A Paris compatible gas market?

Friends of the Earth Europe

EESC public hearing on "**European Gas Market Policy between Market Integration and External Energy Policy – Amending the Gas Market Directive**"

How is the EU gas market today?
Fine, thank you.

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Figure 16 – Access to only at least 3 sources, whole year (source: ENTSO-G)

Figure 17 – RU dependence, 2020 situation, whole year (source: ENTSO-G)

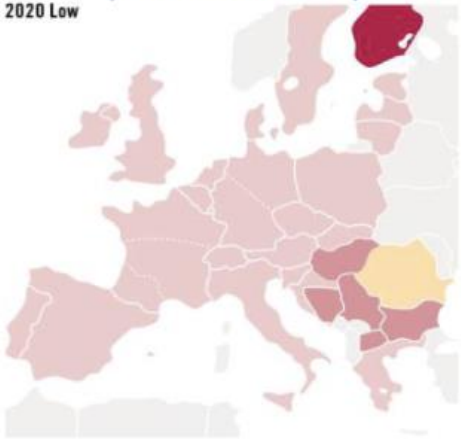

Figure 18 – N-1 scenario, 2017 situation, peak demand (source: ENTSO-G)

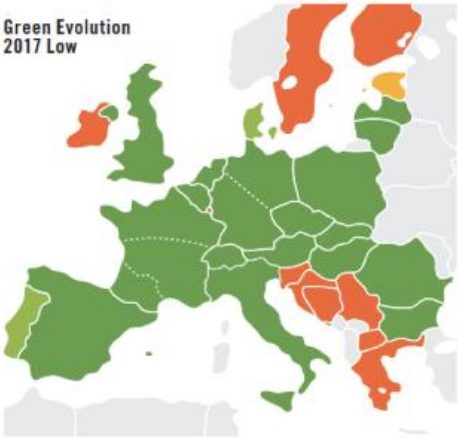

Figure 19 – irreducible dependence on LNG, whole year (source: ENTSO-G)

How is the EU gas market today?
Fine, thank you.

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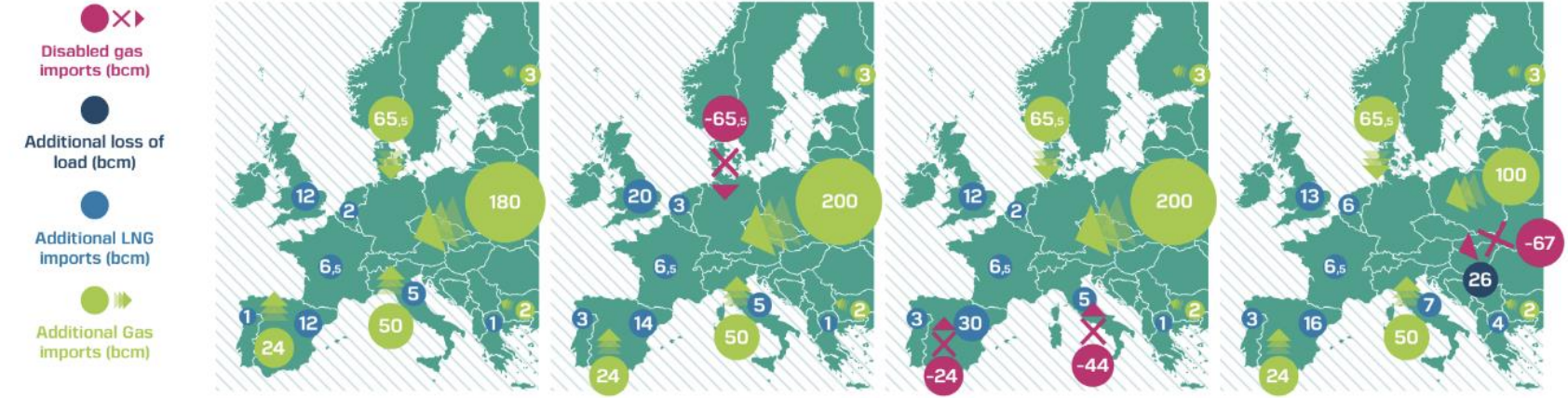


Scenario	Extreme cold	Norway disruption	North Africa disruption	Ukraine disruption
Finding	Little or no disruption in any demand scenario	Little or no disruption in any demand scenario	Little or no disruption in any demand scenario	Significant disruption in South East Europe; little or no disruption elsewhere

Figure 2: Gas imports and loss of load under extreme conditions (Current Trends, 2030).

