



NATIONAL JOINT-STOCK COMPANY
NAFTOGAZ
OF UKRAINE

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Development of the Ukrainian Gas Market

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Gas Market liberalization: key precondition for beneficial partnership

Key milestones on the way to open and integrated market

Feb 2011	Ukraine signed the Treaty Establishing the Energy Community
Apr 2015	Adoption of 3EP-compliant Gas Market Law
4Q 2015	Adoption of 3EP-compliant RAB tariff methodology, security of supply rules, national prevention plan, etc.
December 2015	Launch of OECD principles based corporate governance reform at Naftogaz
Jan 2016	Introduction of RAB-based entry/exit tariffs
Sept 2016	Adoption of the Law on Energy Regulator

Gas Market liberalization: key precondition for beneficial partnership (cont'd)

To be achieved

- | | |
|-------------------------|--|
| 2H 2017 | Bring relations with Gazprom to EU market standards via negotiations or Stockholm arbitration |
| 2H 2017 | Unbundle gas transmission from Naftogaz |
| Oct 2017 | Implement the Commission Regulation (EU) No 312/2014 establishing a Network Code on Gas Balancing |
| After unbundling | Engage EU or US partner to operate gas transmission system |
| IQ 2018 | Liberalize gas prices |

- Share of private importers rose from 7% in 2015 to 26% in 2016
- Share of private suppliers to industry rose from 78% to 90% in 2016
- 23 importers, a number of EU companies selling gas directly in Ukraine
- Naftogaz turned profitable (from \$5bn loss in 2014 to circa \$1bn profit in 2016)
- Naftogaz stopped getting money from the state budget (from 25% of budget expenditures in 2014 to 10% of budget revenue in 2016)
- Ukraine managed to get rid of gas dependence on Russia
- Unproductive gas use decreased by 1/3, energy saving and modernization now make sense economically
- Western operators are interested in co-managing Ukraine's GTS



Integration of Ukraine into Central & Eastern European Gas Market

New infrastructure: a wrong answer to the right question?



Build new pipes or unblock existing ones?



Interconnection points, at which the TSO offers:

- Firm capacity in one direction
- Physically bi-directional
- Firm capacity in one direction, virtual backhaul capacity in the other

Absence of the virtual backhaul at major interconnection points (such as Lanzhot (CZ-SK), Oberkappel (De-AT), Vel'ke Kapushany (SK-UA), Hermanowice (PL-UA), Isaccea (RO-UA), Beregdaróc (HU-UA)) along gas transmission routes greatly limit capacity of gas transmission from Europe to Ukraine

At SK-UA border out of almost 93 bcm/y of the existing capacity, in 2016 only 48.8 bcm were in fact used for transit to Europe.

