The Relevance of US Sanctions in the context of an evolving global gas market

4th London Gas & LNG Forum 2017

London, 13 September 2017

Dr. Wolfgang Peters, MBA

Managing Director, The Gas Value Chain Company GmbH, Germany

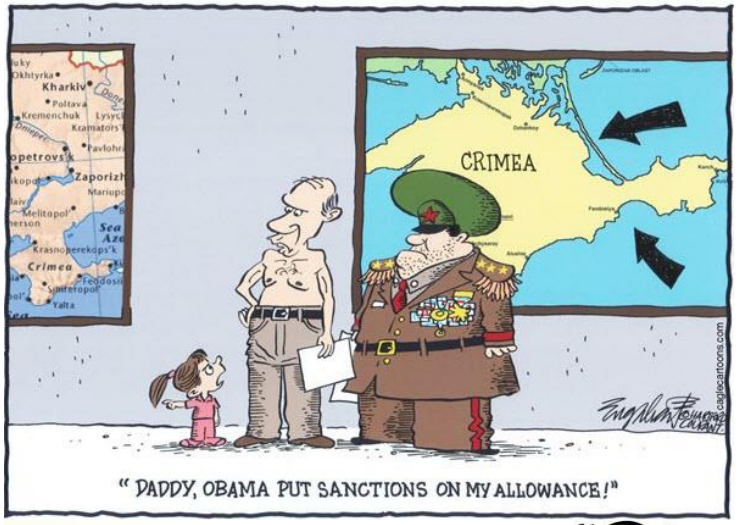
Former CEO, RWE Supply & Trading CZ, a.s., Czech Republic

Agenda

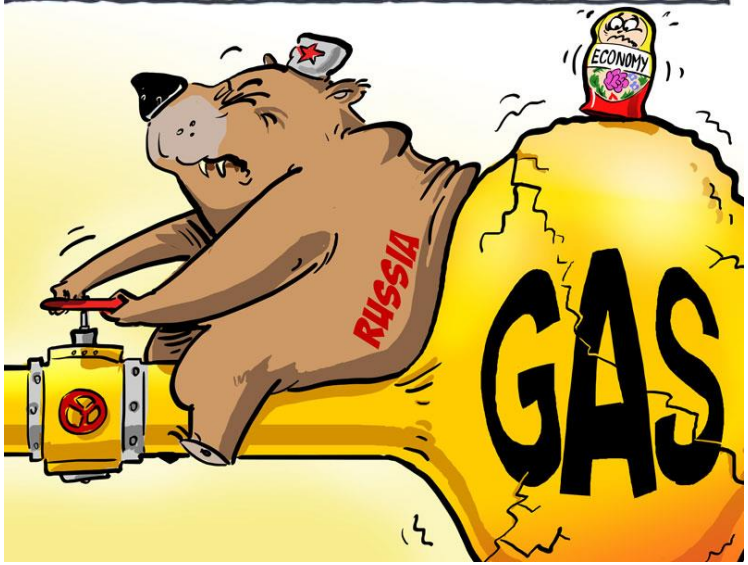
- Introduction: which sanctions?
- Emergence of global gas market: LNG ‘revolution’
- LNG revolution: Price ‘spreads’ vs. price regions
- Security of supply now function of price signals
- Europe: Price signals & redundant import capacity
- E.g. Lithuania: benefitting from LNG opportunities
- US LNG exports: ‘money talks’ – not sanctions
- Much ado about nothing: Nordstream 2
- Security of demand: e.g. German ‘Energiewende’

Introduction: Which sanctions?

- **Crimea: breach of peace after 60 years cannot be tolerated**



- **'Help' US LNG exports: Someone overlooked the state of the global gas market**



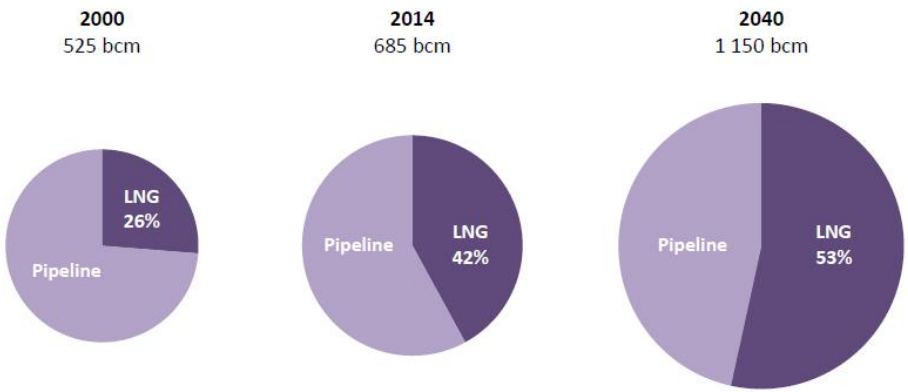
Agenda

- Introduction: which sanctions?
- Emergence of global gas market: LNG ‘revolution’
- LNG revolution: Price ‘spreads’ vs. price regions
- Security of supply now function of price signals
- Europe: Price signals & redundant import capacity
- E.g. Lithuania: benefitting from LNG opportunities
- US LNG exports: ‘money talks’ – not sanctions
- Much ado about nothing: Nordstream 2
- Security of demand: e.g. German ‘Energiewende’

IEA WEO 2016: LNG 'revolution'

LNG to overtake piped gas in global trade
Flexible to price signals: No destination restrictions ('FOB')

Share of LNG in global long-distance gas trade



Contractual terms and pricing arrangements are all being tested as new LNG from Australia, the US & others collides into an already well-supplied market

