

# Gas Supply & Demand Dynamics: Pipelines and LNG

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ENERGY BUSINESS SCHOOL

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# Agenda

- ▶ **Brief note on the Energy Delta Institute**
- ▶ **Gas demand projections**
  - **EU underestimates demand & overestimates indigenous production**
- ▶ **Supply: Europe ‘cornered’ by supply?**
- ▶ **Global gas market through ‘LNG revolution’**
  - **Thanks to LNG, security of supply no longer regional**
- ▶ **LNG ‘marginal’ source of supply for Europe**
  - **LNG sets maximum achievable price for pipeline gas**
  - **Exclusive, permanent reliance means competing with Asia**

# Brief note on the Energy Delta Institute

## From Continental gas course towards Master programs

### Knowledge partners and network of lecturers



Around 200 lecturers from business and academia

# Brief note on the Energy Delta Institute

## Embracing energy transition: traditional & e.g. hydrogen/biogas



### Redefining our DNA..

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- From traditionally gas focused to a new world of energy (transition)

- Executive Programme New Energy Realities
- Energy Transition and Innovation
- Master Class Energy Storage
- “The future is electric!” Course (Dutch)
- North Sea Seminars (Power to Gas)
- Masterclass Hydrogen in one day
- Masterclass in Green Gas (i.e. Biogas)

*Part of*



New Energy Coalition is the dedicated centre of expertise for energy transition

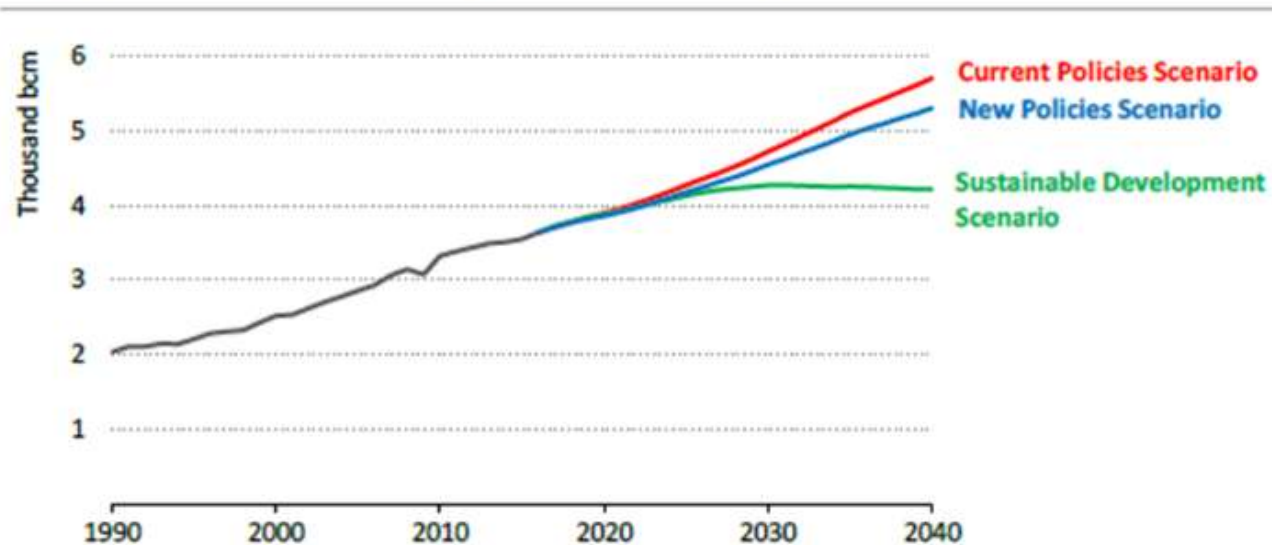
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# IEA WEO 2017: gas only fossil fuel with respectable growth

From ~3,600 bcm/a in 2016 to over 5,300 bcm/a in 2040

**Figure 8.2** ▶ World natural gas demand by scenario



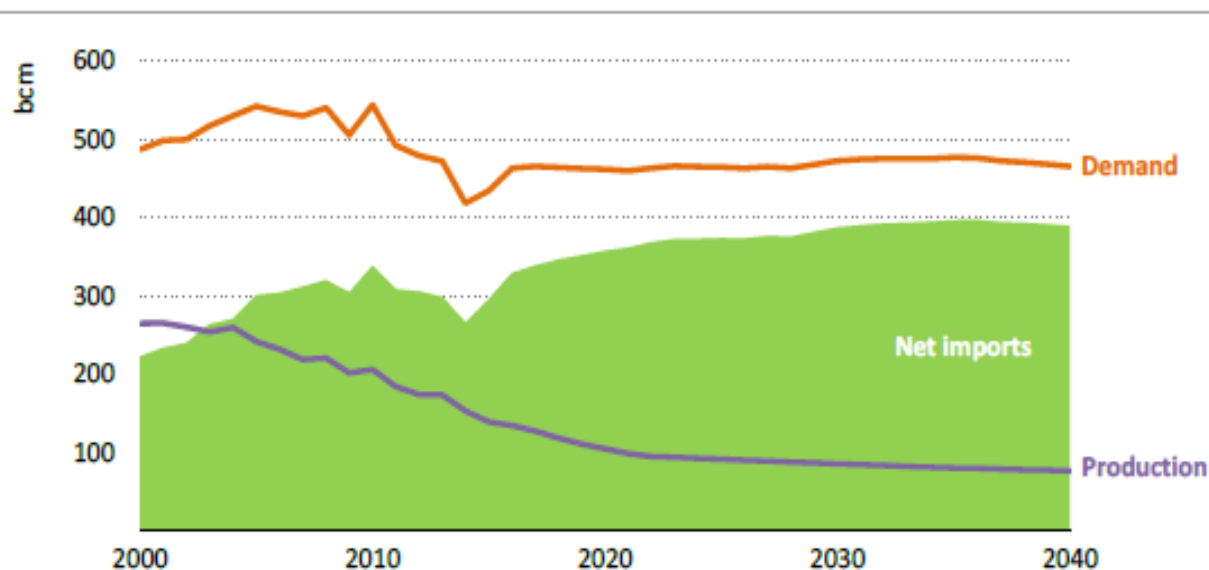
*Gas use is projected to increase by 1.6% per year, on average, in the New Policies Scenario*