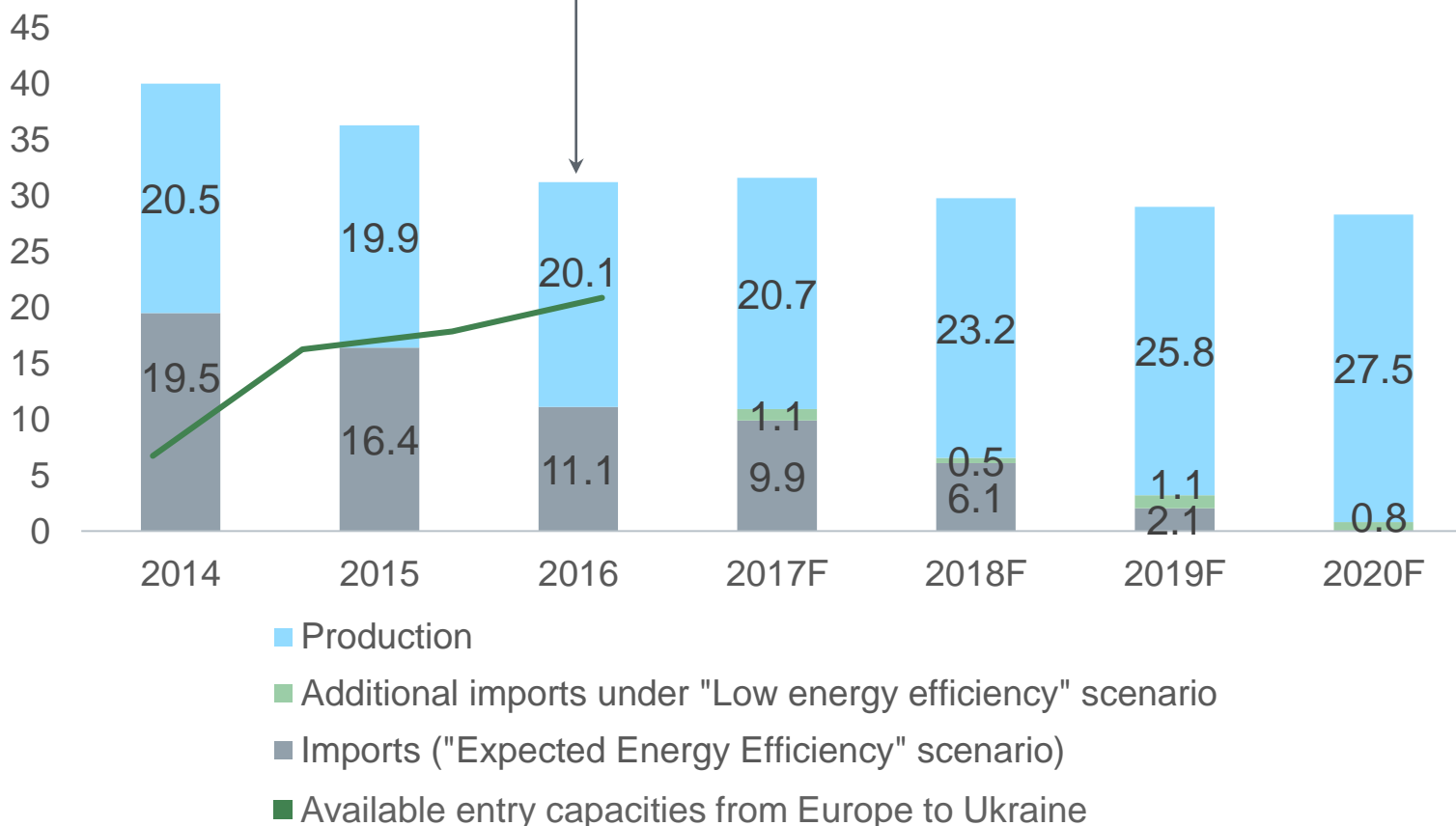
Out of the 60 bcm/y of technically possible capacities, Ukraine can access only 15.5 bcm/y (physical firm & interruptible via "Vojany line", built as a solution for Ukraine)

There is demand only for fast solutions

“Available capacity/
 Import needs*” = 1.93
 ratio in 2016:

Comfortable ratio with
 achievable at zero
 investments in infrastructure: = 3.45