Source: IEA WEO 2016

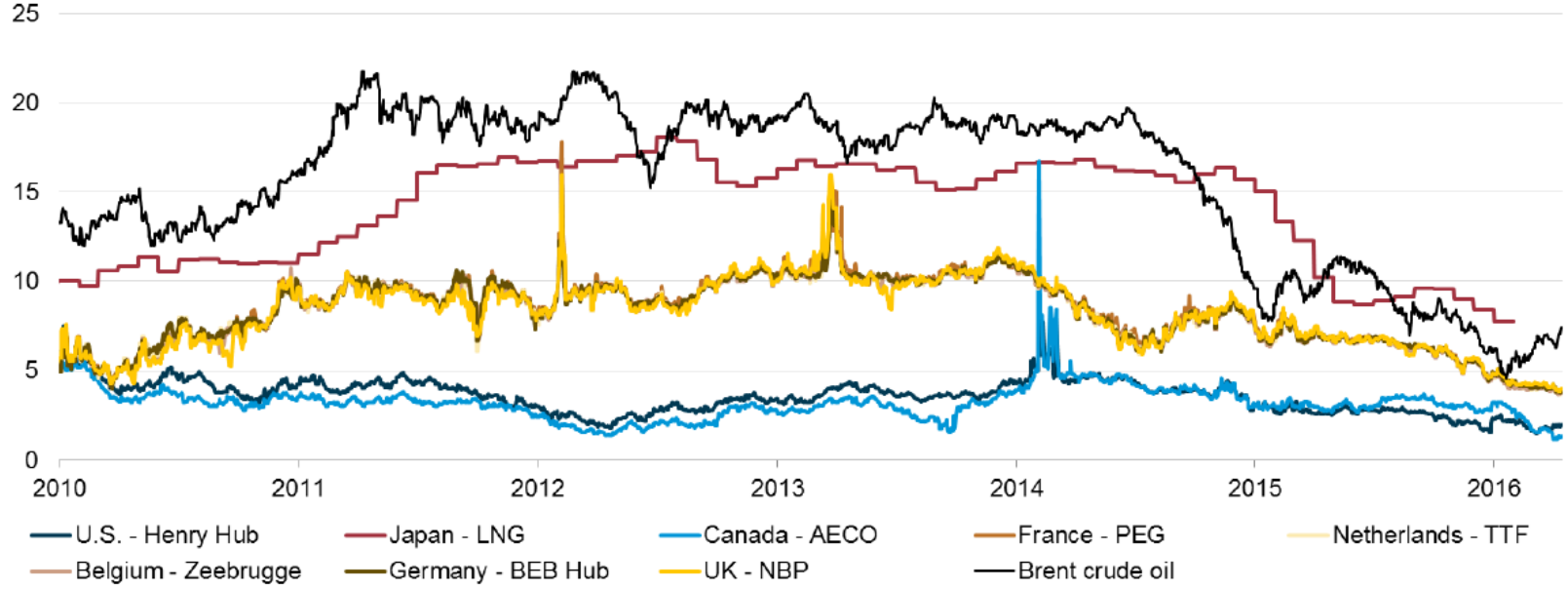
LNG ‘revolution’: price spreads vs. price regions

Spread arbitrage causes price convergence

North American natural gas prices are low compared to prices in the rest of the world, although spreads have narrowed recently

select global natural gas and crude oil prices with average monthly LNG prices in Japan

U.S. dollars per million British thermal unit



Source: EIA, Bloomberg L.P.

Source: EIA 2016

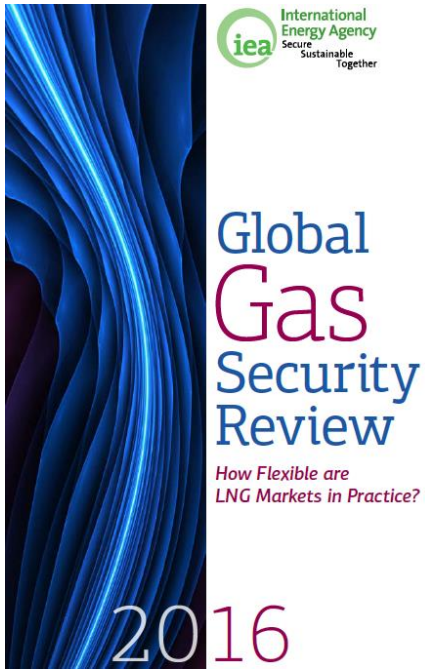
Agenda

- Introduction: which sanctions?
- Emergence of global gas market: LNG ‘revolution’
- LNG revolution: Price ‘spreads’ vs. price regions
- Security of supply now function of price signals
- Europe: Price signals & redundant import capacity
- E.g. Lithuania: benefitting from LNG opportunities
- US LNG exports: ‘money talks’ – not sanctions
- Much ado about nothing: Nordstream 2
- Security of demand: e.g. German ‘Energiewende’

IEA on security of supply:

Regional approach no longer appropriate

"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."



SoS has transformed from bi-lateral physical dependency to a functionality of price signals in an integrated traded market

Exposure to political blackmail concerns less relevant

Ukrainian Crisis 2009: Andrej Budajew, "Putin's recalcitrant bride"

Agenda

- Introduction: which sanctions?
- Emergence of global gas market: LNG ‘revolution’
- LNG revolution: Price ‘spreads’ vs. price regions
- Security of supply now function of price signals
- Europe: Price signals & redundant import capacity
- E.g. Lithuania: benefitting from LNG opportunities
- US LNG exports: ‘money talks’ – not sanctions
- Much ado about nothing: Nordstream 2
- Security of demand: e.g. German ‘Energiewende’

Europe: price signals & redundant import capacities

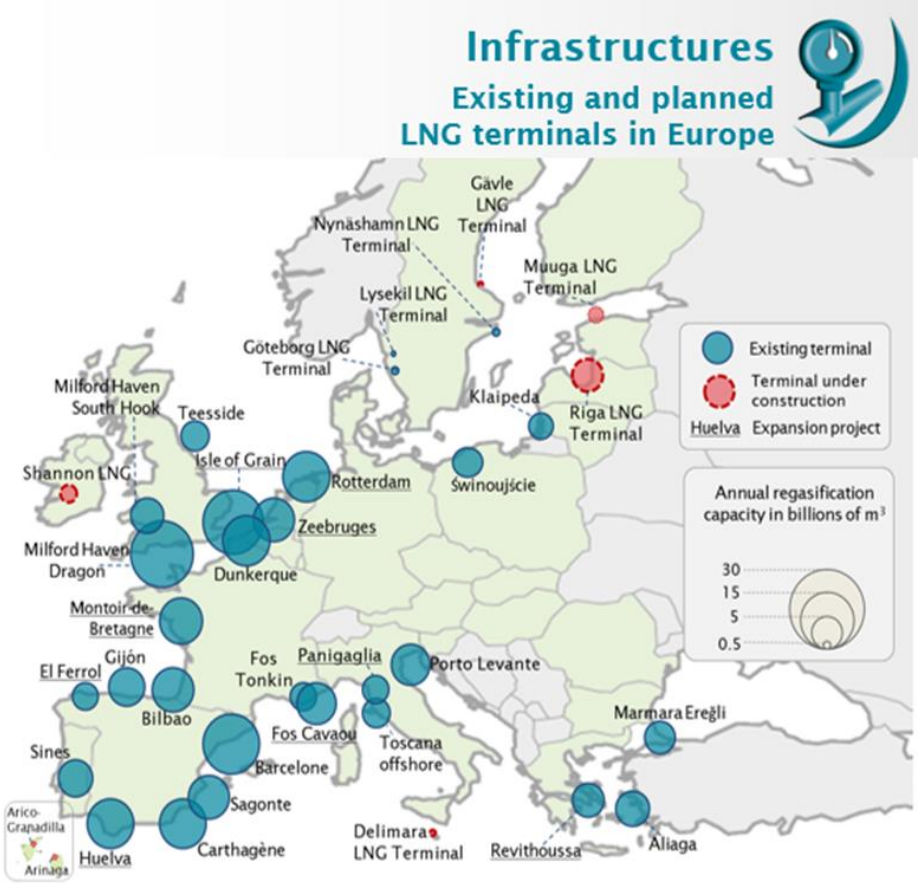
Different stages of development, but strong price correlation

