310	456	582
Mean line	193	206	233	350	520	664
High line	193	206	243	400	592	750

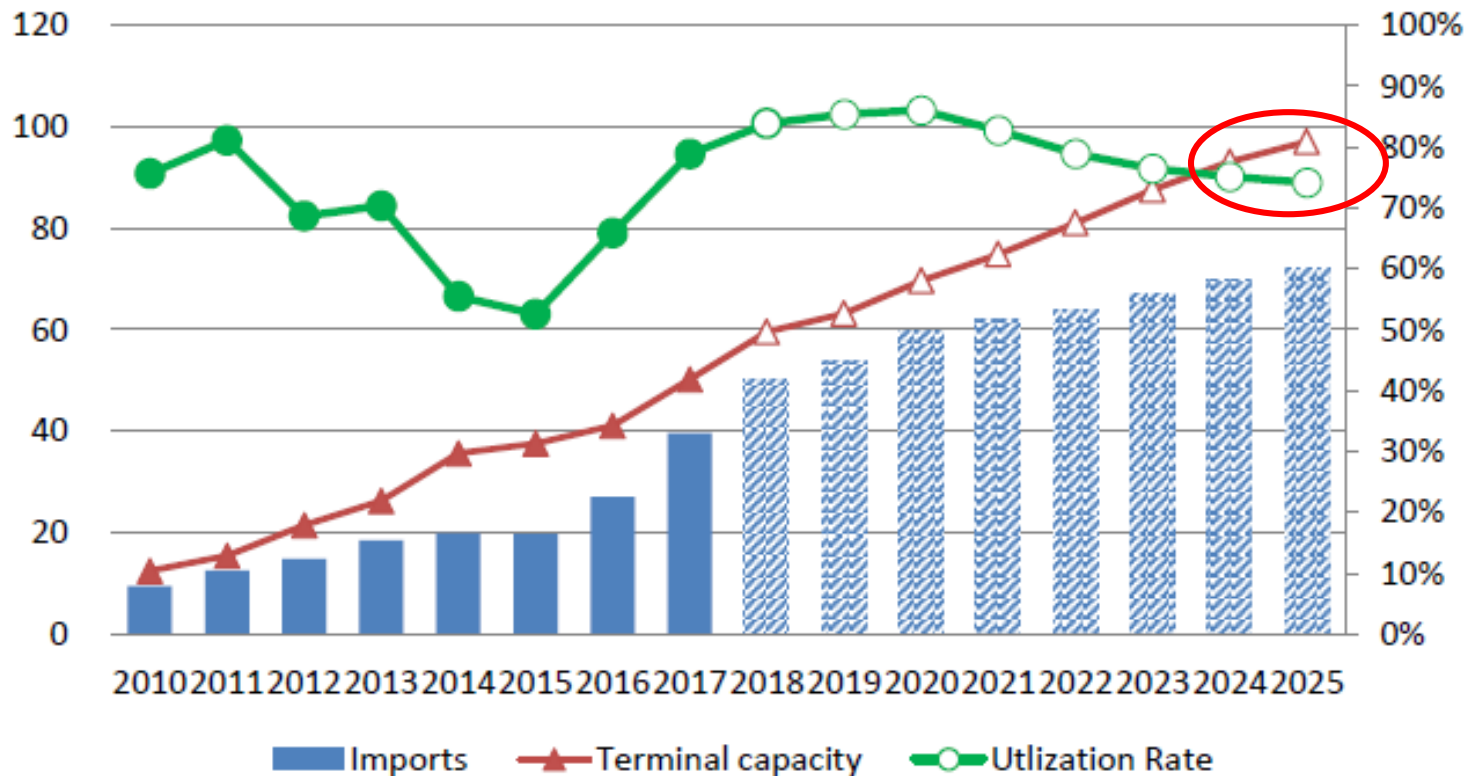
Million tonnes	LNG import forecast assuming piped gas at 50% of imports					
	2015	2016	2017	2020	2025	2030
Low	20	26	30	40	64	80
Mean	20	26	34	53	85	106
High	20	26	36	74	102	119

Source: <https://www.naturalgasworld.com/pdfs/China%20LNG%20forecast.pdf>

Global Outlook: Chinese demand – will Asian spread widen?

China's re-gas expansion plans suggest 140 bcm/a LNG demand in 2025

Figure 3.2: Historical data and outlook for LNG receiving capacity and utilization rate



Source: <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2018/12/The-Outlook-for-Natural-Gas-and-LNG-in-China-in-the-War-against-Air-Pollution-NG139.pdf>

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European outlook: Ukrainian transit – price spike 1Q'20?

OIES: 52-90 bcm/a needed in 2020 – outcome trilateral talks at risk?

Map 3: The Ukrainian pipeline system



Source: OIES

Source : OIES Insight 41 – Pirani – November 2018

European outlook: Ukrainian transit – price spike 1Q'20?

