

EVOLUTION OF RUSSIAN GAS SUPPLY TO EUROPE: CONTRACTS AND PRICES

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GAZPROM EXPORT**

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1. Competition on the European Gas Market

LNG as Russian Pipeline Gas Main Competitor

2. Role of the Long-Term Contracts

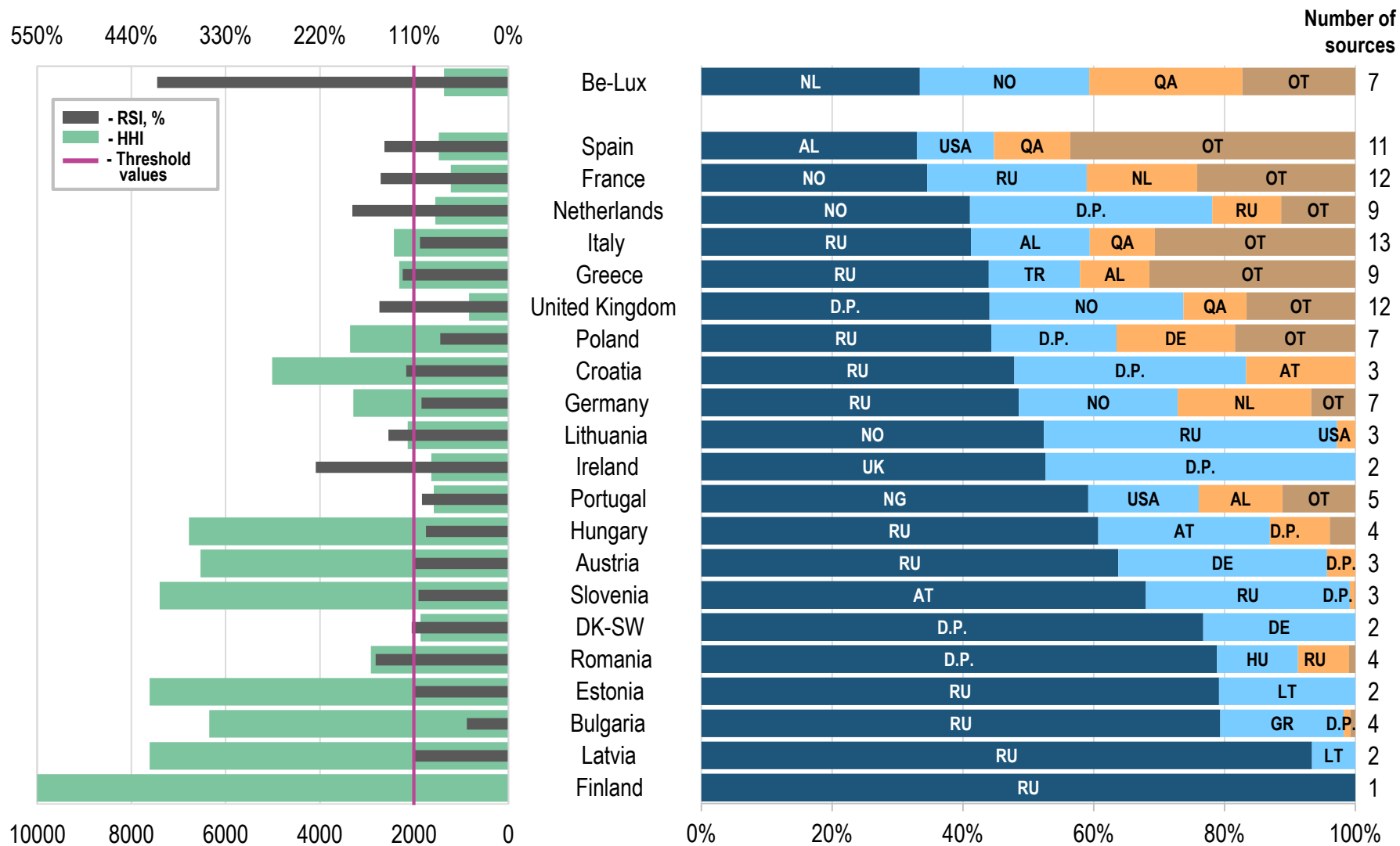
Rational for Long-Term Contract: Security of Supply and Demand
plus the Superior Trading Opportunities