Europe on its way towards 'Eurasian Henry Hub'

Source: Heather/Petrovich, OIES May 2017

Europe: price signals & **redundant import capacities**

LNG terminals: ~220 bcm/a (~75% idle)



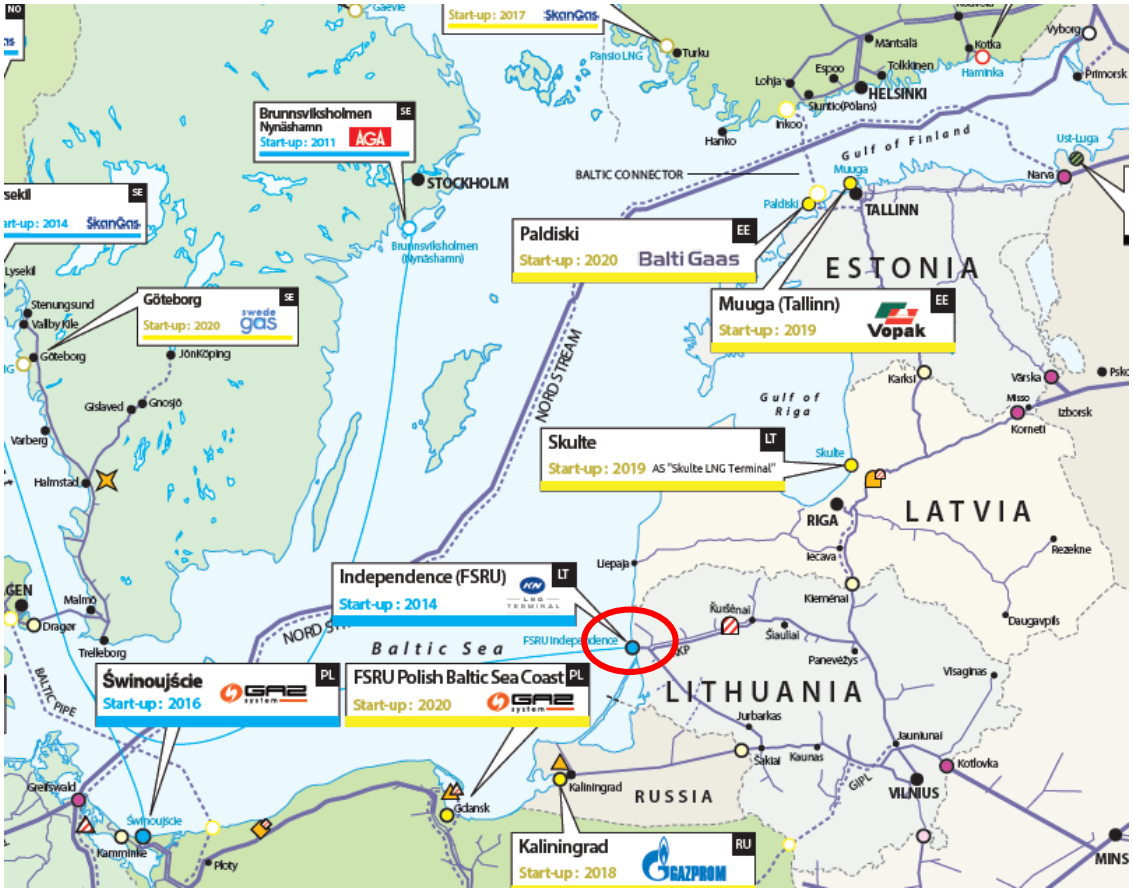
Source : GIIGNL (2016), GLE (2015)

Agenda

- Introduction: which sanctions?
- Emergence of global gas market: LNG ‘revolution’
- LNG revolution: Price ‘spreads’ vs. price regions
- Security of supply now function of price signals
- Europe: Price signals & redundant import capacity
- E.g. Lithuania: benefitting from LNG opportunities
- US LNG exports: ‘money talks’ – not sanctions
- Much ado about nothing: Nordstream 2
- Security of demand: e.g. German ‘Energiewende’