Note: bcm = billion cubic metres.

Source: IEA WEO 2017

## IEA WEO 2017: European demand 'flat' (~450 bcm/a in 2040) Indigenous decline renders import requirement of ~390 bcm/a

**Figure 8.9** ▶ Natural gas balance of the European Union in the New Policies Scenario

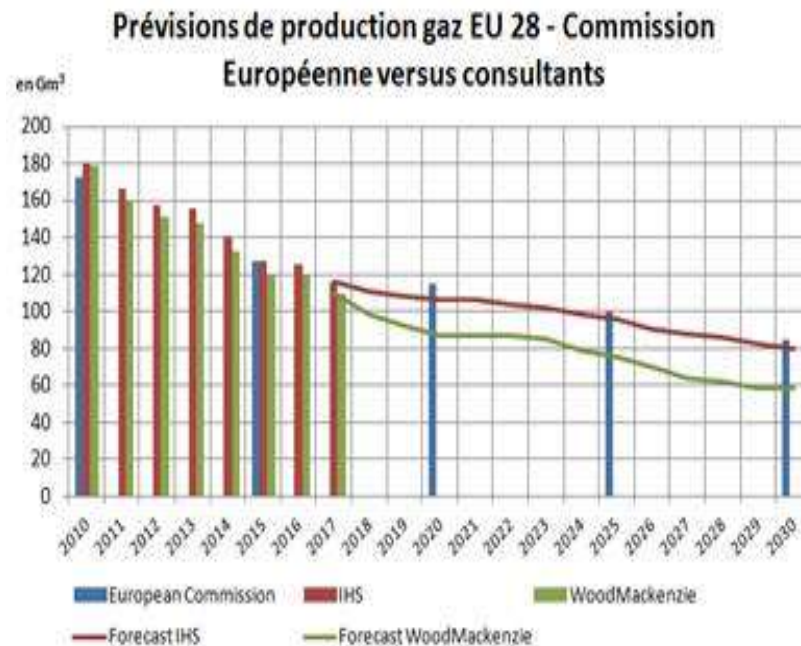
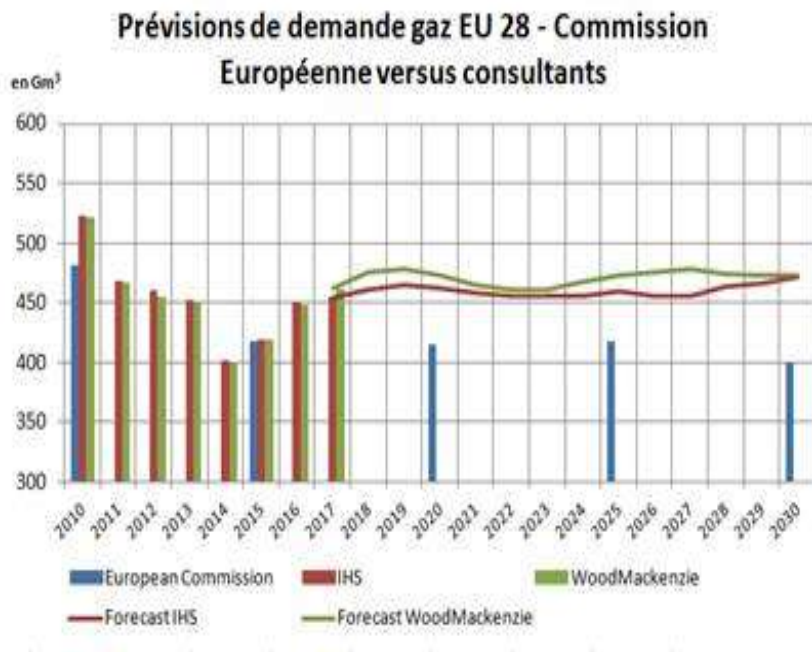


*Even with a flat demand outlook, the European Union's gas imports increase to 2040 as domestic output continues to decline*