3. Evolution of Pricing Mechanisms

From Oil Indexation to Hub Pricing

Extreme Price Volatility

EU GAS MARKET HEALTH METRICS (ACER*), 2019



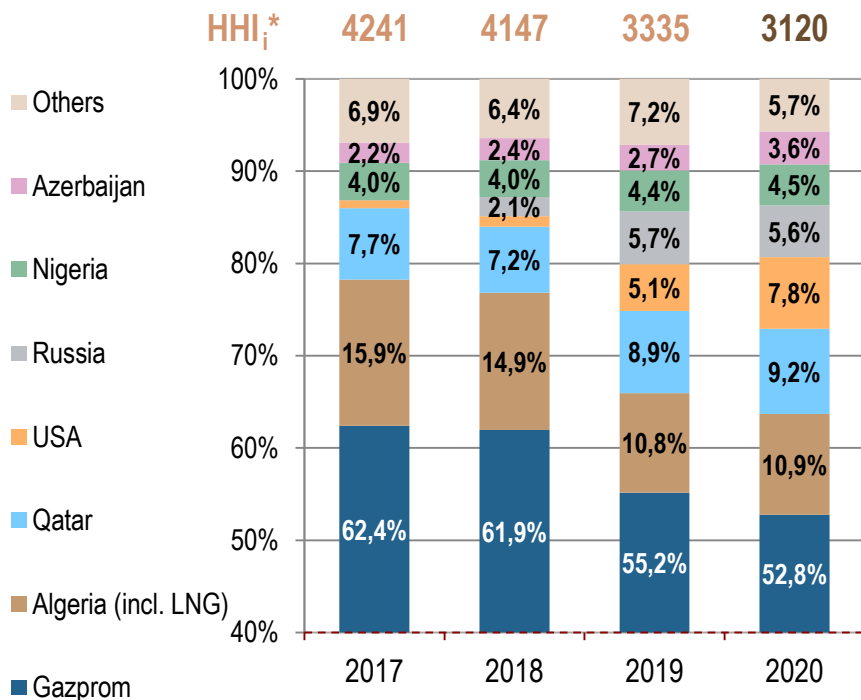
Over the last 10 years EU made the enormous progress in competition enhancement on its natural gas market. Competition has strengthened both in terms of increased number of sources of supply and the single supplier's role reduction. Only 5 countries out of 22 surveyed by ACER have less than three suppliers. Residual supplies index (RSI) is close to the EU Target with the exception for several East and Central European countries. In 2018 Gazprom took legally binding commitments to address the EU Commission's concerns over its dominant position in these counties.

ACER Gas Target Model	
Metric	Threshold values
HHI	HHI ≤ 2000
RSI	RSI ≥ 110%
Number of sources	Q ≥ 3

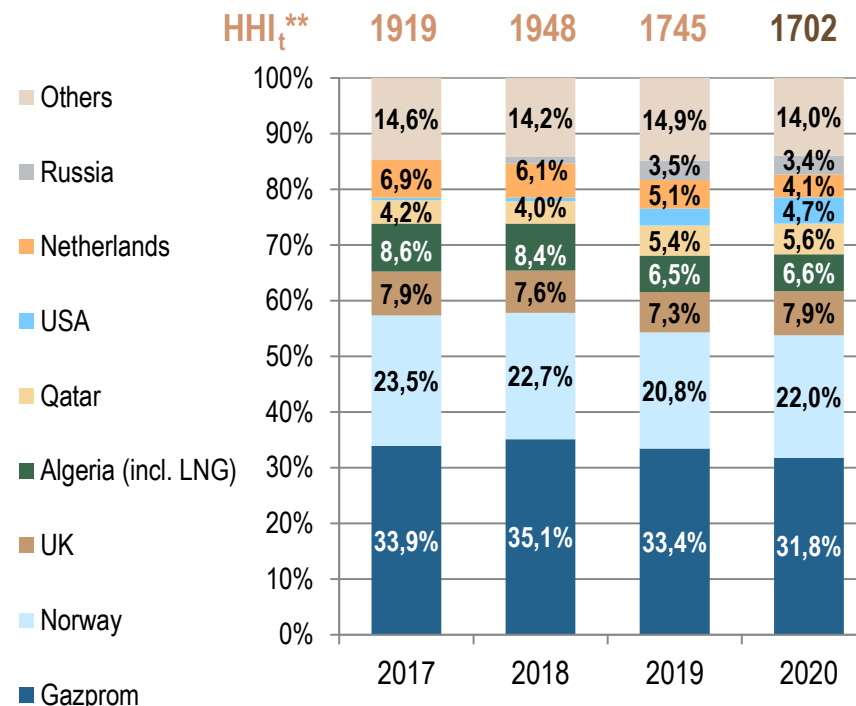
*The European Union Agency for the Cooperation of Energy Regulators
 Source: ACER Annual Report on the Results of Monitoring the Internal Electricity and Gas Markets in 2019

CONCENTRATION OF THE SUPPLIES TO EUROPE (HHI INDEX)

SUPPLIES TO EUROPE FROM THE THIRD COUNTRIES



SUPPLIES TO EUROPE INCLUDING INTERNAL PRODUCERS



Herfindahl–Hirschman Index (HHI) is a measure of the size of the suppliers and an indicator of the amount of competition among them.