in bcm, annually



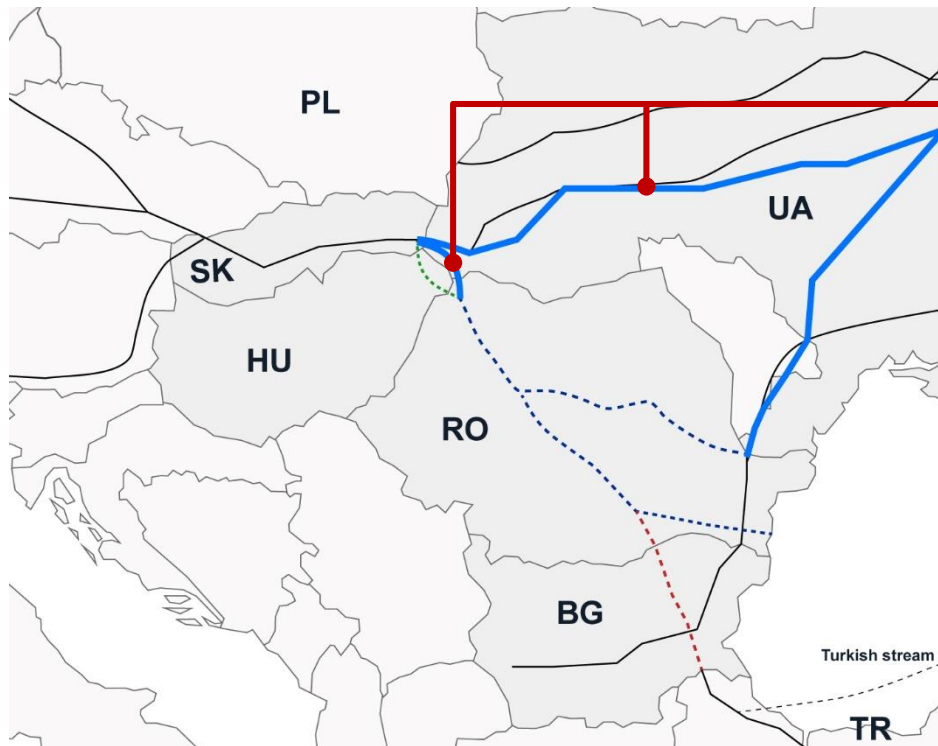
Notes: own estimates as of Jan-2016.

* – “Import needs” is calculated as the estimated import volumes of the natural gas required to be injected to the underground gas storages during the three months period of lowest gas prices (summer) to satisfy expected annual needs

Is new infrastructure fit for the claimed purposes?

- “- Eastring allows additional utilization for existing transit and storage assets in Central and Eastern Europe (CZ, SK, PL, UA, RO, BG)
- Eastring is most economic and time efficient project to construct in the concerned region”

Eastring official web-site <http://www.eastring.eu>



--- planned Eastring routing options
--- possible routings engaging Ukrainian GTS

Utilization of the already existing transmission infrastructure in Ukraine results in the same at lower or even no cost

In terms of respective costs, transmitting gas through Ukrainian GTS could be the most cost-effective routing alternative, especially **starting from 2020**, when tariffs will **be 10x lower than currently** approved entry/exit RAB tariffs in Ukraine

Is new infrastructure fit for the claimed purposes?

Eastring might be “the suboptimal solution” in terms of ensuring sources for diversification and security of supply in Europe

The claimed goal of the Project	Eastring	Ukrainian GTS
Physical alternative for 100% supply to the Balkans	✓	✓
Efficient utilization for CZ, SK, PL, UA, RO, BG transit and storage assets	?	✓
Access for Western shippers to the Balkans and Turkey from NCG/ Gaspool/ Baumgarten	✓	✓
No need for new infrastructure to be built	— (EUR 2.1 bn)	✓
Full compliance with EU law	?	✓
Commissioning year	2020 ?	in operation

“Public money (including the Connecting Europe Facility and European Fund for Strategic Investment) is at risk of being diverted to uneconomic projects as a result of unrealistic demand projections, leading to higher value projects in other sectors losing out.”

“Europe’s declining gas demand implications for infrastructure investment and energy security”, E3G, 2015

Is new infrastructure fit for the claimed purposes?

Doubling of Gazprom's Nord Stream pipeline is a politically motivated concept. Calculations show that by the time the Nord Stream-2 becomes fully operational, taking gas to Germany through Ukraine will cost 20% less. Route through Ukraine remains the only one fully operational and not controlled by Gazprom