How is the EU gas market today? Fine, thank you.

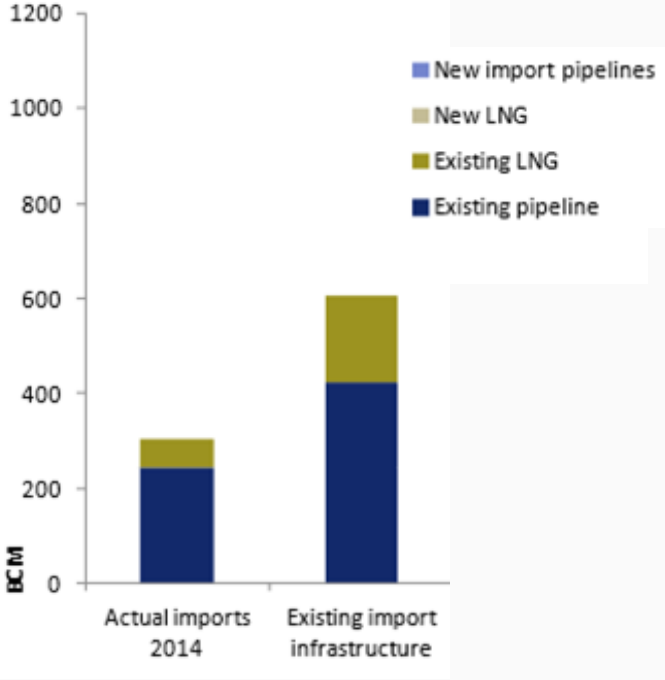
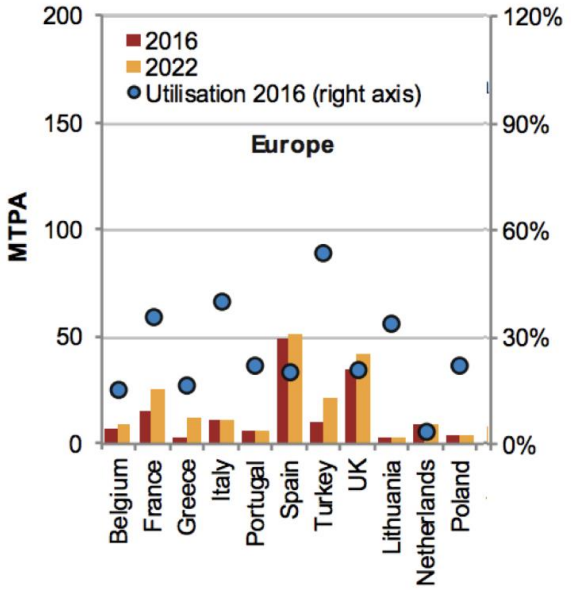
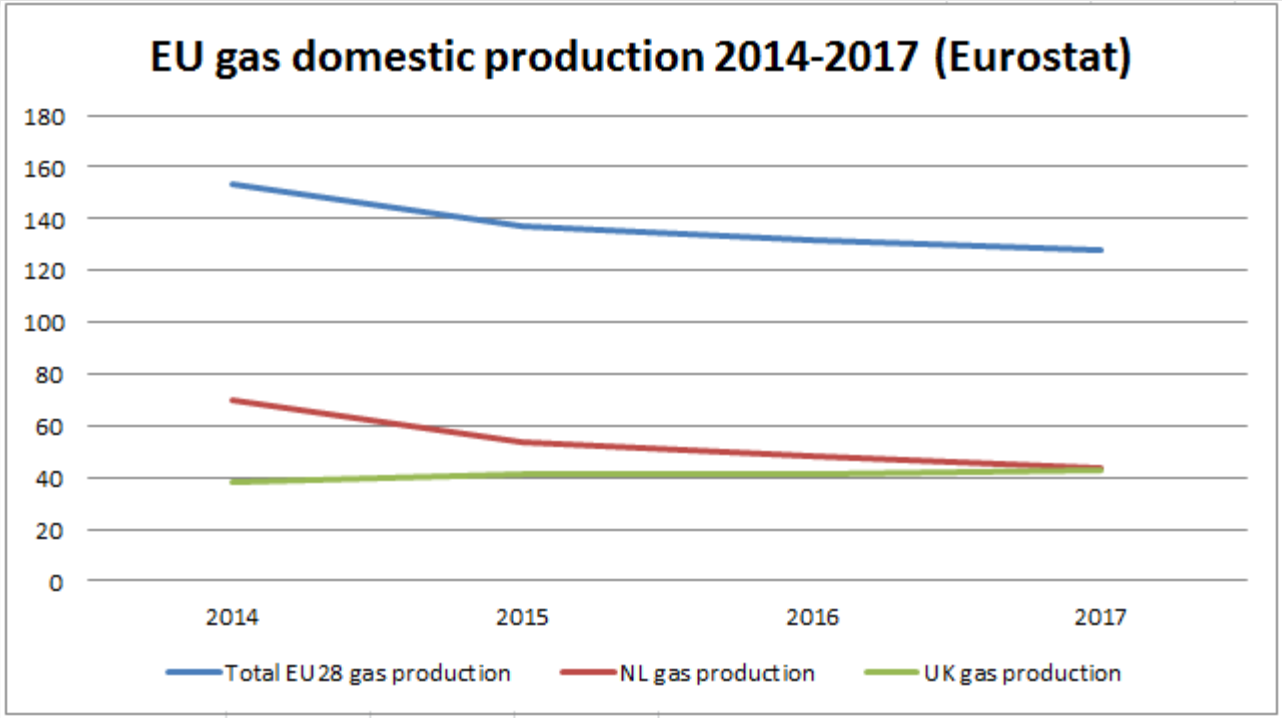