E.g. Lithuania: benefitting from LNG opportunities

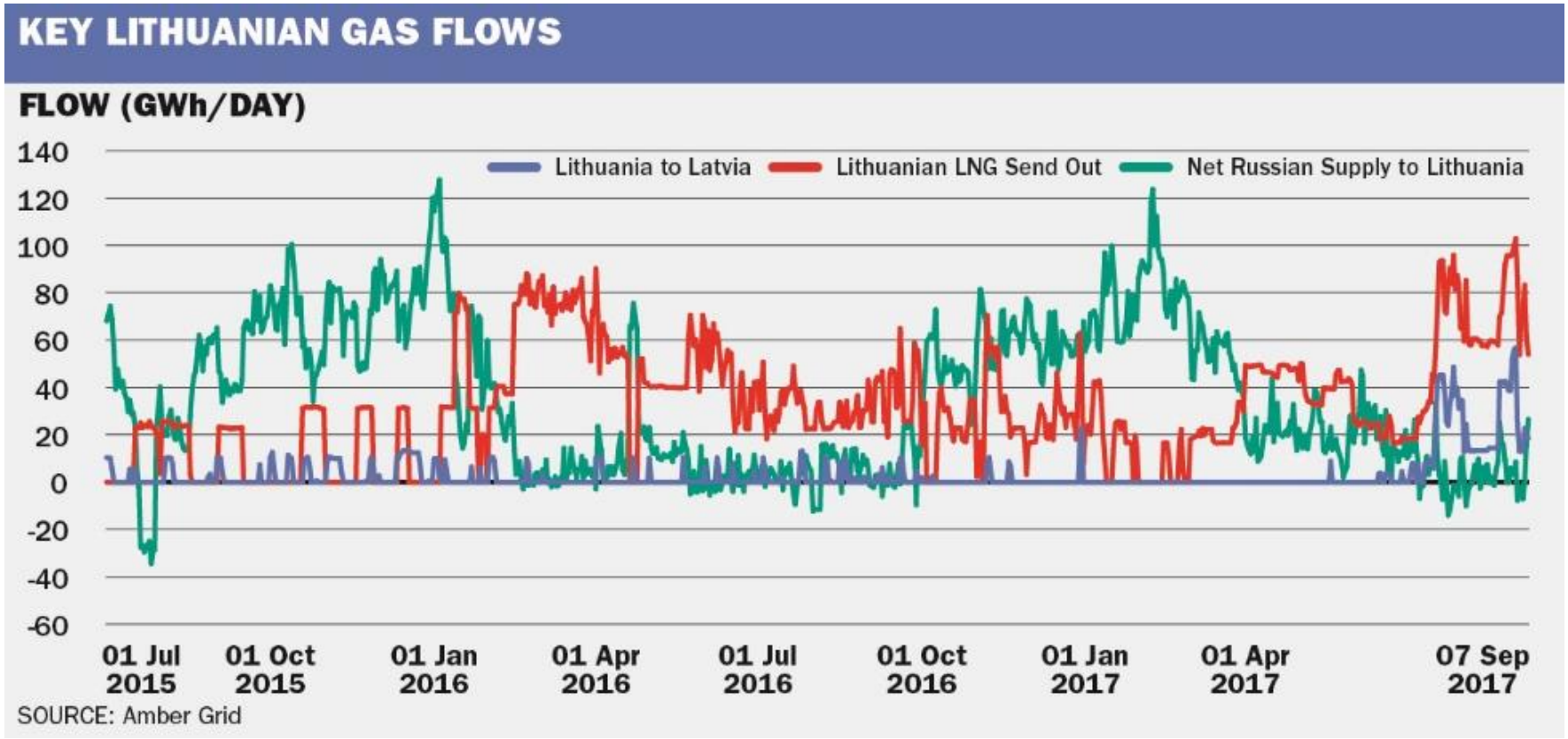
Klaipeda FSRU since 2014: Master Agreement with ~10 companies, cargoes from Norway, Qatar, Nigeria, Trinidad



Source: GIE 2016

E.g. Lithuania: benefitting from LNG opportunities

‘Arbitraging’ Russian supplies, volumes also to Latvian wholesale market and storage – first US cargo (Cheniere) <u>not a game changer</u>



Source: ICIS Heren

Agenda

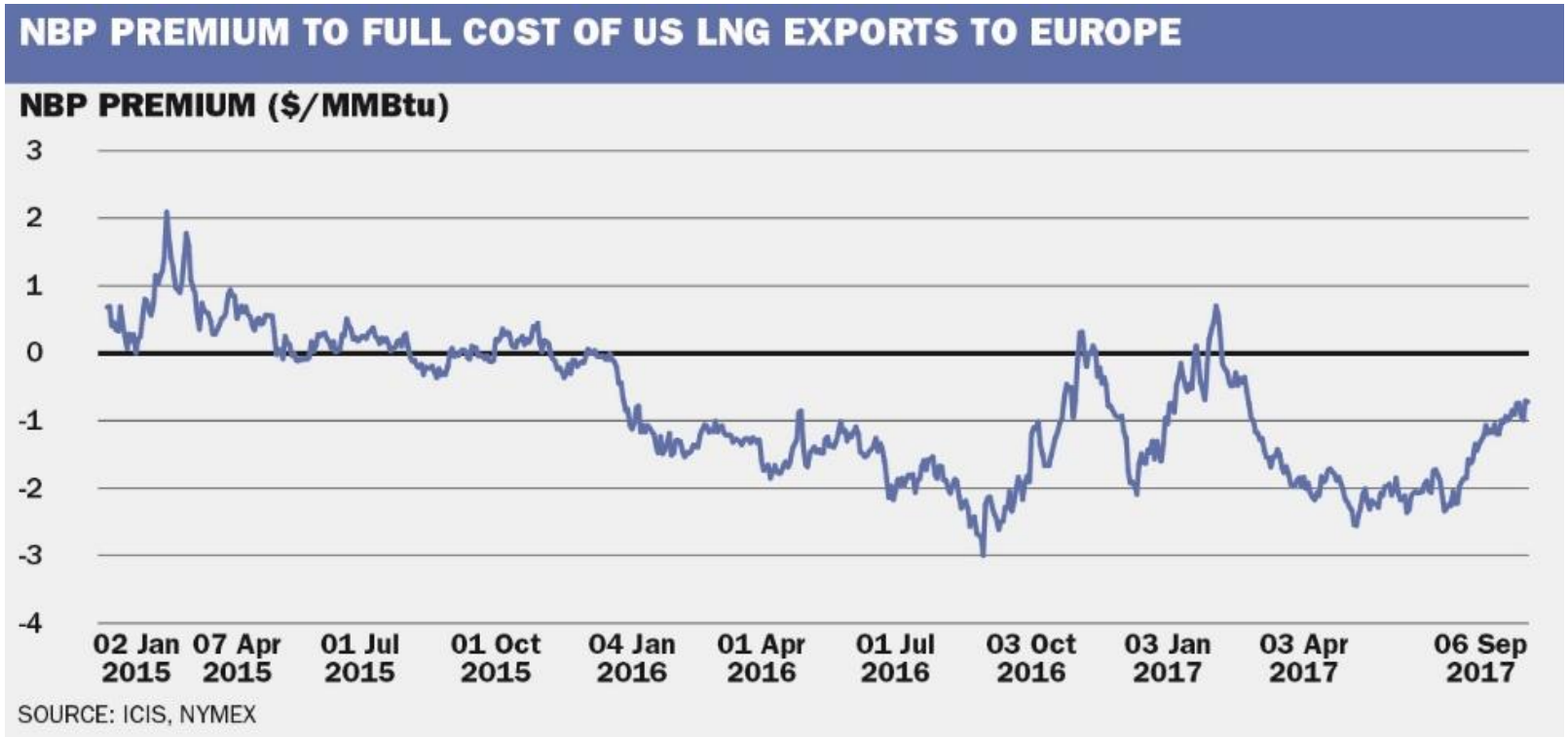
- Introduction: which sanctions?
- Emergence of global gas market: LNG ‘revolution’
- LNG revolution: Price ‘spreads’ vs. price regions
- Security of supply now function of price signals
- Europe: Price signals & redundant import capacity
- E.g. Lithuania: benefitting from LNG opportunities
- US LNG exports: ‘money talks’ – not sanctions
- Much ado about nothing: Nordstream 2
- Security of demand: e.g. German ‘Energiewende’