HHI points to ‘moderate concentration’ of the European gas market when all the suppliers are taken into consideration.

European gas market still remains in ‘high concentration’ zone when domestic supplier are taken out. However, HHI index slashed nearly 1000 points over the last 4 years and approaches ‘moderate concentration’ terrain due to the LNG inflow.

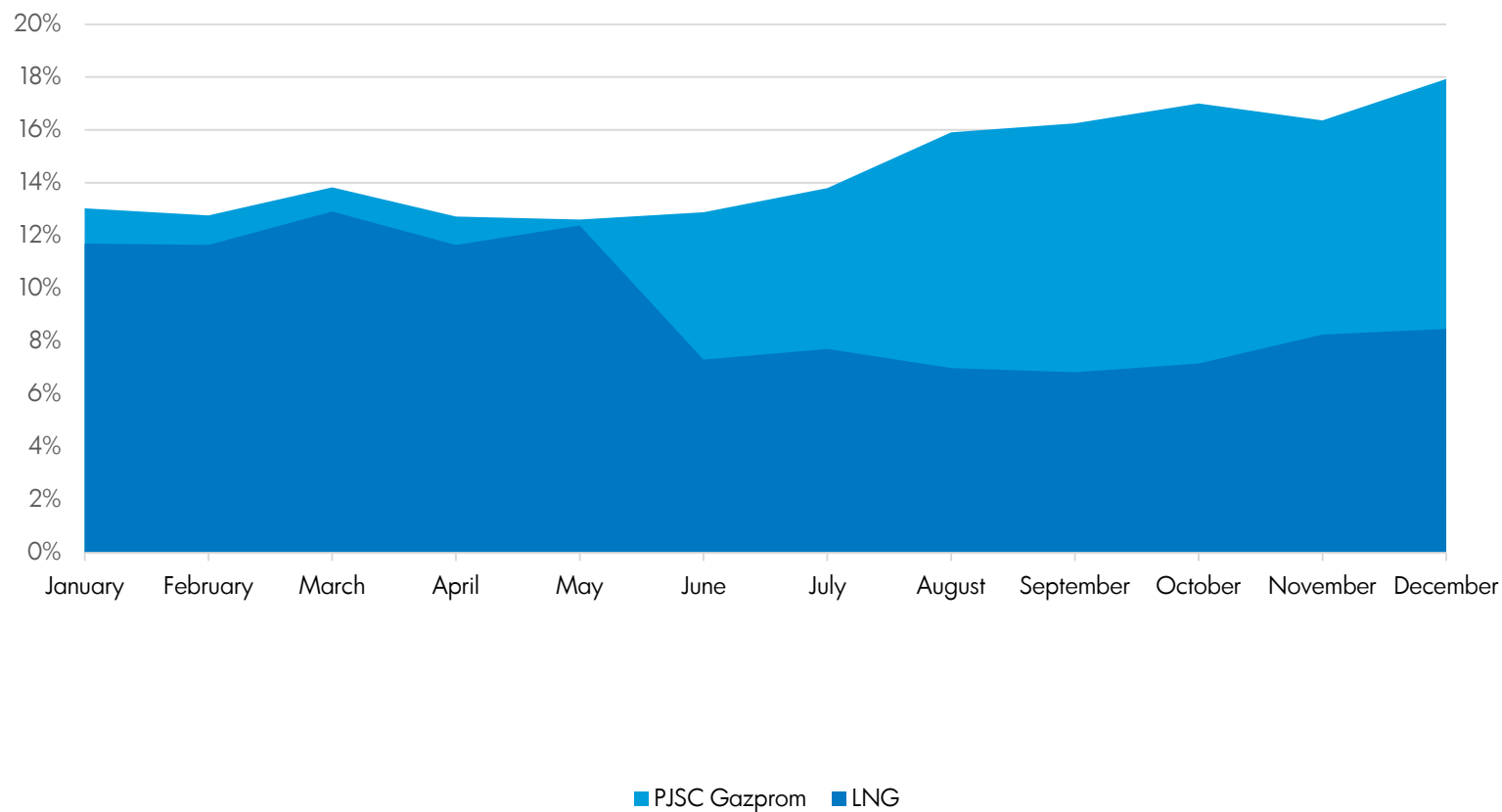
With a declining indigenous production LNG will become a main competitor to Gazprom.

Introduction of carbon tax on the imported gas puts LNG in a less advantageous position in comparison with Gazprom’s pipe gas.