Figure 18 –LNG terminal utilization rates

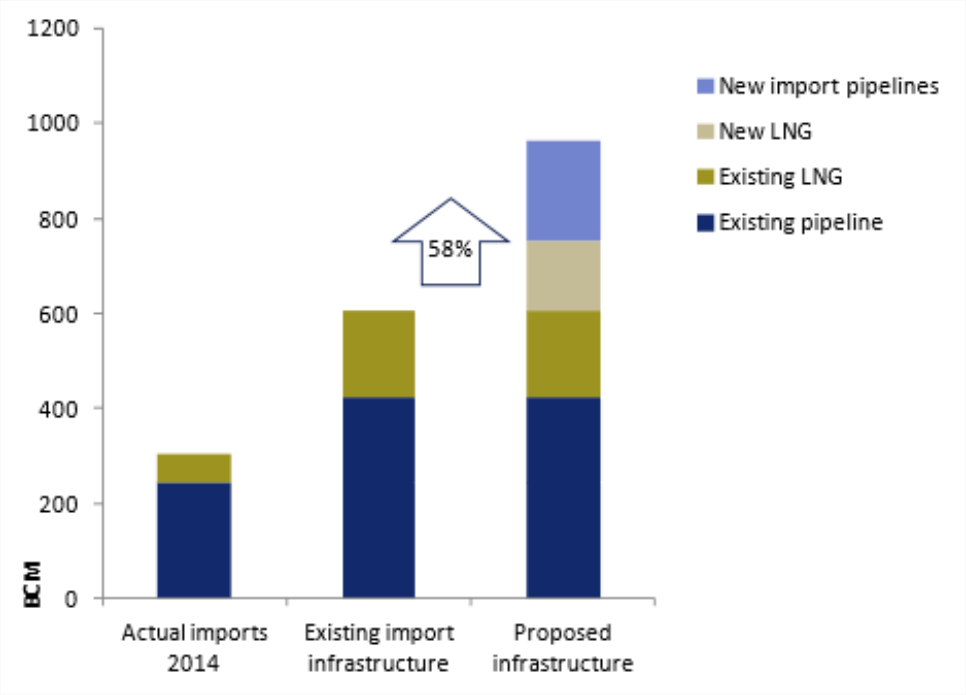


Sources: IHS Markit, IGU, Company Announcements

One real problem:
The decline of EU gas domestic production



Dash for new gas infrastructure…



- **<u>New gas infrastructure – The new catch-all solution:</u>**
  - Everyone wants to be the new European hub
  - Worst case scenarios are used to justify any new project
  - Gas = Solution to energy security, to cheap energy, to climate change, etc