Source: IEA WEO 2017



# EU underestimates demand and overestimates indigenous supply Deviation from 'consultant's consensus'!



Source: Engie

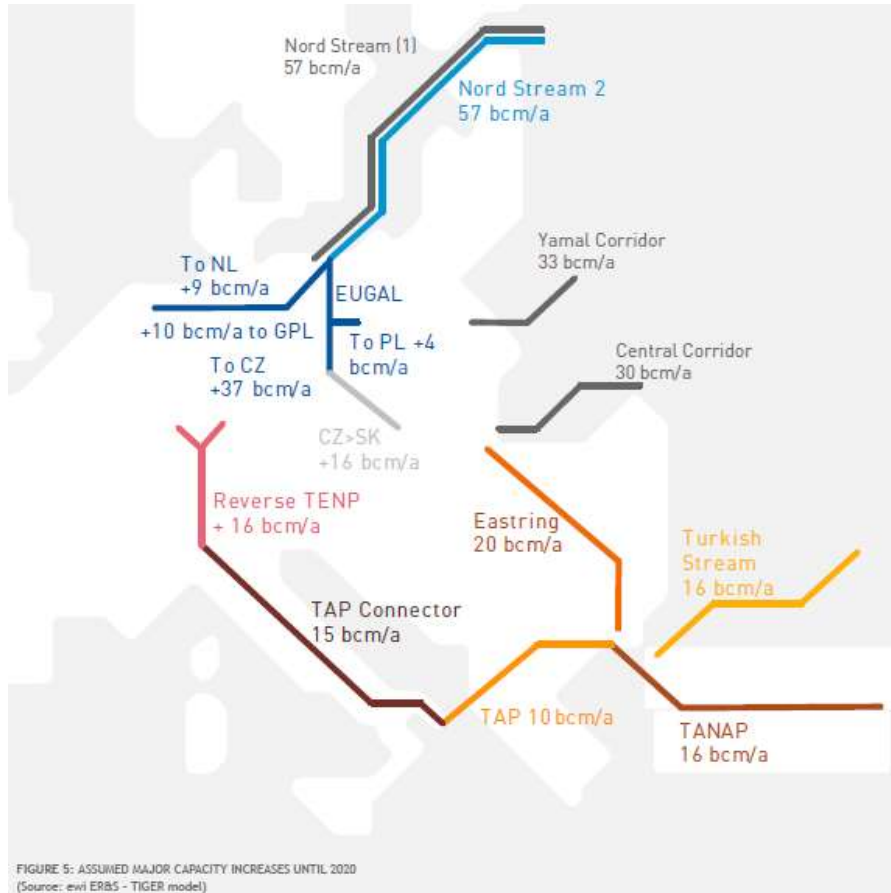


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# Supply: Europe 'cornered' by supply?

Southern Corridor; Nordstream 2; Turkstream; East-Med and ...