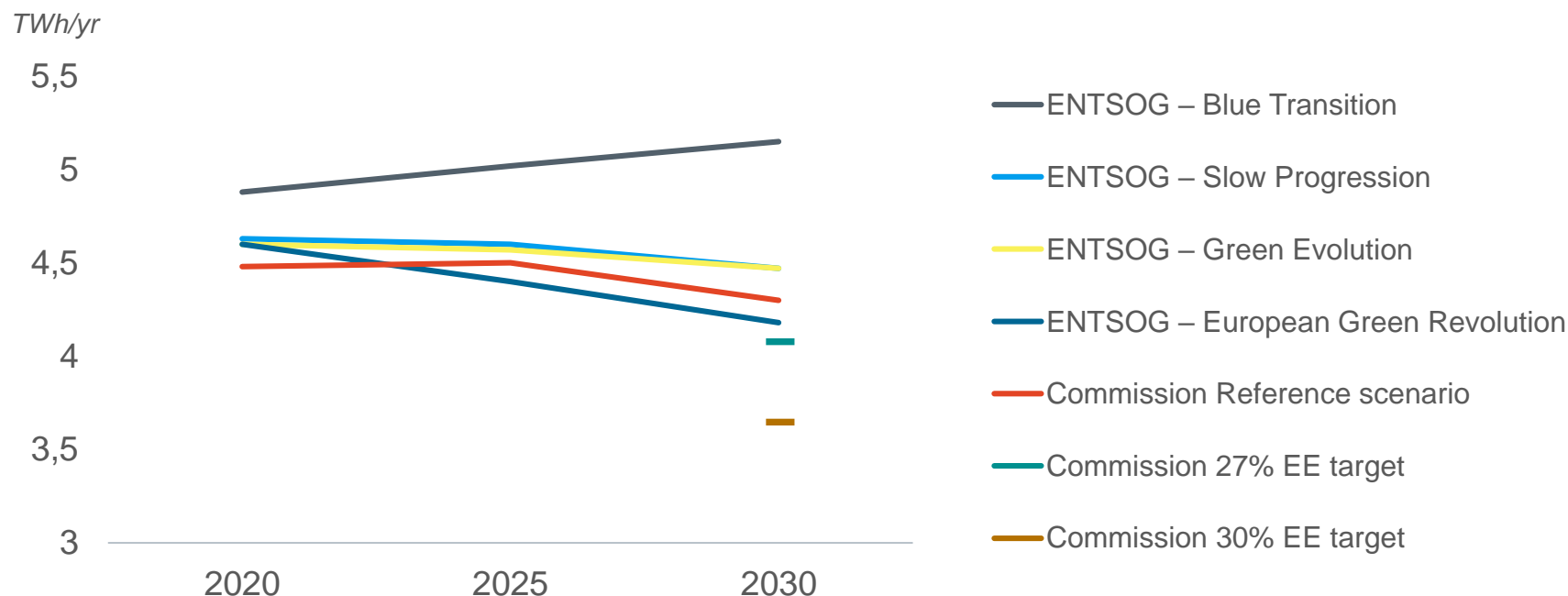
And besides that, Nord Stream 2 is a major threat both for Ukraine and the EU:

- Geopolitical tool of Russia to divide the EU
- Security of energy supply concerns
- Competition concerns
- Transit revenue for Ukraine and other transit countries
- Arbitration decisions in Naftogaz vs. Gazprom cases in Stockholm can make the project less attractive

Is new infrastructure fit for the claimed purposes

**Current infrastructure plans are out of line with EU climate and energy targets
New gas infrastructure assets are likely to become stranded by 2050**

Projected EU gas demand under different scenarios to achieve climate and energy targets:



Source: E3G, ENTSOG TYNDP 2017, EU Reference Scenario 2016, Impact assessment for EED revision