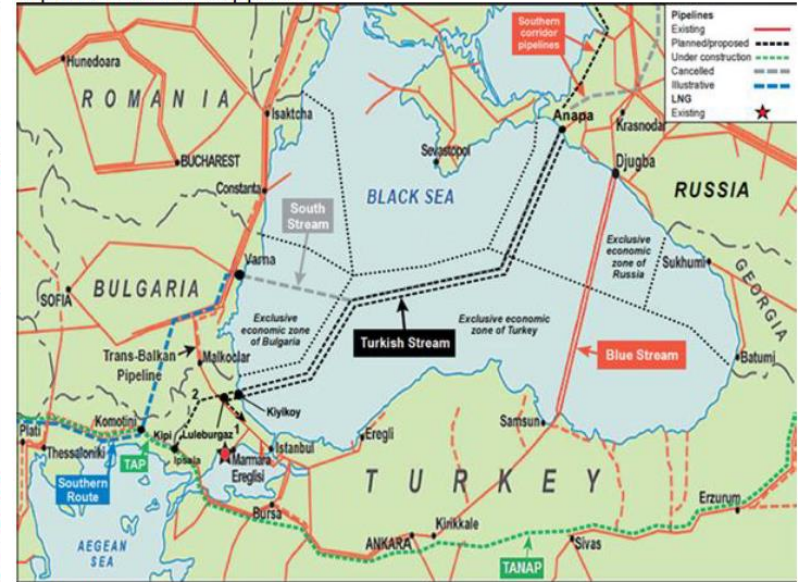
Nordstream 2 and Turkstream ready to save the day?

Map 1: The Nord Stream pipelines



Source: OIES

Map 2: The Turkish Stream pipelines



Source: OIES

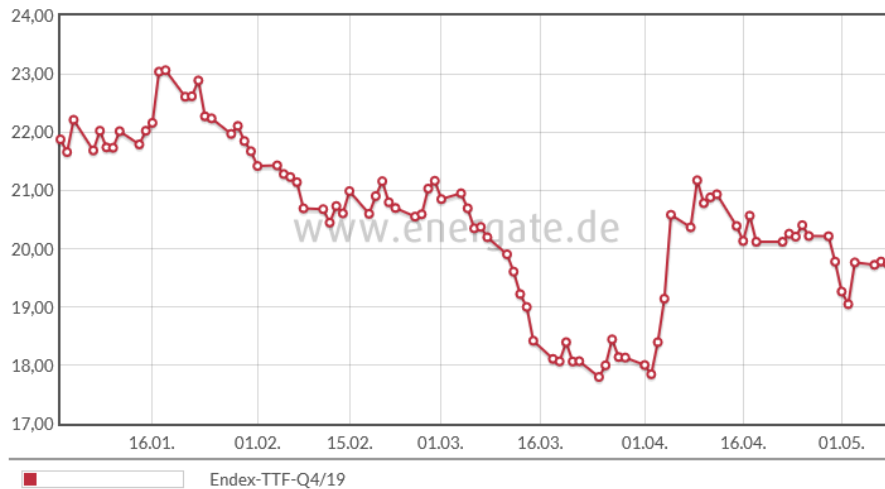
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European outlook: Ukrainian transit – price spike 1Q'20?

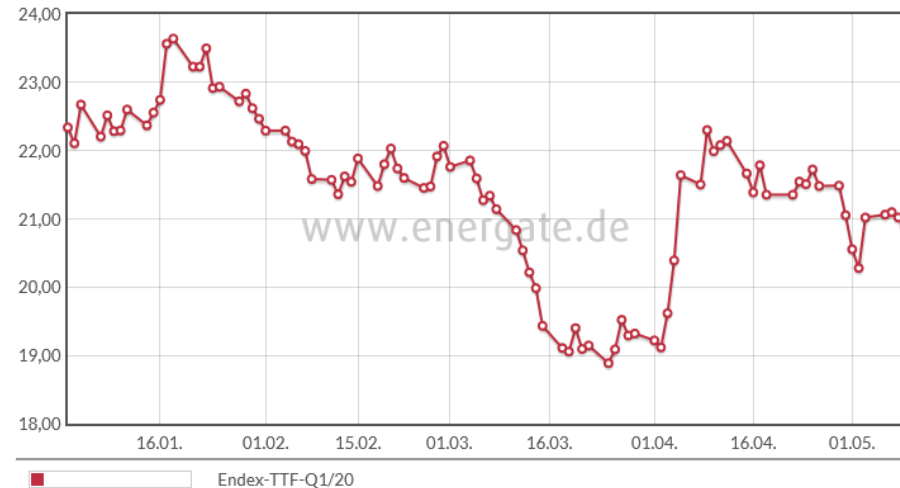
Curve volatile reflecting concerns but not (yet) excessive

Spread 4Q'19/1Q'20 at ~1.50 €/MWh noticeable but not (yet) alarming

ENDEX-TTF-Q4/19



ENDEX-TTF-Q1/20



Source: <https://www.energate-messenger.de/markt/preise/87707>

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Pricing LNG LTCs to Europe – who flinches first?

The challenge: allocation of basis risk HH/TTF

KEY OIL AND GAS PRICES 29 APRIL 2019		
Contract	€/MWh	\$/MMBtu
ICIS Heren NBP May '19	13.410	4.401
ICIS Heren TTF May '19	14.388	4.721
ICIS Heren RU-DE Contract May '19	20.192	6.717
ICIS Heren NO-DE Contract May '19	18.528	6.164
ICIS Heren NL-DE Contract May '19	19.251	6.404
ICIS Heren AL-SP LNG Contract May '19	21.493	7.150
NYMEX Henry Hub Jun '19	7.854	2.580

Feedgas at 115% HH 2.98 \$/MMBtu

Remaining spread HH/TTF 1.75 \$/MMBtu

Liquefaction/transport/regas ~4.20 \$/MMBtu

Loss - 2.45 \$/MMBtu

Source: ICIS Heren GIF 26.08 of 30 April 2019 – own calculations



Thank you for your attention