HHI threshold values	European Commission	U.S. Department of Justice and FTC
Low concentration	HHI < 1000	HHI < 1500
Moderate concentration	1000 < HHI < 2000	1500 < HHI < 2500
High concentration	2000 < HHI < 10000	2500 < HHI < 10000

* HHI only for the European gas imports
 ** HHI for all of the European gas supplies

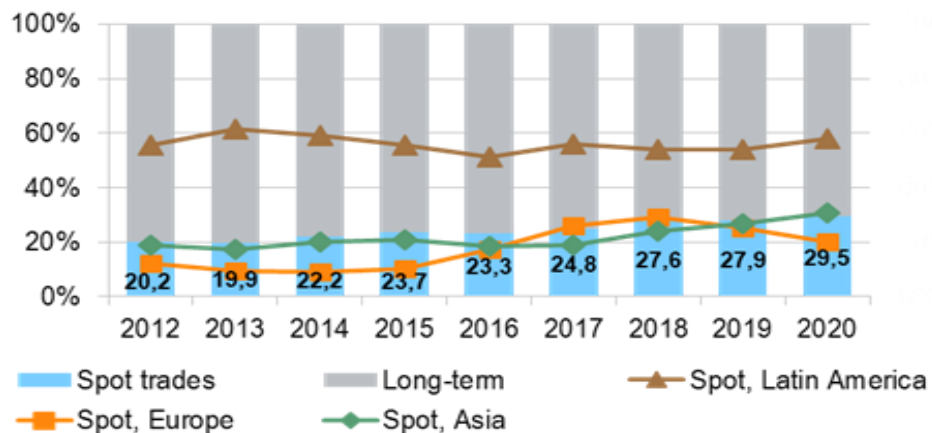
LESSONS FROM 2020



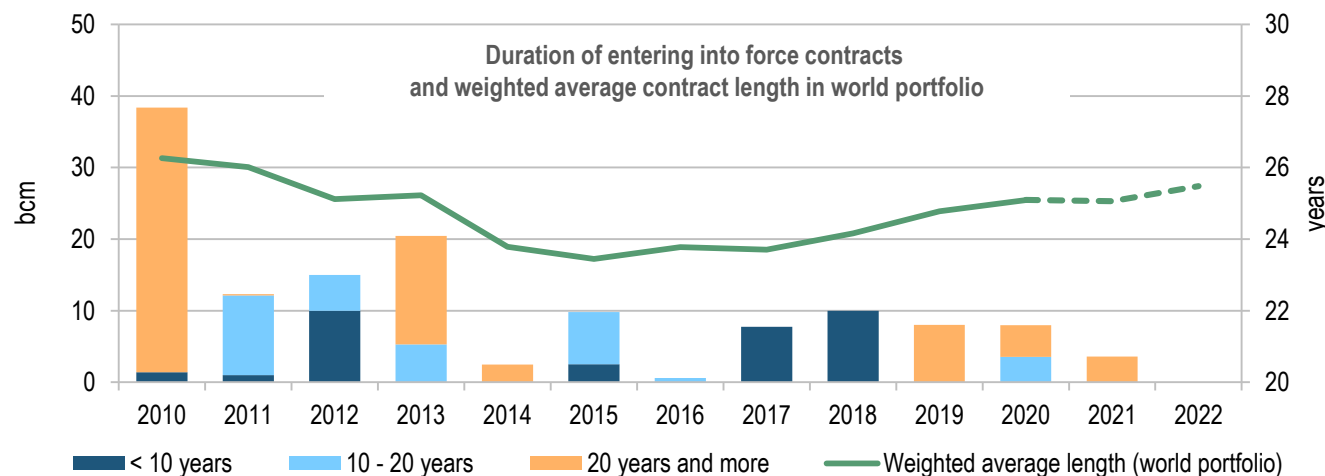
- LNG spot deliveries are extremely price sensitive. When prices on the European gas market dropped to below \$2/mbtu most LNG suppliers were unable to return their cash costs.
- Being a low-cost producer, Gazprom was only moderately affected by a prices meltdown and managed to uphold deliveries when flows of flexible LNG left Europe and created gas deficit in H2 2020.

LONG-TERM CONTRACTS RETAIN THEIR DOMINANT POSITION IN EUROPE

Term versus Spot Sales in LNG Trading



Parameters of the global portfolio of pipeline contracts



Source: IHS Waterborne, Cedigaz

- Third Energy Package gave suppliers a formal opportunity to export the entire volume of gas on a spot basis. However, this opportunity remained unclaimed. And this is not just a matter of the “heritage” of the previously concluded legacy LTCs, which, by the way, could be terminated by mutual agreement of the parties.
- LTCs facilitate development of the European forward and futures markets by providing them with backup physical liquidity. Monetization of LTCs is a specific feature of the European forward/futures market that has a distinct physical nature, not a financial nature like in the United States.