US LNG exports: 'Money talks …' – not sanctions

Premium NBP over HH required

Full cost: 15% HH + ~$2.25 liquefaction + 0.50 shipping + $ 0.50 regas = ~$3.70/MMBtu

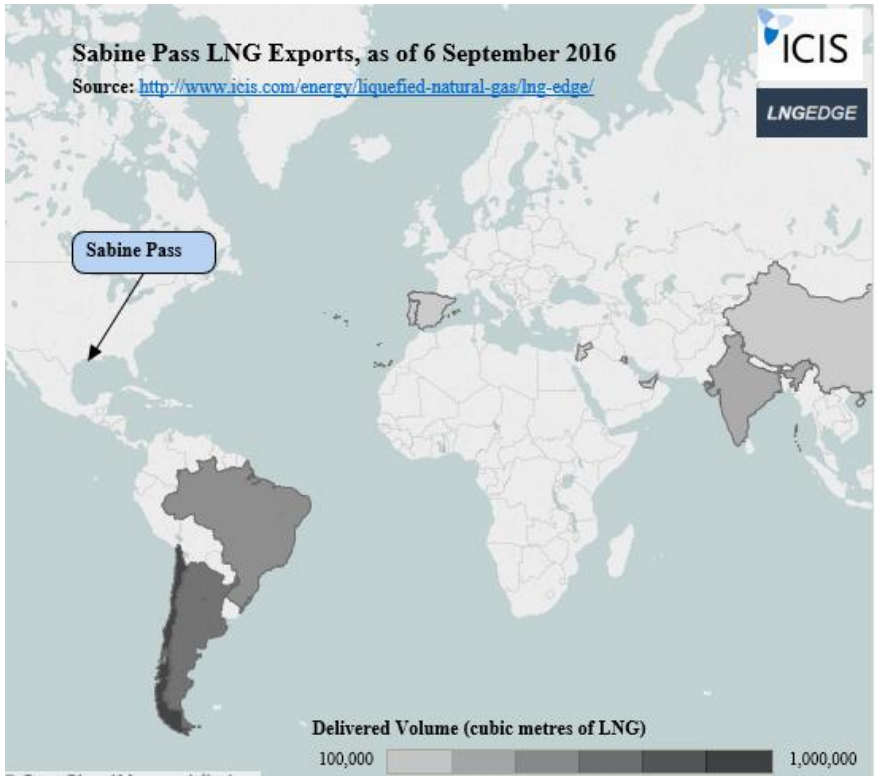
Marginal cost (liquefaction sunk): ~$1.45/MMBtu