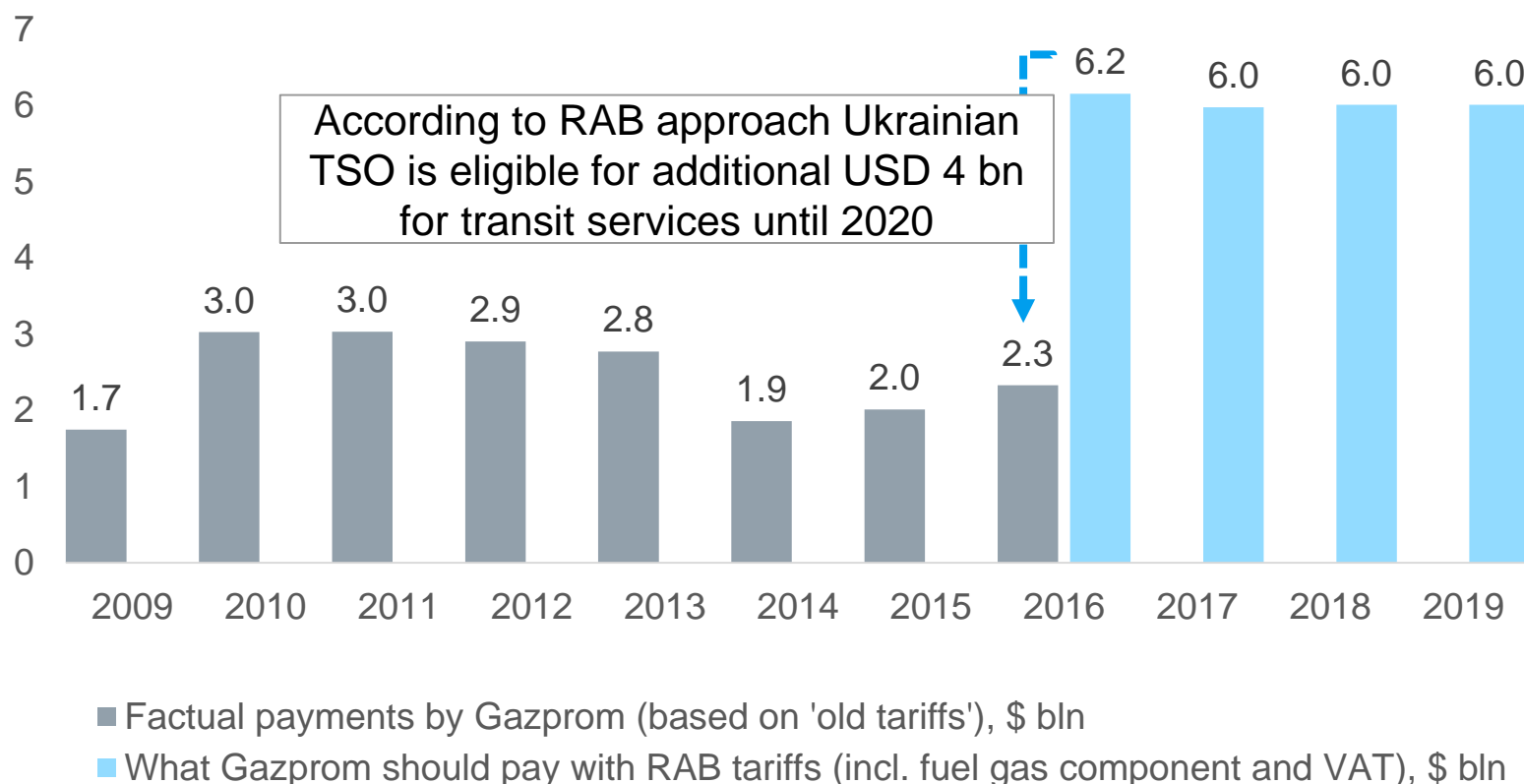
Isn't it better to treat energy efficiency as infrastructure instead of building excessive infrastructure? For every 1% of increase in energy efficiency, gas imports fall by 2.9%

Integration of Ukraine into Central & Eastern European Gas Market:

Our Key Economic Considerations

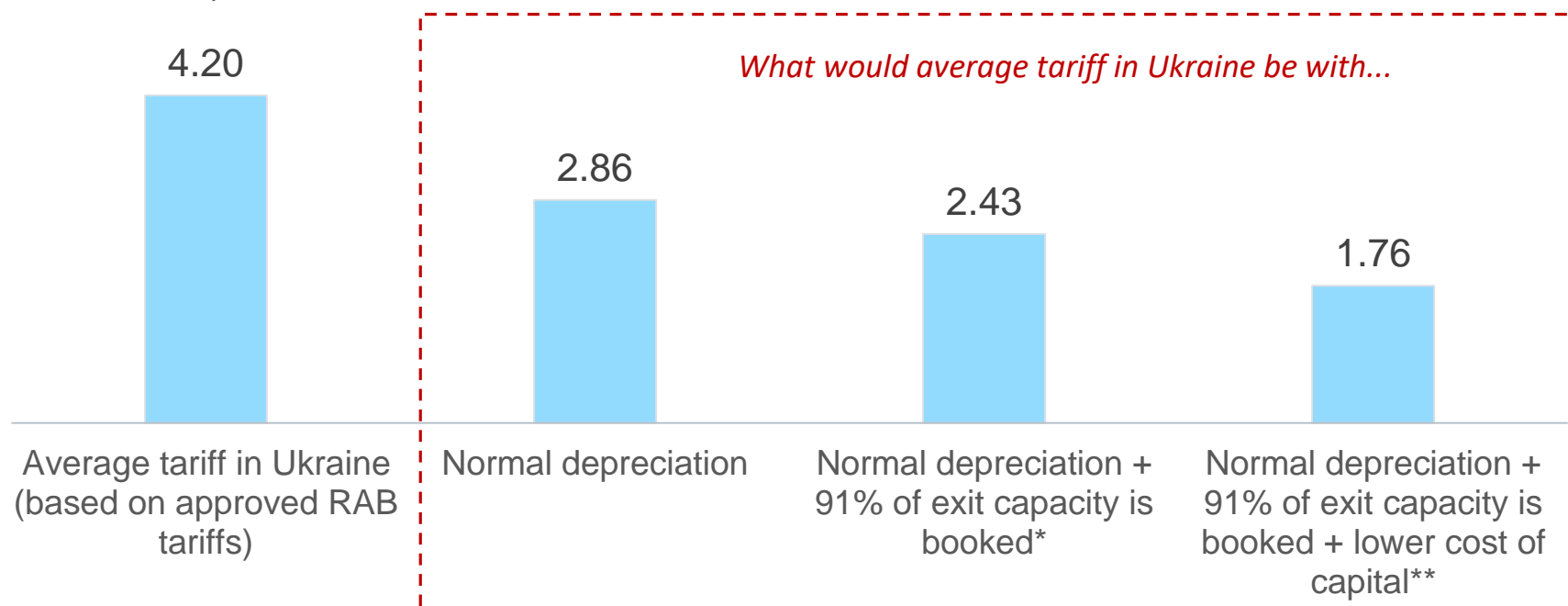
RAB entry/exit tariffs in Ukraine

Following the transposition of the EU energy regulations on October 2015, Ukraine switched to regulated entry/exit capacity-based tariffs. 3EP compliant tariff methodology, agreed with the ECS, ensures that TSO earns adequate return on the capital employed and covers reasonable operating costs, incl. depreciation



Approved Ukrainian entry/exit tariffs are affected by the use of accelerated depreciation of gas “transit assets” until the end of 2019 (expiration of the transit contract, given little reasons to expect material volumes of Russian gas transit through Ukraine beyond 2020), utilization level of transit capacities and relatively high cost of capital