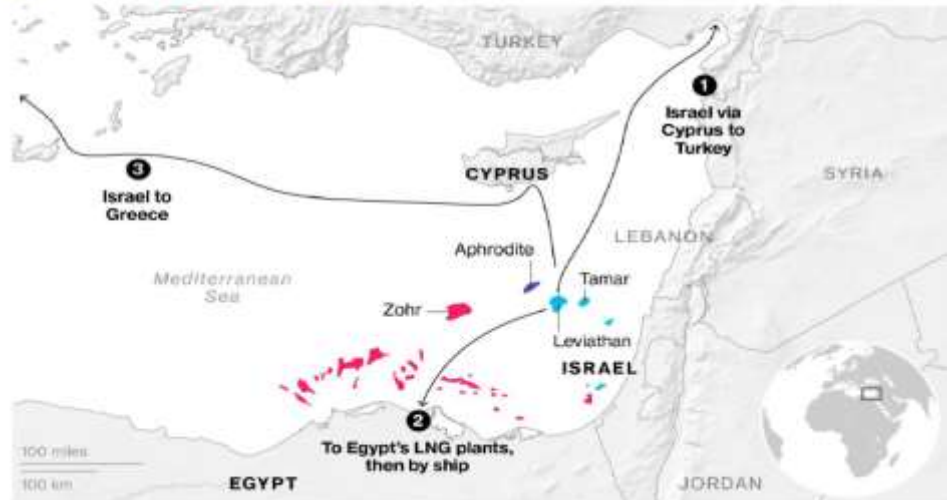


## The East Med gas pipeline options

### Routes to Europe

Possible gas pipelines from the East Mediterranean

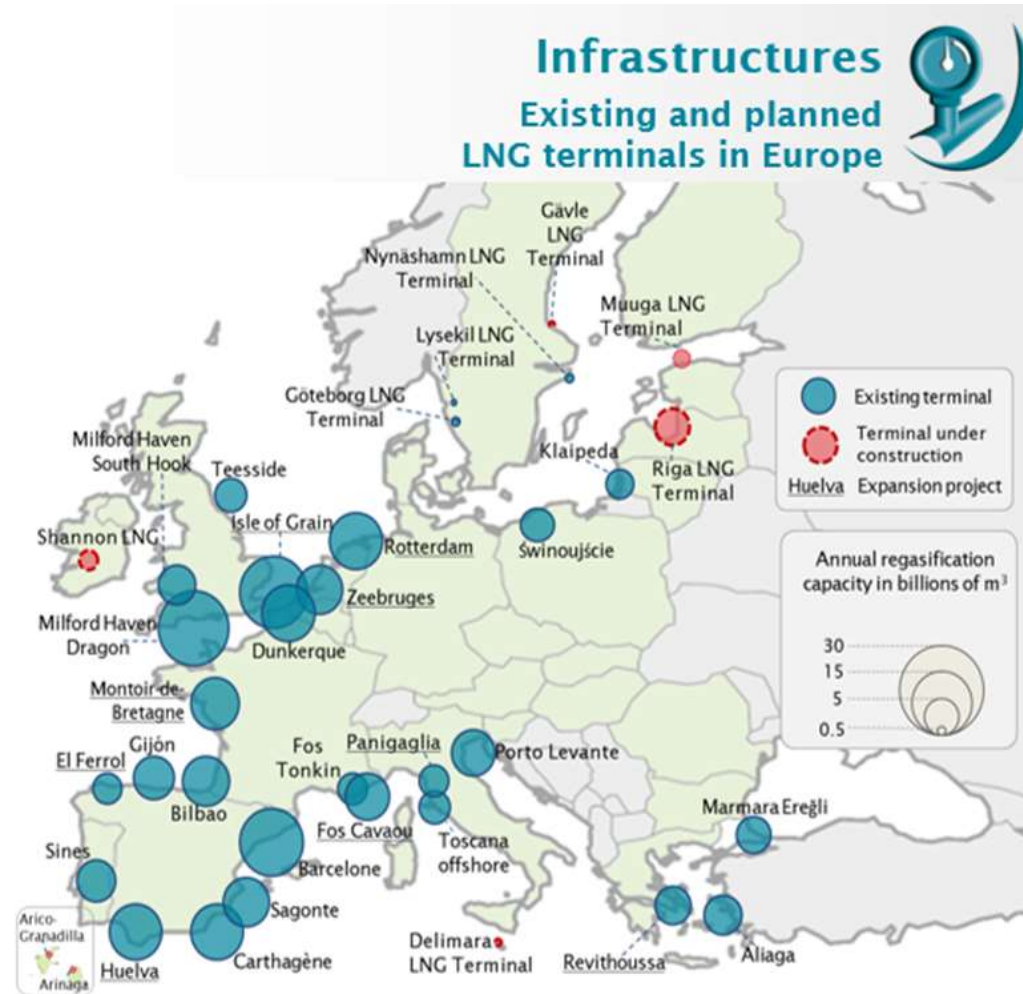
■ Cyprus field ■ Egypt field ■ Israel field ① Pipeline ordered most to least likely



Bloomberg

# Supply: Europe 'cornered' by supply?

## LNG: ~210 bcm/a of LNG regas terminals (~75% idle)



Source : GIIGNL (2016), GLE (2015)

Source: GIE LNG Map 2018

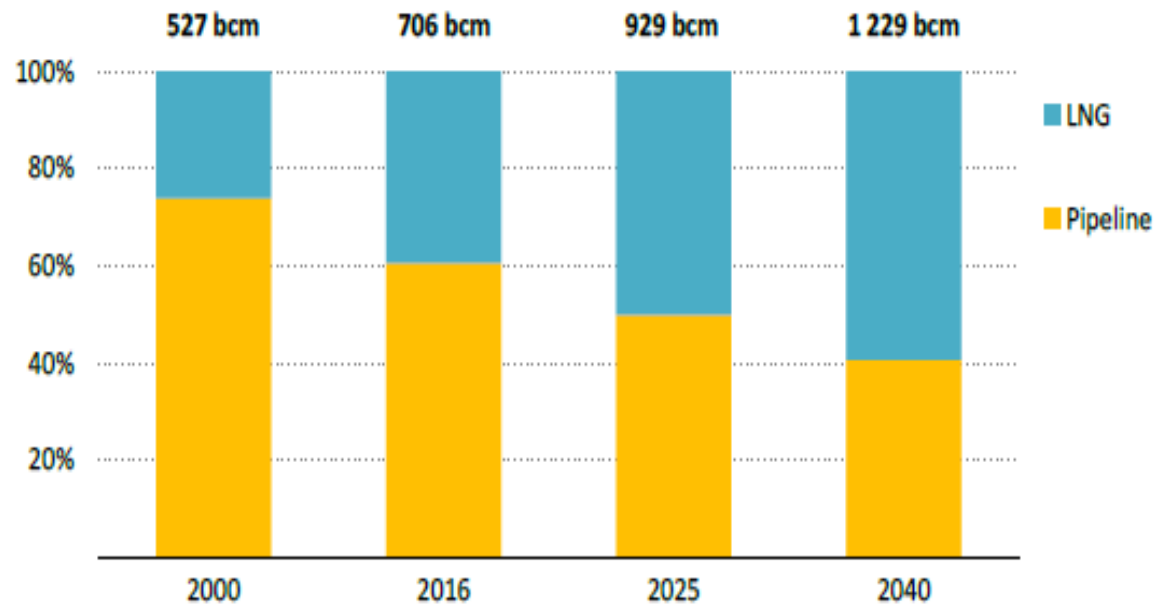
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# IEA WEO 2017: Second gas revolution