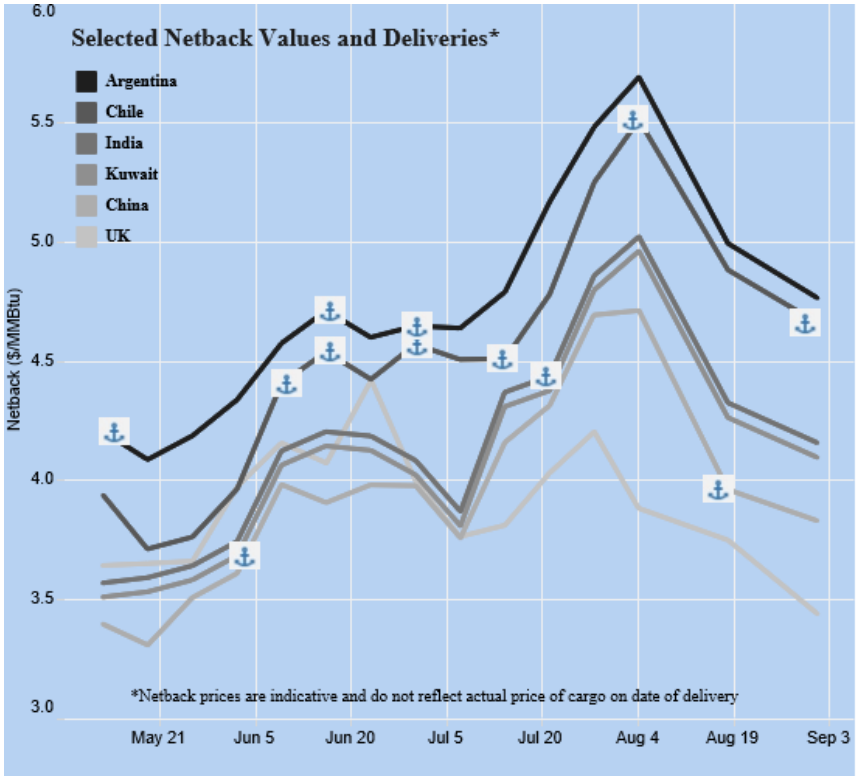


Source: ICIS Heren

US LNG exports: 'Money talks …' – not sanctions

Sabine pass 2016: higher net-backs South-America





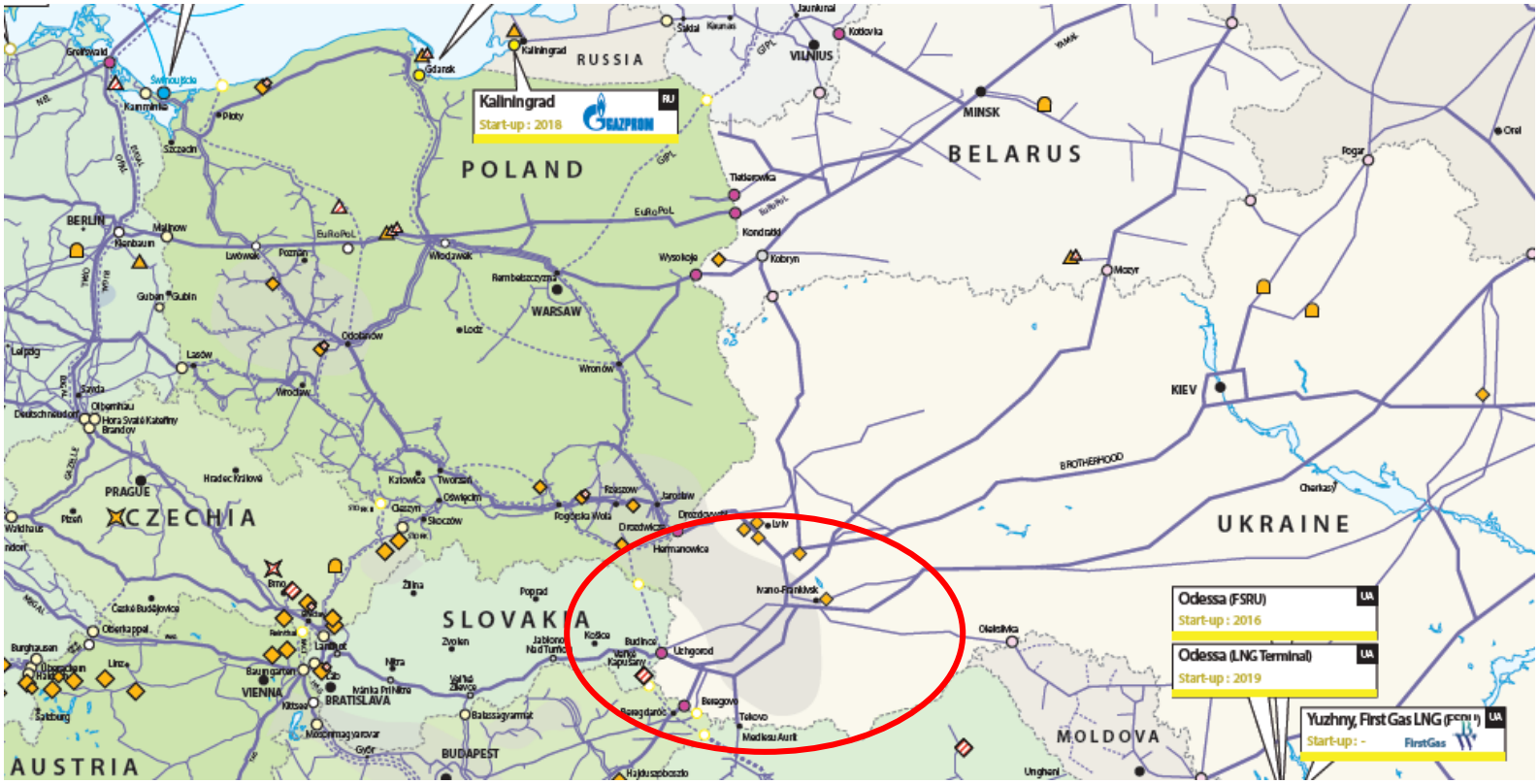
Source: ICIS Heren

Agenda

- Introduction: which sanctions?
- Emergence of global gas market: LNG ‘revolution’
- LNG revolution: Price ‘spreads’ vs. price regions
- Security of supply now function of price signals
- Europe: Price signals & redundant import capacity
- E.g. Lithuania: benefitting from LNG opportunities
- US LNG exports: ‘money talks’ – not sanctions
- Much ado about nothing: Nordstream 2
- Security of demand: e.g. German ‘Energiewende’

Much ado about nothing: sanctions vs. Nordstream 2?

Ukraine transit capacity >120 bcm/a – to continue past 2019?
Note price competition will benefit European consumers



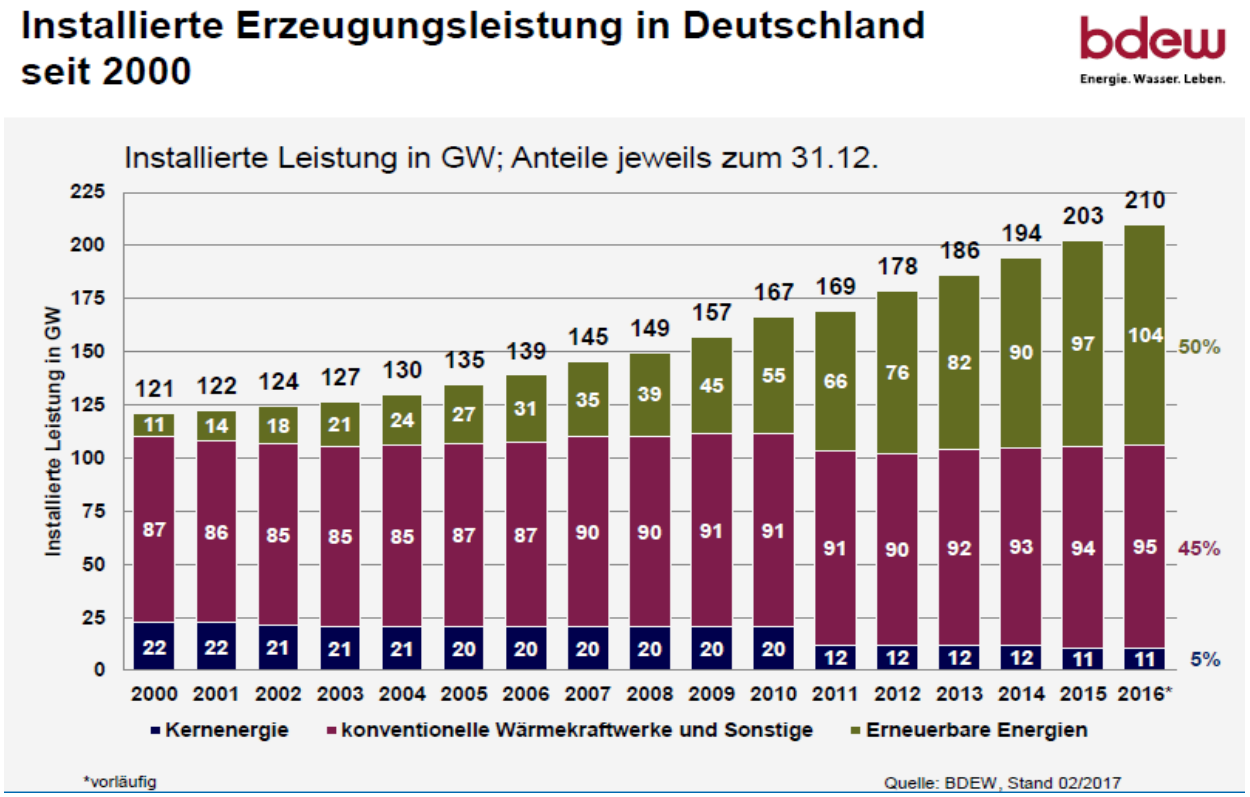
Source: GIE 2016

Agenda

- Introduction: which sanctions?
- Emergence of global gas market: LNG ‘revolution’
- LNG revolution: Price ‘spreads’ vs. price regions
- Security of supply now function of price signals
- Europe: Price signals & redundant import capacity
- E.g. Lithuania: benefitting from LNG opportunities
- US LNG exports: ‘money talks’ – not sanctions
- Much ado about nothing: Nordstream 2
- Security of demand: e.g. German ‘Energiewende’

Security of demand: e.g. German Energiewende

Generation capacities renewables/conventional ‘at par’
Production renewables 188 TWh out of 645 TWh
Gas fired power plants mostly idle, merit order favours coal