- **<u>Discussion on gas pipelines with a supply-side approach only:</u>**
  - more pipelines to compensate decline of domestic production,
  - more pipelines to further diversify gas supplies,
  - more pipelines to reduce dependence on Russian gas

… but another approach is possible

- A more **integrated approach** (gas + electricity) can seriously reduce needs for new gas investments
- A **demand-side approach** can reduce it even more significantly:

… but another approach is possible

Of course, the cleanest and cheapest way to decarbonise our energy system is by reducing our energy consumption: for every 1% improvement in energy efficiency, EU gas imports fall by 2.6%.

(Marrakesh, November 14th 2016)

Our energy policy should take "efficiency first" as its abiding motto.

Before importing more gas or generating more power, we should ask ourselves: "can we take cost-effective measures to reduce our energy use that will also increase our competitiveness?"

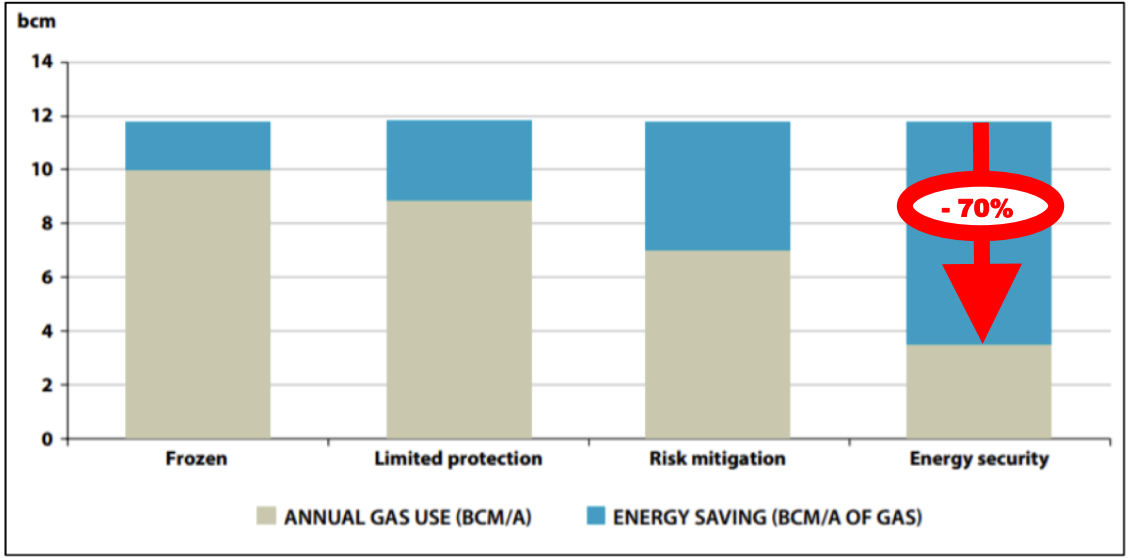
(Riga, February 6th 2015)

… but another approach is possible

Figure 9 - Costs and savings of buildings' renovation within 20 years in South Eastern Europe (source: BPIE)

COSTS AND SAVINGS € billion – Present value	Frozen	Limited protection	Risk mitigation	Energy security
Investments	22	31	47	81
Avoided energy costs	23	42	70	106

Figure 8 - Impact of renovation scenarios on gas demand within 20 years in South Eastern Europe (source: BPIE)