LONG-TERM CONTRACTS RECEIVED ADDITIONAL SUPPORT FROM TRADING

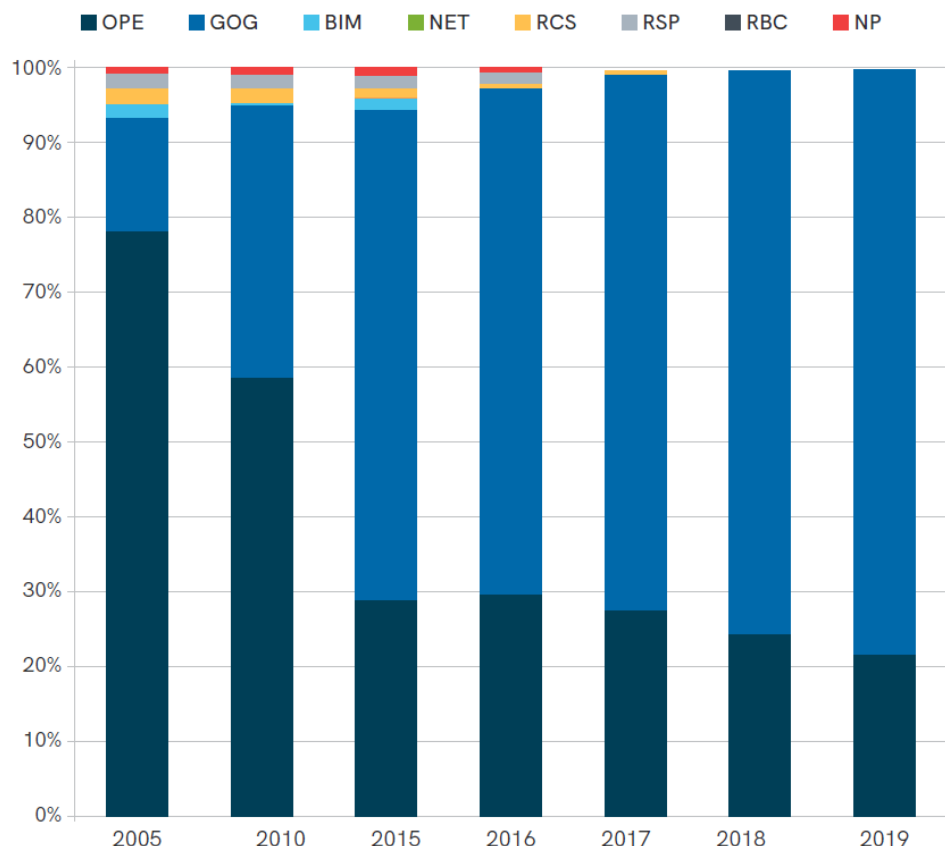
Rational for long-term S&P contracts

Security of demand	Buyer/importer	Assumes long-term offtake obligations taking into account the prospective market needs. Reselling significant gas volumes on the domestic market only on a short-term basis is impossible. Contract duration affects the efficiency of trading operations.
	Seller/exporter	Is interested in guaranteed sales for long-term planning and long-term borrowing.
Security of supply	Buyer/importer	Choice between term and spot deliveries depends on the availability of gas in the market.
	Seller/exporter	The LTC reduces the risks of supply interruptions. The exporter assumes obligations taking into account the long-term capabilities of this resource base.