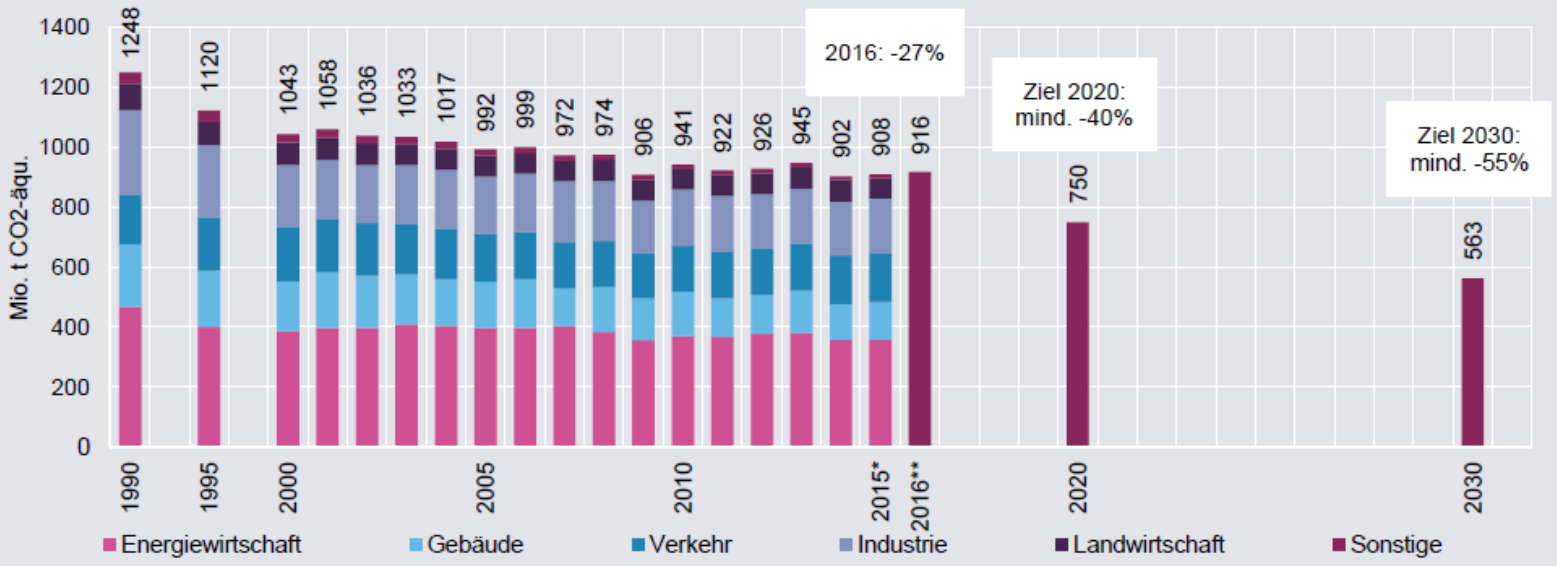


Source: BDEW Report 2017

Security of demand: e.g. German Energiewende

CO2 reduction target 2020 impossible to achieve, Government scrambling for solutions

Treibhausgasemissionen nach Sektor 1990-2016 sowie Reduktionsziele für 2020 und 2030



UBA 2016, eigene Schätzungen

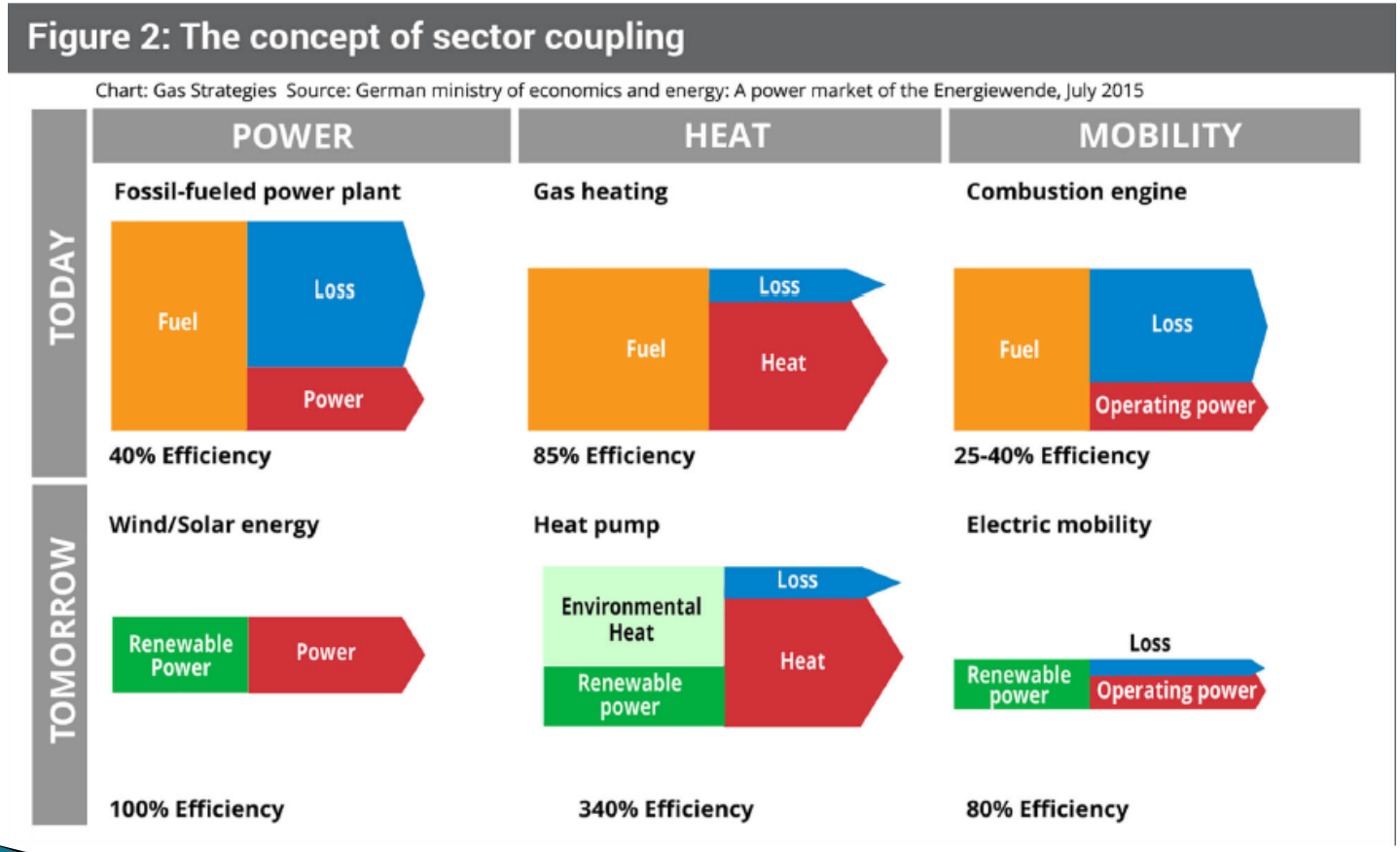
Source: Agora Energiewende 2017

Security of demand: e.g. German Energiewende

COP22 Marrakesh November 2016: Germany 'Fossil of the Day'
Scrambling for solutions, but: instead of using more gas, Germany favours 'sector coupling'