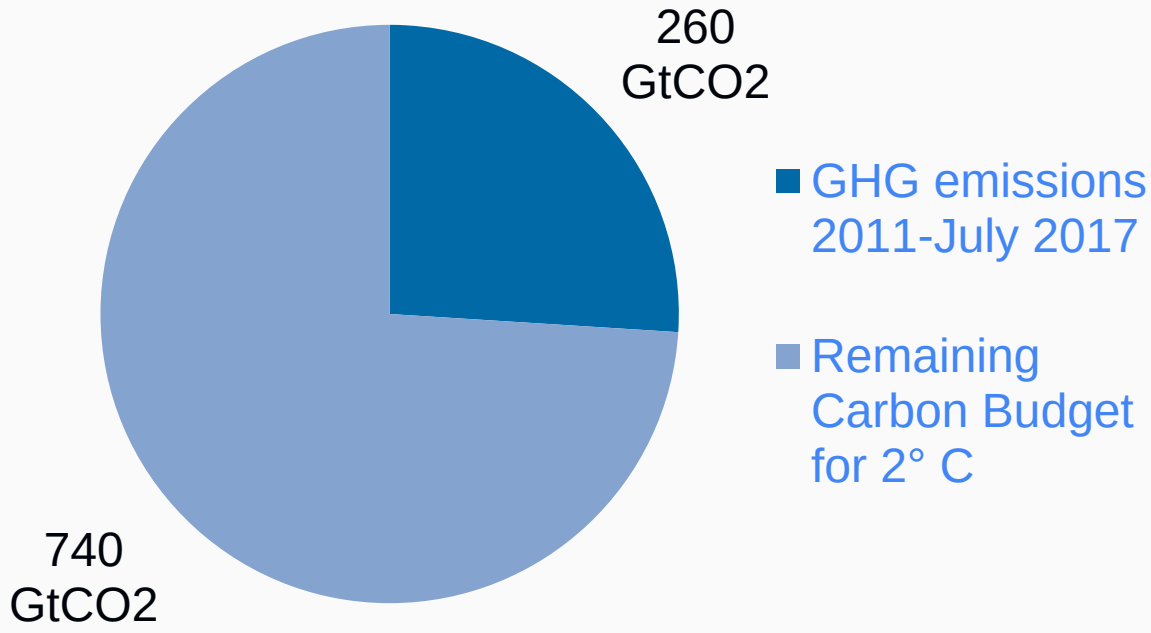
– Gas and climate –

The white elephant of this gas market debate

Paris Agreement

- Parties committed to *'holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial temperatures*'
- But.. we're on course for **3.2°C** of warming *if* all the Paris pledges to reduce emissions are kept (UNEP)
- We could be heading for **5°C** of warming if they are not

Problem:
Our 2°C global carbon budget melts like snow in the sun



Gas is <u>not</u> a low carbon fossil fuel

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ARTICLE

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Reduced biomass burning emissions reconcile conflicting estimates of the post-2006 atmospheric methane budget

John R. Worden[1], A. Anthony Bloom[1], Sudhanshu Pandey[2,3], Zhe Jiang[1,4], Helen M. Worden[4], Thomas W. Walker[1], Sander Houweling[2,3,5] & Thomas Röckmann[3]

Several viable but conflicting explanations have been proposed to explain the recent ~8 p.p.b. per year increase in atmospheric methane after 2006, equivalent to net emissions increase of ~25 Tg CH_4 per year. A concurrent increase in atmospheric ethane implicates a fossil source; a concurrent decrease in the heavy isotope content of methane points toward a biogenic source, while other studies propose a decrease in the chemical sink (OH). Here we show that biomass burning emissions of methane decreased by 37 (±14) Tg CH_4 per year from the 2001-2007 to the 2008-2014 time periods using satellite measurements of CO and CH_4, nearly twice the decrease expected from prior estimates. After updating both the total and isotopic budgets for atmospheric methane with these revised biomass burning emissions (and assuming no change to the chemical sink), we find that fossil fuels contribute between 12-19 Tg CH_4 per year to the recent atmospheric methane increase, thus reconciling the isotopic- and ethane-based results.

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- Fossil gas is methane (CH4) which emits significant volumes of CO2 when burnt
- Methane is a dangerous greenhouse gas – GWP 86 times higher than CO2 (20 years)
- Though more short-lived in the atmosphere (12yrs)
- And **gas leaks** – all along the production and distribution system

New NASA study analysing the boom of global methane emissions since 2006:

- Atmospheric methane emissions have been rising by about 25 teragrams each year
- About 17 teragrams per year of the increase is due to fossil fuels (mostly gas)

- Methane emissions from natural gas, oil and coal production and their usage can be up to 60% greater than inventories.