## 90% of additional gas trade through LNG

**Figure 2.16** ▶ Global gas trade by mode in the New Policies Scenario



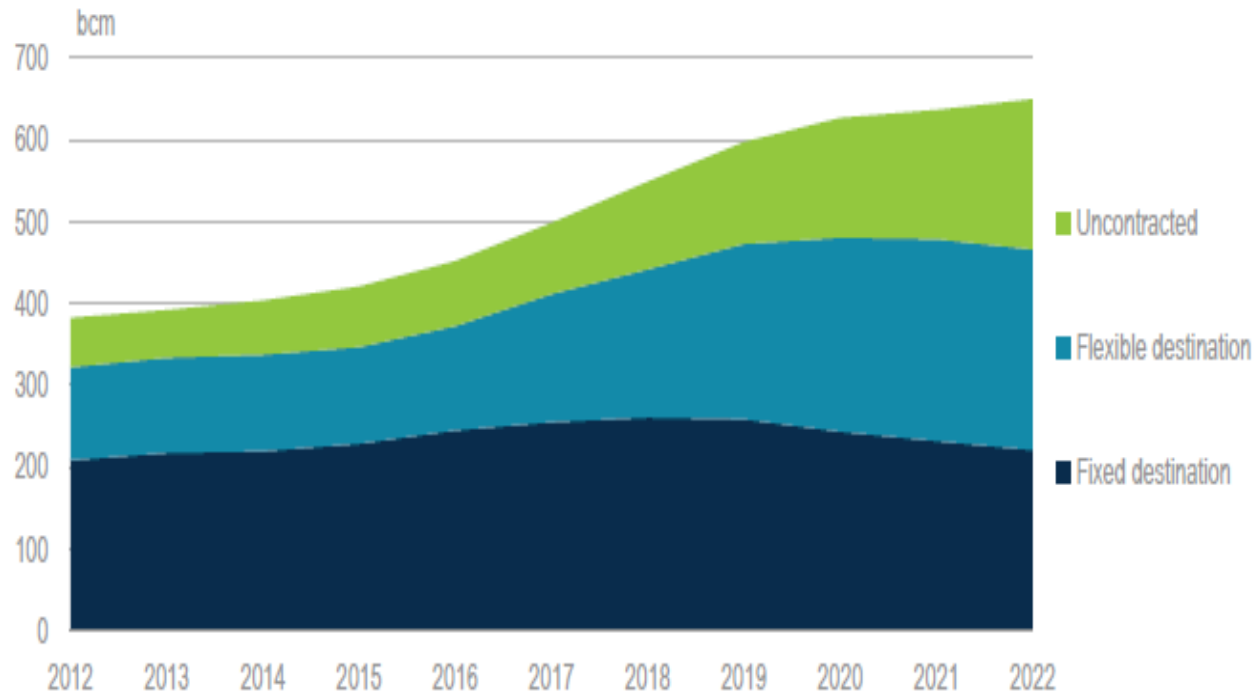
*Almost 90% of additional gas trade in the period to 2040 is in the form of LNG*

Source: IEA WEO 2017

# LNG increasingly 'destination-flexible'

## Responding to price signals

Figure 2.10 • LNG export contract volumes by destination flexibility, 2012-22



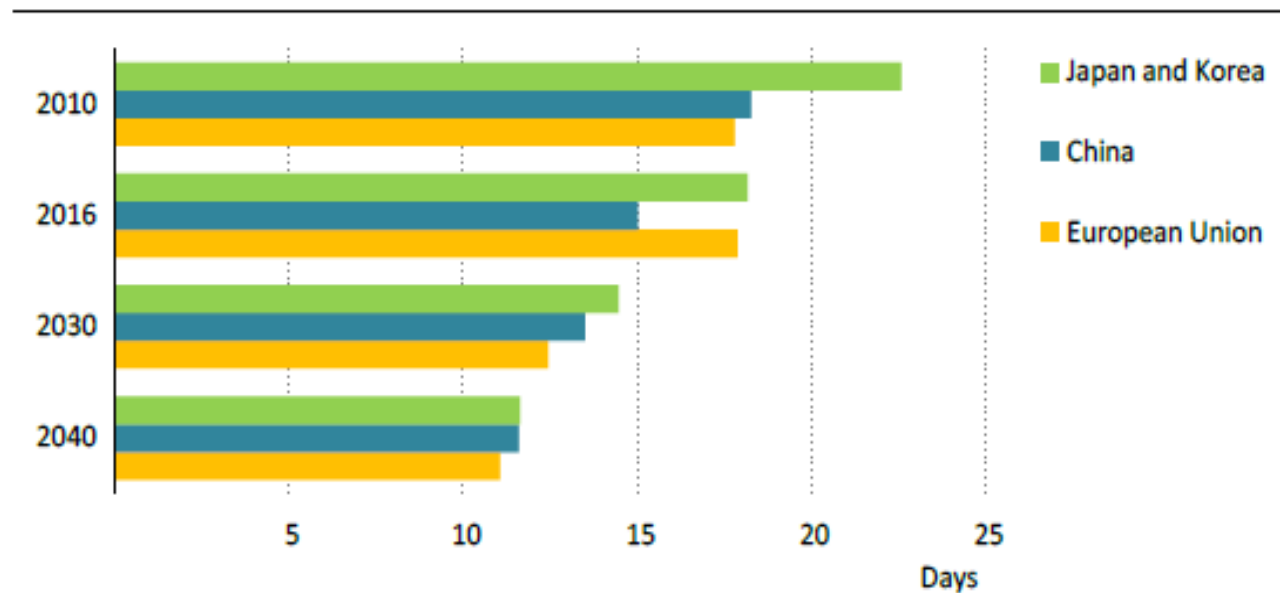
Source: IEA Global Gas Security Review 2017