in USD/'000m³ per 100km



Source: Naftogaz data and calculations

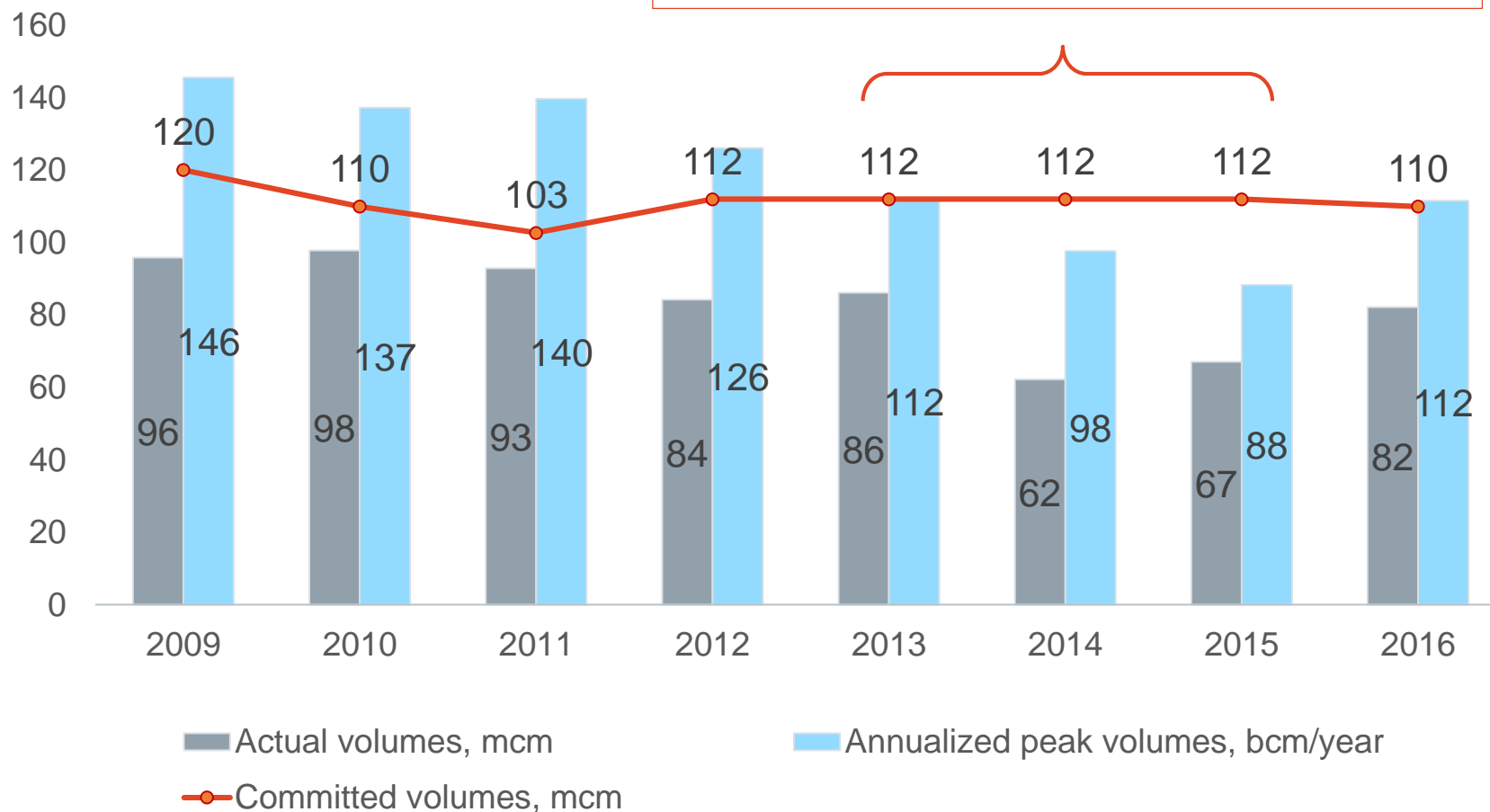
Notes:

* – As if 91% of technical exit capacity of Ukrainian GTS on the border with EU countries and Moldova is booked and used by Gazprom – just as on the Western border of Slovakia (91% of technical exit capacity is booked for 2017 at Baumgarten)

** – Cost of capital (WACC) used for calculation of required return = 6.04%, which is equal to WACC used in Slovakia for distribution gas networks, mentioned in 2014 report about use of RAB approach in European countries by E&Y [http://www.ey.com/Publication/vwLUAssets/Mapping_power_and_utilities_regulation_in_Europe/\\$FILE/Mapping_power_and_utilities_regulation_in_Europe_DX0181.pdf](http://www.ey.com/Publication/vwLUAssets/Mapping_power_and_utilities_regulation_in_Europe/$FILE/Mapping_power_and_utilities_regulation_in_Europe_DX0181.pdf)).