Methane leakage
A problematic lack of acknowledgement

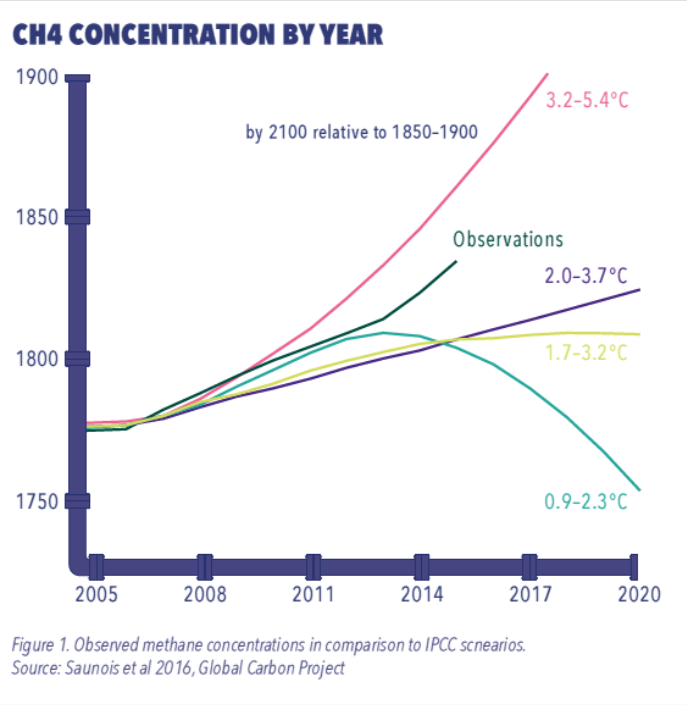
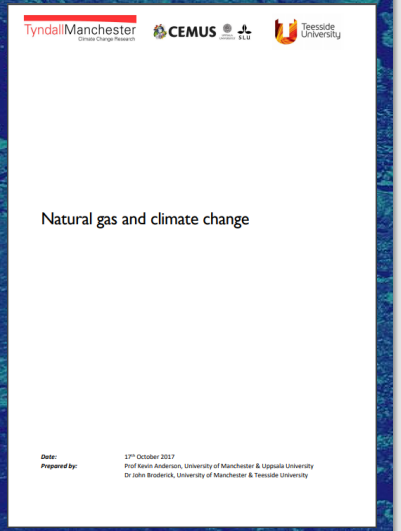


Figure 1. Observed methane concentrations in comparison to IPCC scnearios.
Source: Saunois et al 2016, Global Carbon Project

- Methane concentration at the upper end of IPCC scenarios
- Mounting scientific evidence showing that methane emissions from natural gas, oil and coal production and their usage can be up to 60% greater than inventories.

Gas is <u>not</u> a low carbon fossil fuel



<u>Tyndall Center scientific study concludes:</u>

- EU's 2°C carbon budget: 23-32 bn tonnes of CO2
- At current level of emissions, Europe has at most 9 years of energy-only emissions left before its 2°C carbon budget runs out
- 12 years at best if complete switch from coal/oil to gas

<u>To meet Paris commitments, the EU should:</u>

- Mitigate at >12 to 16% p.a. starting now
- 75% reduction in CO2 by 2025
- Fully decarbonised energy system by 2035-2040

→ It is therefore not (and should not be) about new pipelines, debate should be about what we will do with our gas system in an inevitable post-fossil fuel era.

Thank you

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IPCC Carbon budgets: 1000GtCO2 for 2°C

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Table 2.2 | Cumulative carbon dioxide (CO_2) emission consistent with limiting warming to less than stated temperature limits at different levels of probability, based on different lines of evidence. *[WGI 12.5.4, WGIII 6]*