Security of demand: e.g. German Energiewende

Sector coupling: ‘all-out’ electrification transport & heat sectors
Supposedly all powered by renewables



Source: Gas Strategies

Security of demand: e.g. German Energiewende

Electrification of transport & heat sector would massively increase power demand (from ~590 to 1,300 TWh)

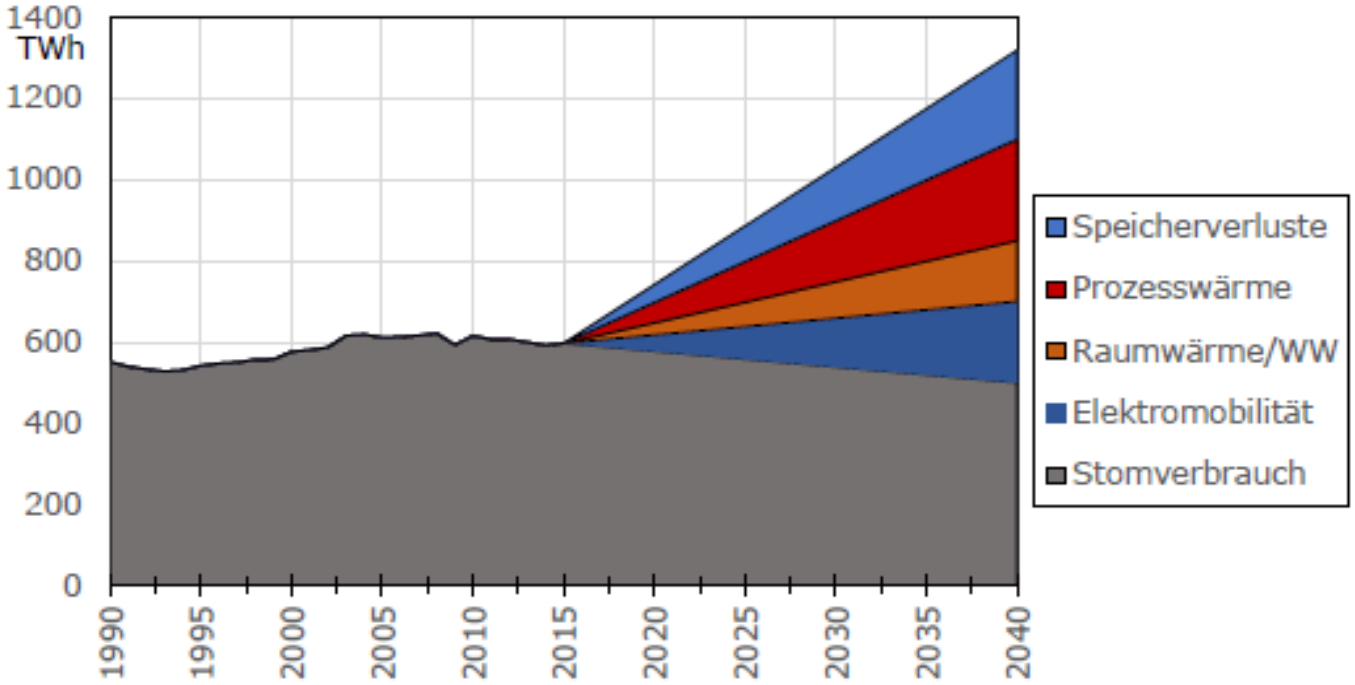


Bild 14 Entwicklung des Strombedarfs für eine klimaneutrale Energieversorgung mit Effizienzmaßnahmen

Source: Quaschning, Sektorkopplung, page 29

Security of demand: e.g. German Energiewende

Decarbonization transport & heat sector huge opportunity for gas

Next level: Gas ‘can green’! Hydrogen and synthetic gas from PtG.

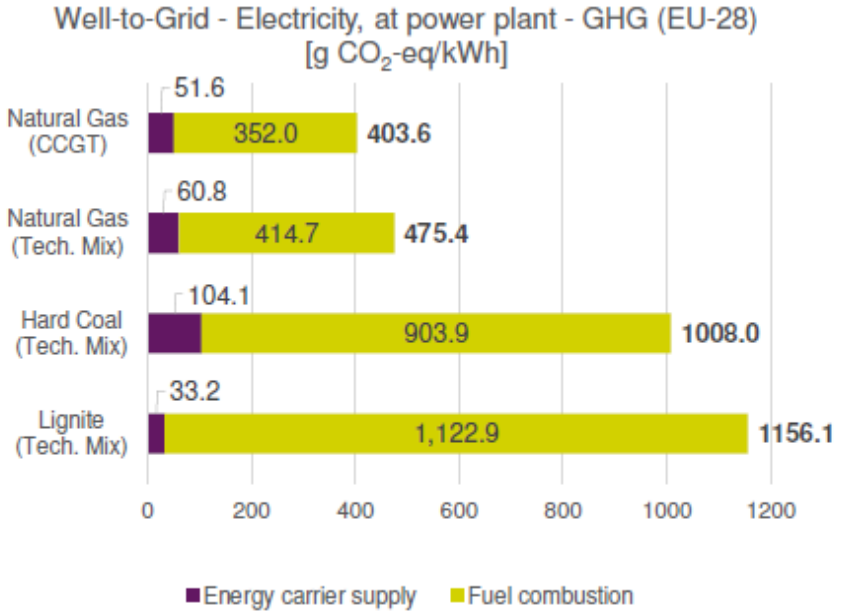


Figure 7-8: Well-to-Electricity – GHG Emissions: Electricity Production Comparison for different Energy Carriers [33]

Source: Thinkstep Natural Gas GHG Intensity Report, page 91

For further reading soon to come:

‘Energiewende: From Champion to ‘Fossil of the Day’

Without natural gas to save the day, ‘all-electric sector-coupling’ will ensure further fossil of the day awards

(www.gasvaluechain.com)

Thank you very much for your attention!