# LNG response time significantly reduced

## Europe: from ~17 days in 2016 to ~12 days in 2030

**Figure 9.14** ▸ Estimated average time to procure an extra 10% of LNG import volumes by selected importer in the New Policies Scenario

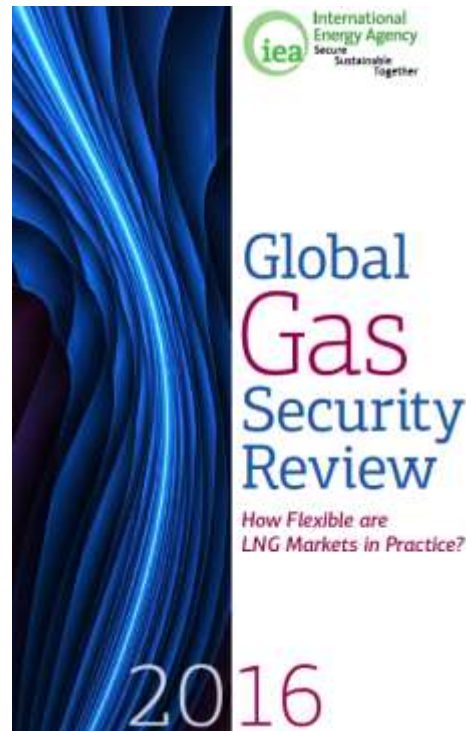


*As LNG trade expands and becomes more diversified, major LNG importers are able to meet an unforeseen 10%-spike in their LNG import demand in much less time than today*

Source: IEA WEO 2017

# LNG revolution consequence: Re-definition of security of supply

IEA: "As the role of gas ... evolves, a narrow approach to gas security focussing on gas as a stand-alone fuel in an individual region is no longer appropriate."



Source: IEA Global Gas Security Review 2016

Thanks to global LNG, threat of political blackmail gone  
Europe: allow as much supplier competition as possible  
Russian gas (e.g. Nordstream 2)? – ‘Putin phobia’ no longer justified



Ukrainian Crisis 2009: Andrej Budajew, “Putin’s recalcitrant bride”

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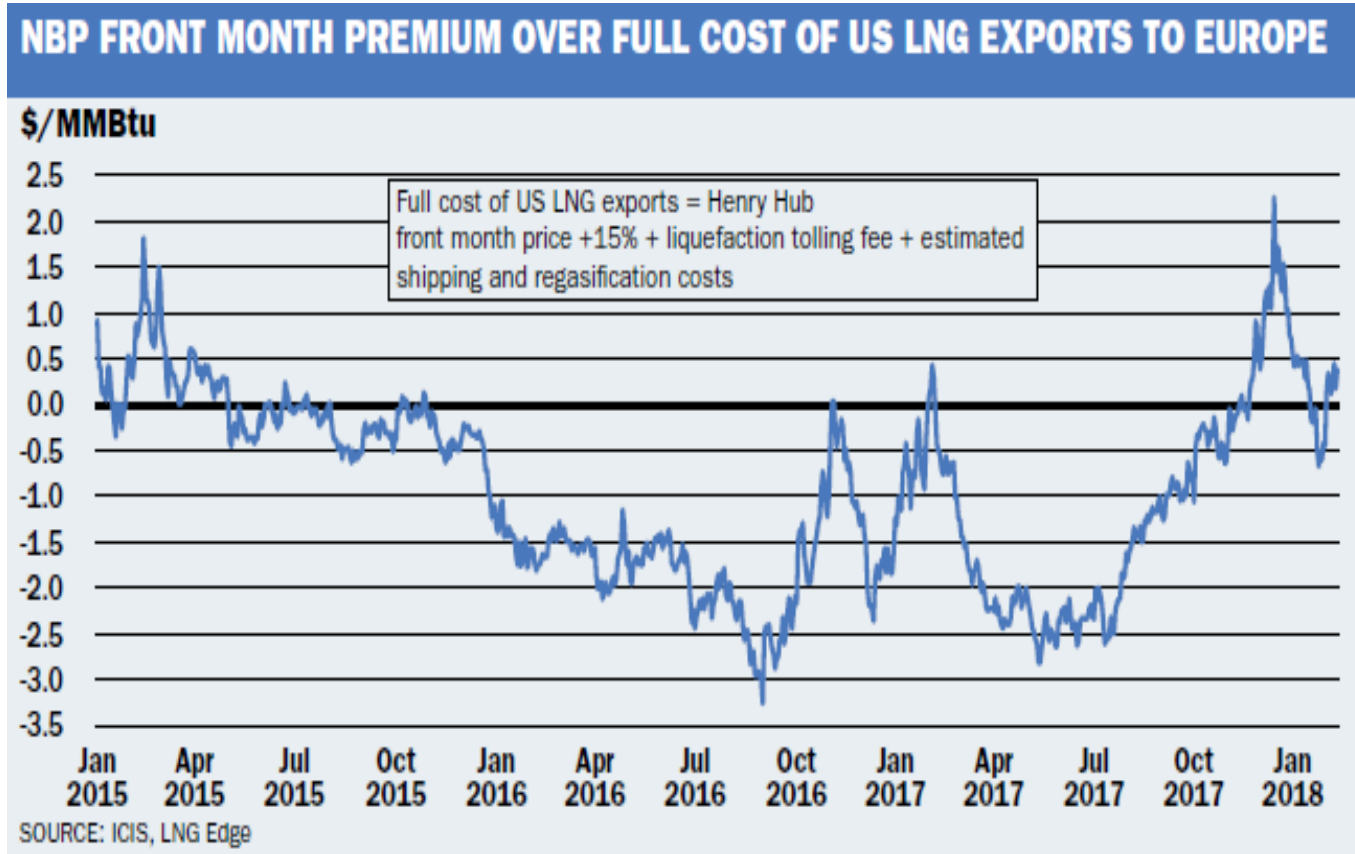
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# U.S. LNG to Europe:

HH/TTF spread of >3.95 \$/MMBtu required

Not if higher net-backs elsewhere ('money talks')

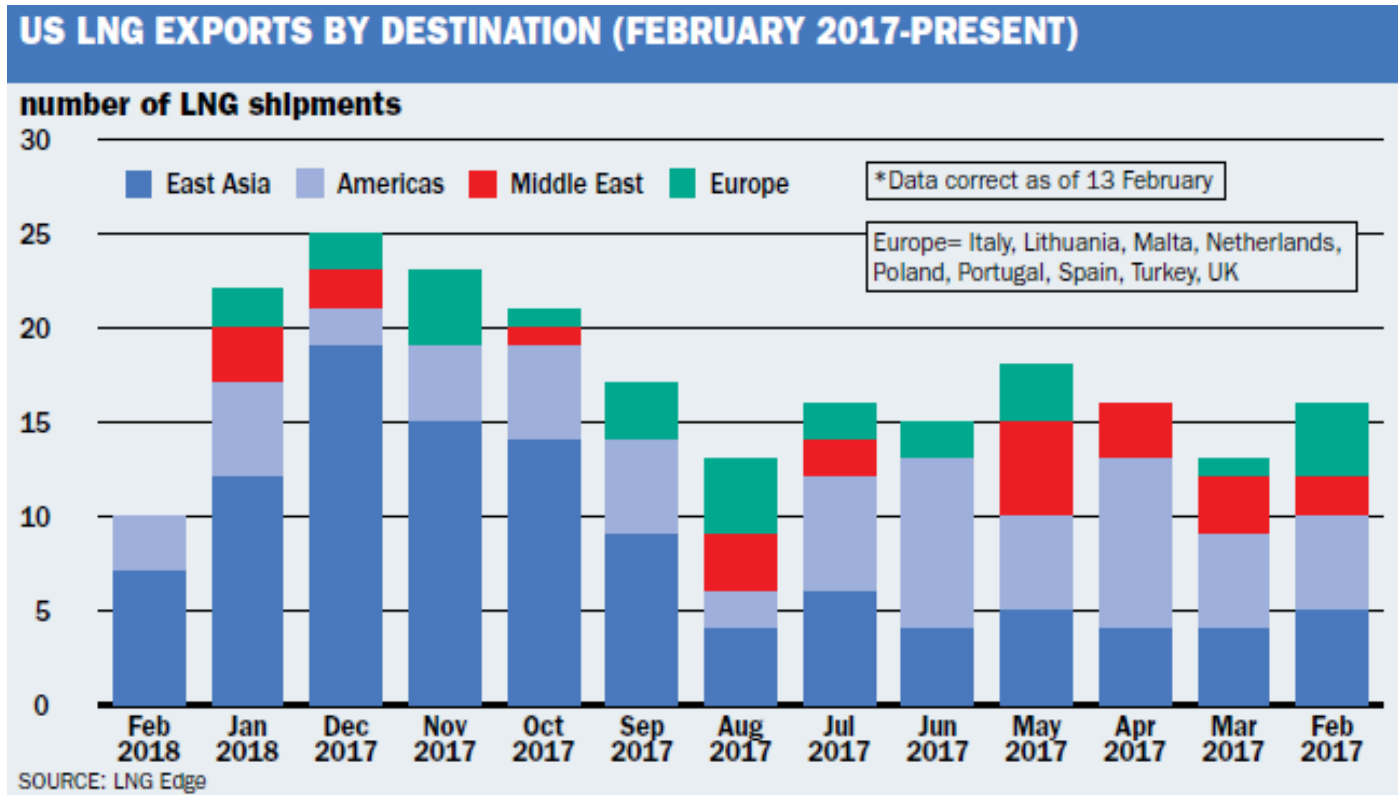
Hence, 'occasional', not 'permanent' reliance on U.S. LNG



Source: ICIS Heren, EGM 25.03

# U.S. LNG 'followed the money'

Since October 2017, 67 out of 101 Sabine Pass cargoes to East-Asia  
9 cargoes to Europe, but only Turkey, Spain, Portugal