Source: Compiled by the author

FROM PRICING BASED ON GAS-ON-SUBSTITUTE TO GAS-ON-GAS COMPETITION

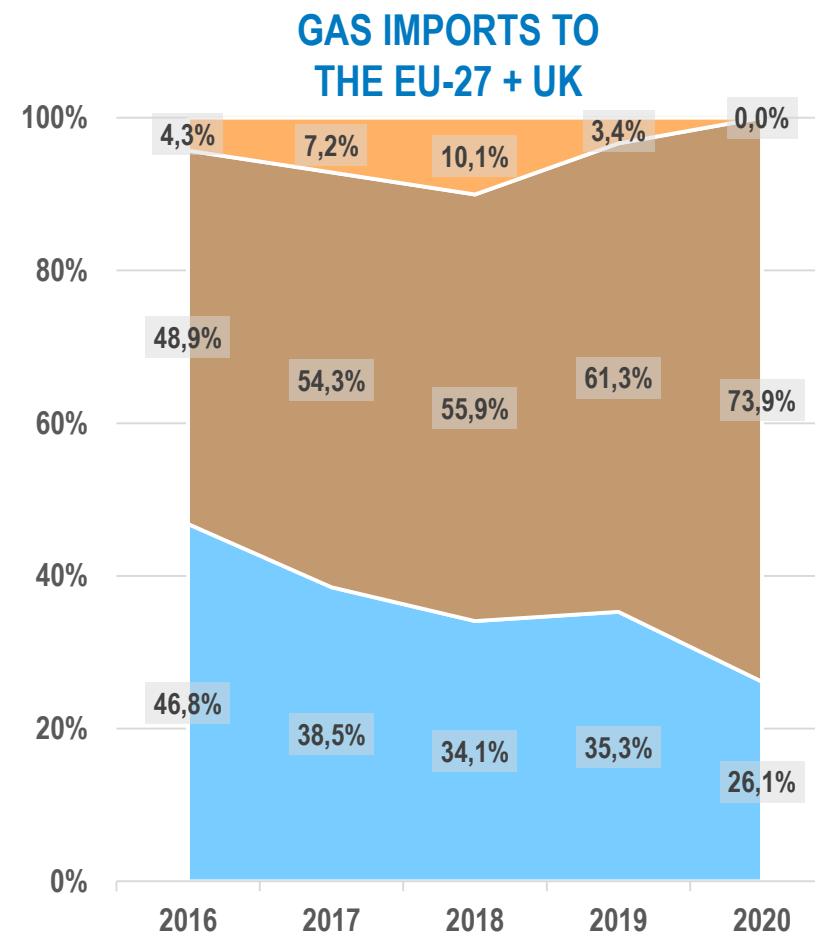
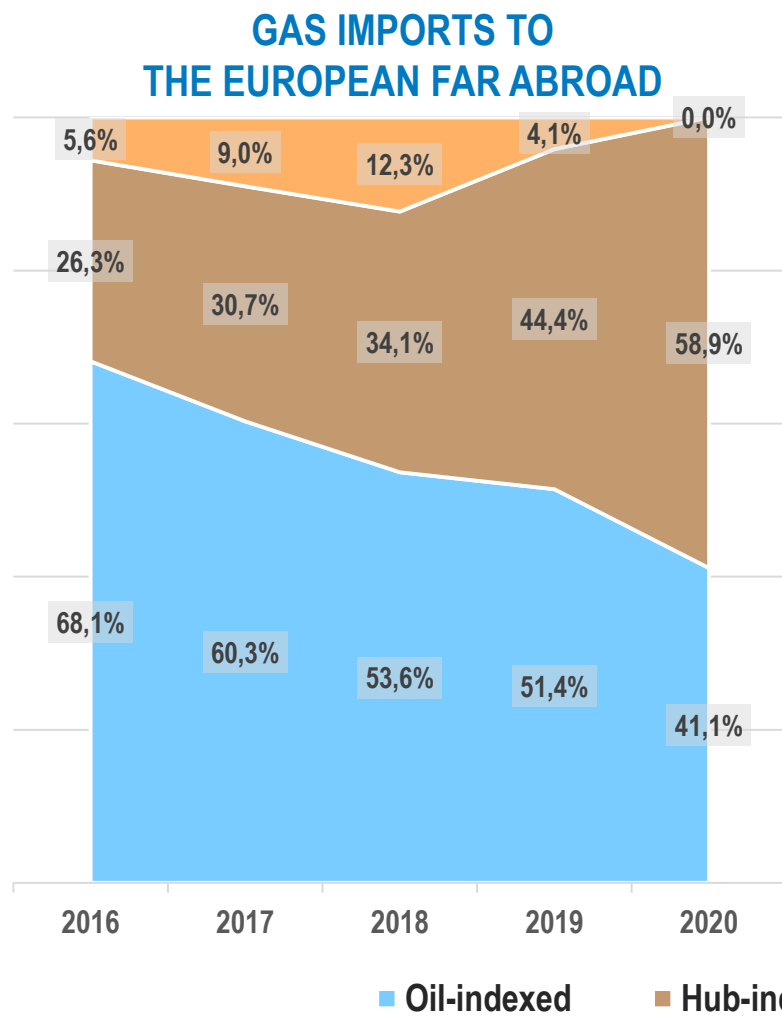
EUROPE PRICE FORMATION 2005 TO 2019



- Europe is the region where the most significant changes in price formation mechanisms have taken place.
- In the total consumption there has been a broadly continuous move from oil-indexation to pricing based on gas-on-gas competition since 2005.
- Share of oil-indexation in Europe dropped from 78% in 2005 to 22% in 2019.