Cumulative CO_2 emissions from 1870 in $GtCO_2$									
Net anthropogenic warming [a]	<1.5°C			<2°C			<3°C		
Fraction of simulations meeting goal [b]	66%	50%	33%	66%	50%	33%	66%	50%	33%
Complex models, RCP scenarios only [c]	2250	2250	2550	2900	3000	3300	4200	4500	4850
Simple model, WGIII scenarios [d]	No data	2300 to 2350	2400 to 2950	2550 to 3150	2900 to 3200	2950 to 3800	n.a. [e]	4150 to 5750	5250 to 6000
Cumulative CO_2 emissions from 2011 in $GtCO_2$									
Complex models, RCP scenarios only [c]	400	550	850	1000	1300	1500	2400	2800	3250
Simple model, WGIII scenarios [d]	No data	550 to 600	600 to 1150	750 to 1400	1150 to 1400	1150 to 2050	n.a. [e]	2350 to 4000	3500 to 4250
Total fossil carbon available in 2011 [f]: 3670 to 7100 $GtCO_2$ (reserves) and 31300 to 50050 $GtCO_2$ (resources)									

Europe's carbon budget: Anderson & Broderick

Based on:

- Non-OECD peak emissions between 2021 & 2025 + mitigation far beyond their Paris NDCs
- Three estimates of Europe's share of the OECD carbon budget (grandfathering, population, GDP)

= EU's carbon budget of 23 and 32 billion tonnes of CO2

To harmonize gas prices? – Gas hub prices convergence already happening

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Figure 13 - Comparison of wholesale gas prices in Europe between 2013 and 2015 (Source: EC internal assessment)

Because LNG is good and efficient and because US shale gas is cheap – No and No.

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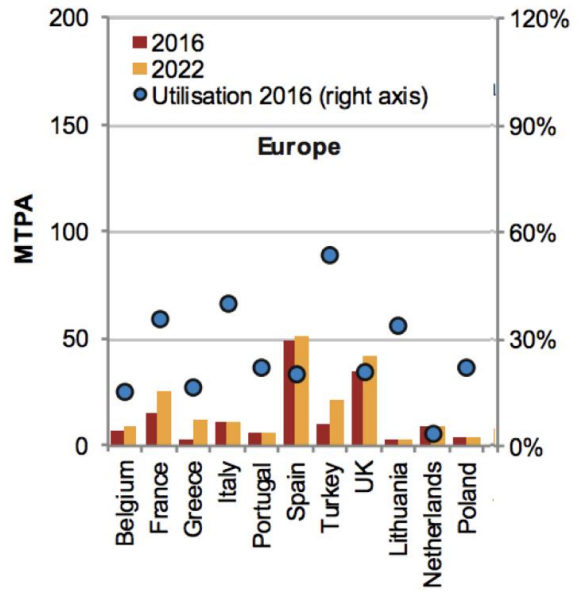
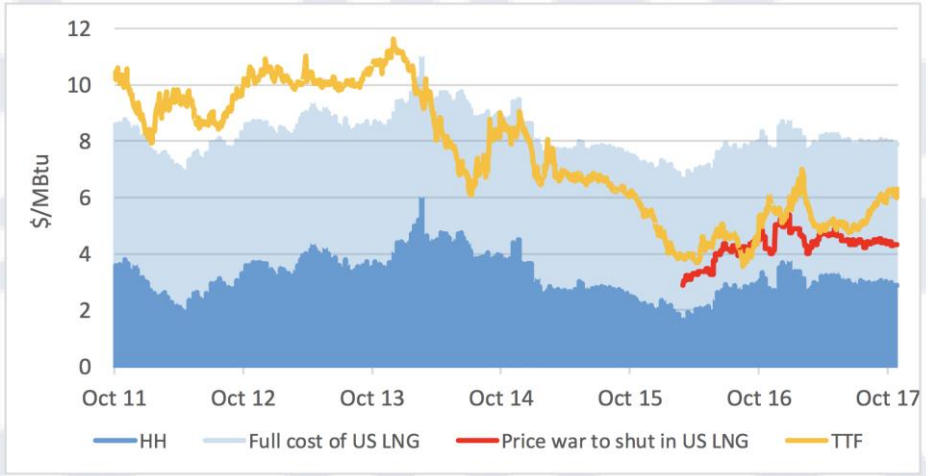
Figure 18 –LNG terminal utilization rates



Sources: IHS Markit, IGU, Company Announcements

US LNG vs Russian pipe - Prices



Source: Argus, thierrybros.com