Source: ICIS Heren, EGM 25.03

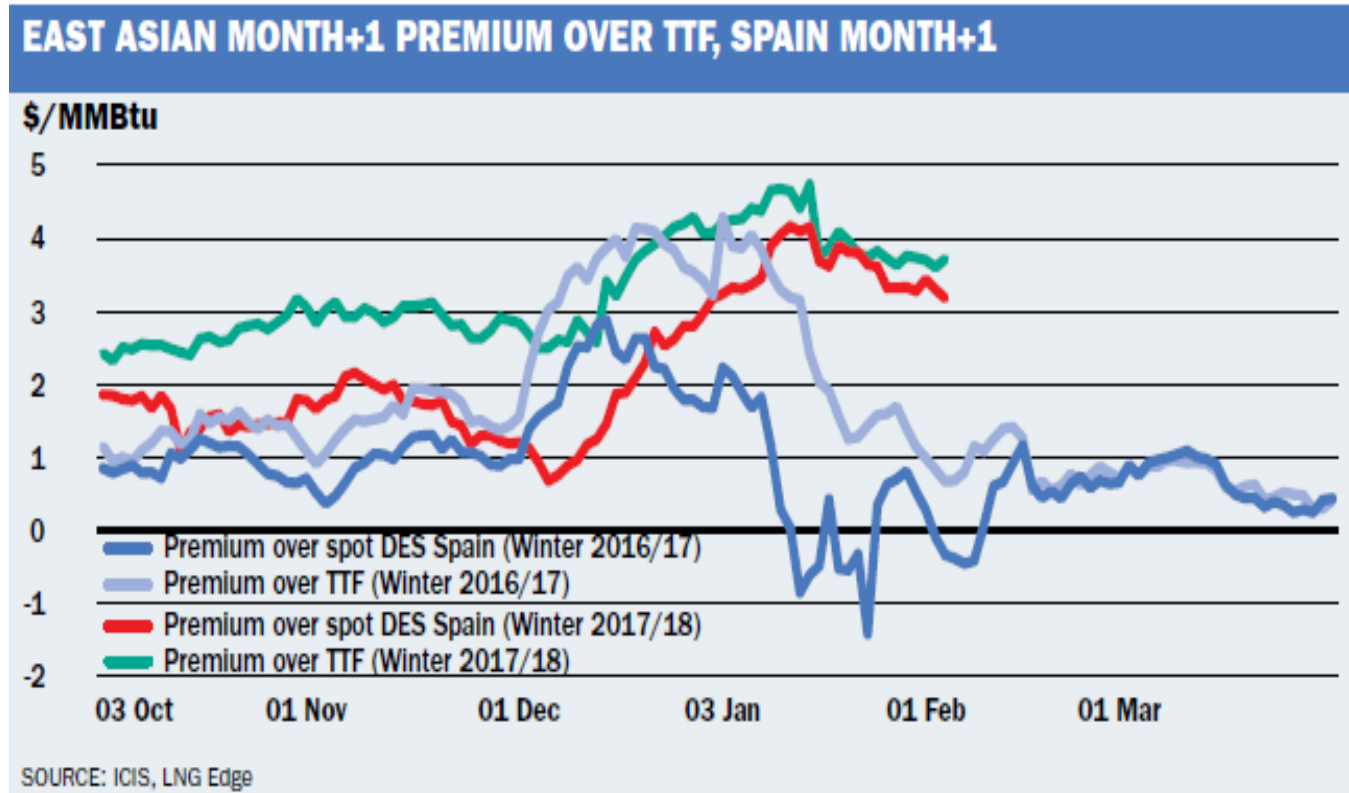


# Exclusive, permanent reliance on U.S. LNG ?

Means competing with Asia

China's LNG ramp-up caused price surge

Required premium over TTF January 2018 av. 4.12 \$/MMBtu



Source: ICIS Heren, EGM 25.03

**Competing with Asia would have been costly for Europe:**  
TTF settled price January 2018: 7.077 \$/MMBtu  
Required TTF price level to compete: 11.197 \$/MMBtu (31.598 €/MWh)  
**I.e. TTF price level would have had to be >50% higher**

KEY OIL AND GAS PRICES 20 DECEMBER 2017		
Contract	€/MWh	\$/MMBtu
ICIS Heren NBP Jan '18	23,184	8.088
ICIS Heren TTF Jan '18	20,288	7.077
ICIS Heren RU-DE Contract Jan '18	17,950	6.200
ICIS Heren NO-DE Contract Jan '18	20,176	6.970
ICIS Heren NL-DE Contract Jan '18	20,887	7.215
ICIS Heren AL-SP LNG Contract Jan '18	17,915	6.189
NYMEX Henry Hub Jan '18	7,717	2.692

Source: ICIS Heren, EGM 24.22



For further ‘bed-time reading’ on the subject:

**‘Implications of a global gas market for traditional gas  
economical paradigms’,  
by Wolfgang Peters, in February 2018**

[http://gasvaluechain.com/cms/wp-content/uploads/2018/03/2018-02-20-Implications-Global-Gas-Market...-W.Peters\\_Gas-Value-Chain.pdf](http://gasvaluechain.com/cms/wp-content/uploads/2018/03/2018-02-20-Implications-Global-Gas-Market...-W.Peters_Gas-Value-Chain.pdf)

Also in: <https://www.naturalgasworld.com/ggp-implications-of-a-global-gas-market-for-traditional-gas-economical-paradigms-59197>