Source: Wholesale Gas Price Survey 2020 Edition/ A Global Review of Price Formation Mechanisms 2005 to 2019, June 2020

PRICE FORMATION MECHANISMS IN GAS IMPORTS TO EUROPE



* Norway considered as internal supplier

** From 2020 onwards includes quasi-oil indexation and fixed price based on year-ahead forwards

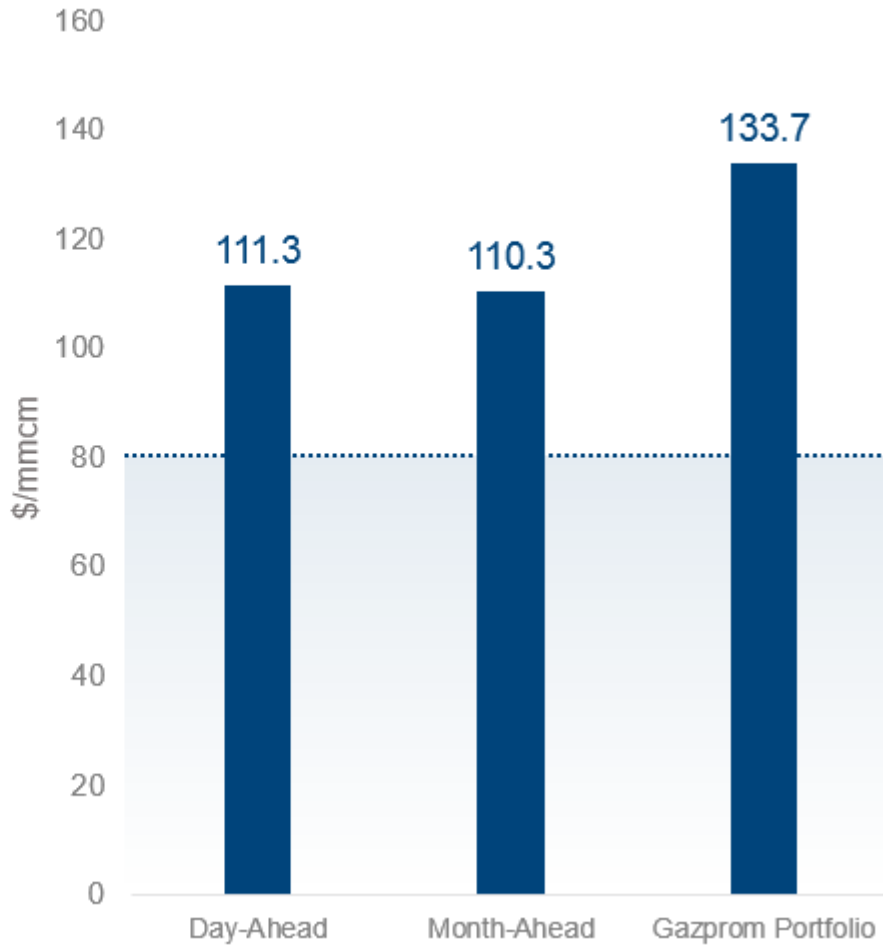
Sources: IEA, IHS Markit, Gazprom Export estimates

GAZPROM EXPORT SALES PORTFOLIO COMPOSITION BY PRICING MECHANISMS FOLLOWS THE EUROPEAN TRENDS

SALES BY PRICING MECHANISM



- 56.1%** Prompt (Day-ahead and Month-ahead)
- 30.9%** Forwards (Quarter, Season & Year)
- 13.0%** Oil indexation



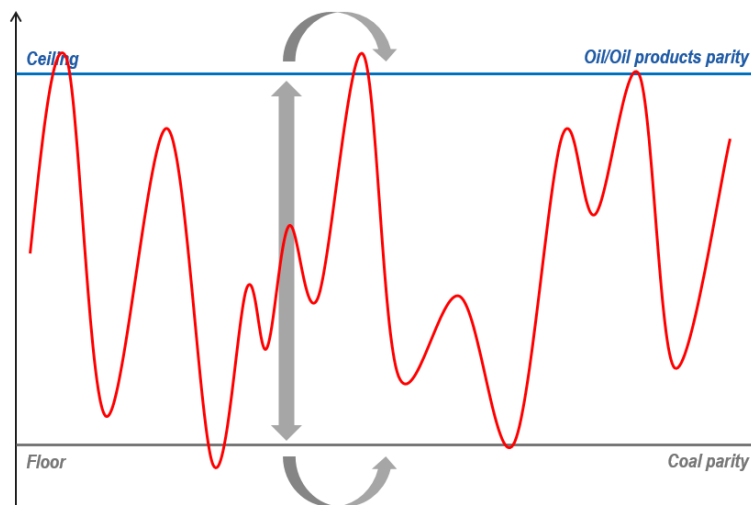
CORRELATION OF GAS HUB PRICES WITH OIL PRICES IS STILL STRONG

Correlation between Year-Ahead Price on TTF and Oil indexes

R-coefficient	Y-A Mid Price - Brent	Y-A Mid Price - Brent 3-monthMA	Y-A Mid Price - Brent 6-monthMA	Y-A Mid Price - Brent 9-monthMA
2010-2013	88%	90%	87%	86%
2014-2015	91%	89%	89%	93%
2016-2018	82%	89%	89%	84%
2019-2021	84%	77%	67%	56%
2010-2021	91%	92%	91%	90%

Why, despite significant shift away from oil indexation, natural gas prices retain strong correlation with oil prices?

Oil-indexation departed from the LTCs but inter-fuel competition cannot cease to exist

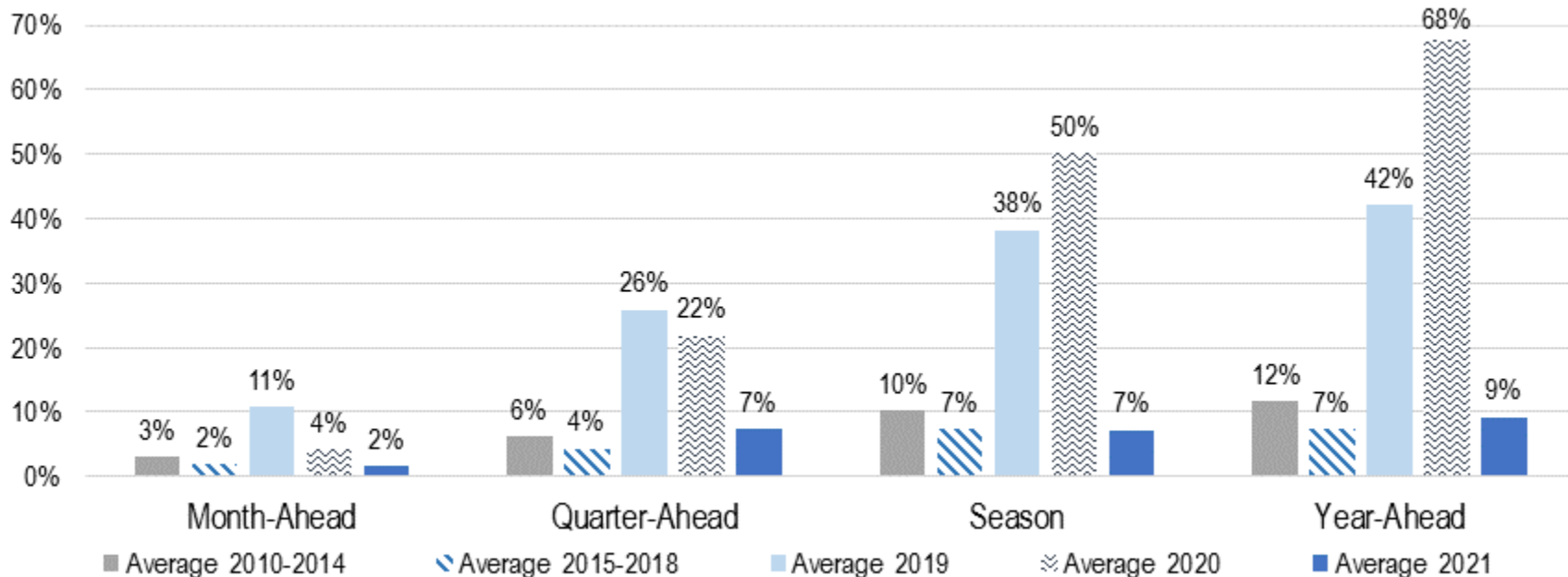


Although oil-indexation has lost its dominance, inter-fuel competition still plays an important role in pricing but setting up a price corridor for natural gas between oil products and coal on an energy parity basis*

*For discussion see: Komlev S. *Foundations of Natural Gas Price Formation/ Misunderstandings Jeopardizing the Future of the Industry*. Anthem Press. NY. 2020

HYPER VOLATILITY OF DAY-AHEAD AND MONTH-AHEAD PRICES

Average Deviation of TTF Forward Prices from the TTF Day-Ahead Price Index



Source: Bloomberg

Uncomfortable questions remain*.

- Why integration of regional gas market does not lead to the formation of one price similar to global benchmarks typical for other commodities?
- What makes prompt prices so volatile?
- What is behind the diversion of the forward prices with different longevity?

*For discussion see: Komlev S. Foundations of Natural Gas Price Formation. Misunderstandings Jeopardizing the Future of the Industry. Anthem Press. NY. 2020.

Thank you for your attention!