Transit through Ukraine: peak vs. committed volumes

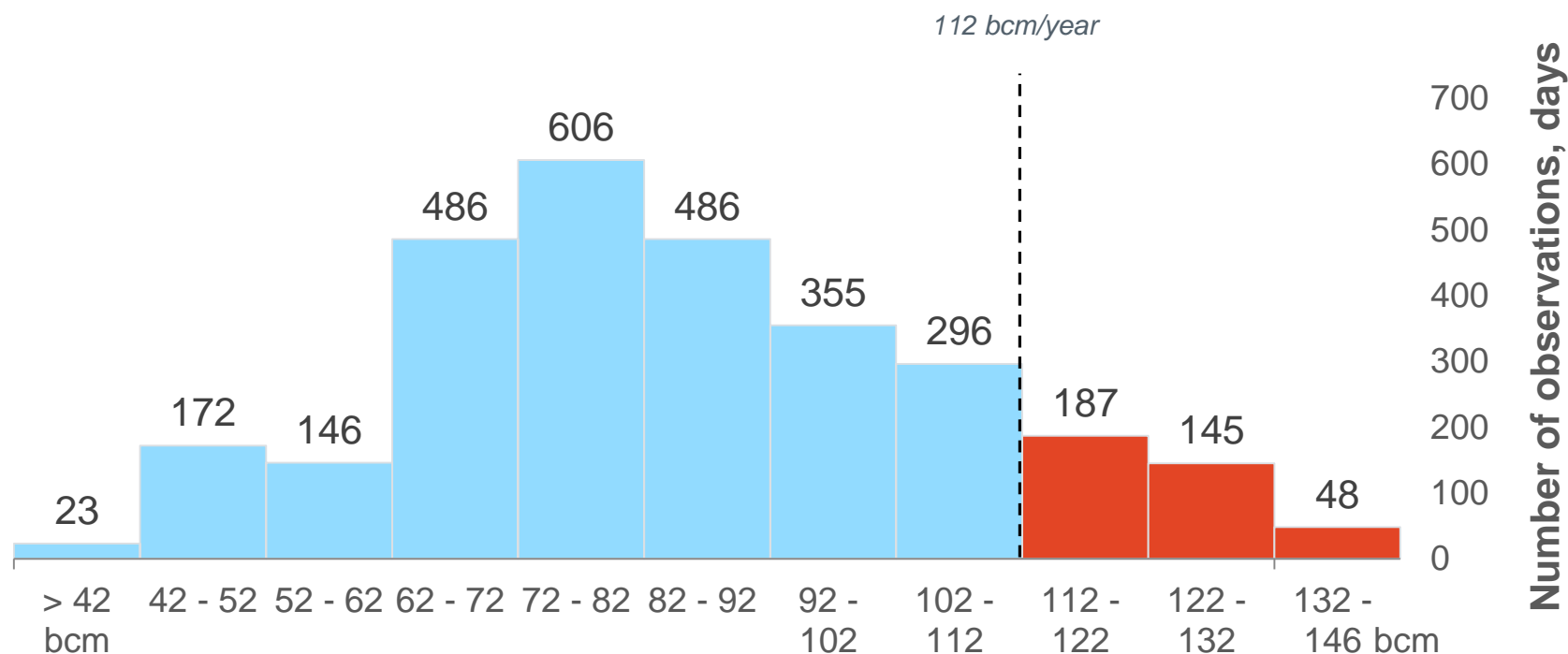
On an annual basis, historically only in three years (2013-'15) committed capacities were not exceeded by Gazprom



Transit through Ukraine: peak vs. committed volumes (cont'd)

On an annualized basis Gazprom exceeded contractual capacities not just occasionally, i.e. annualized actual daily volumes delivered by Gazprom for transit were higher than contractual capacities in approximately 13% of observations

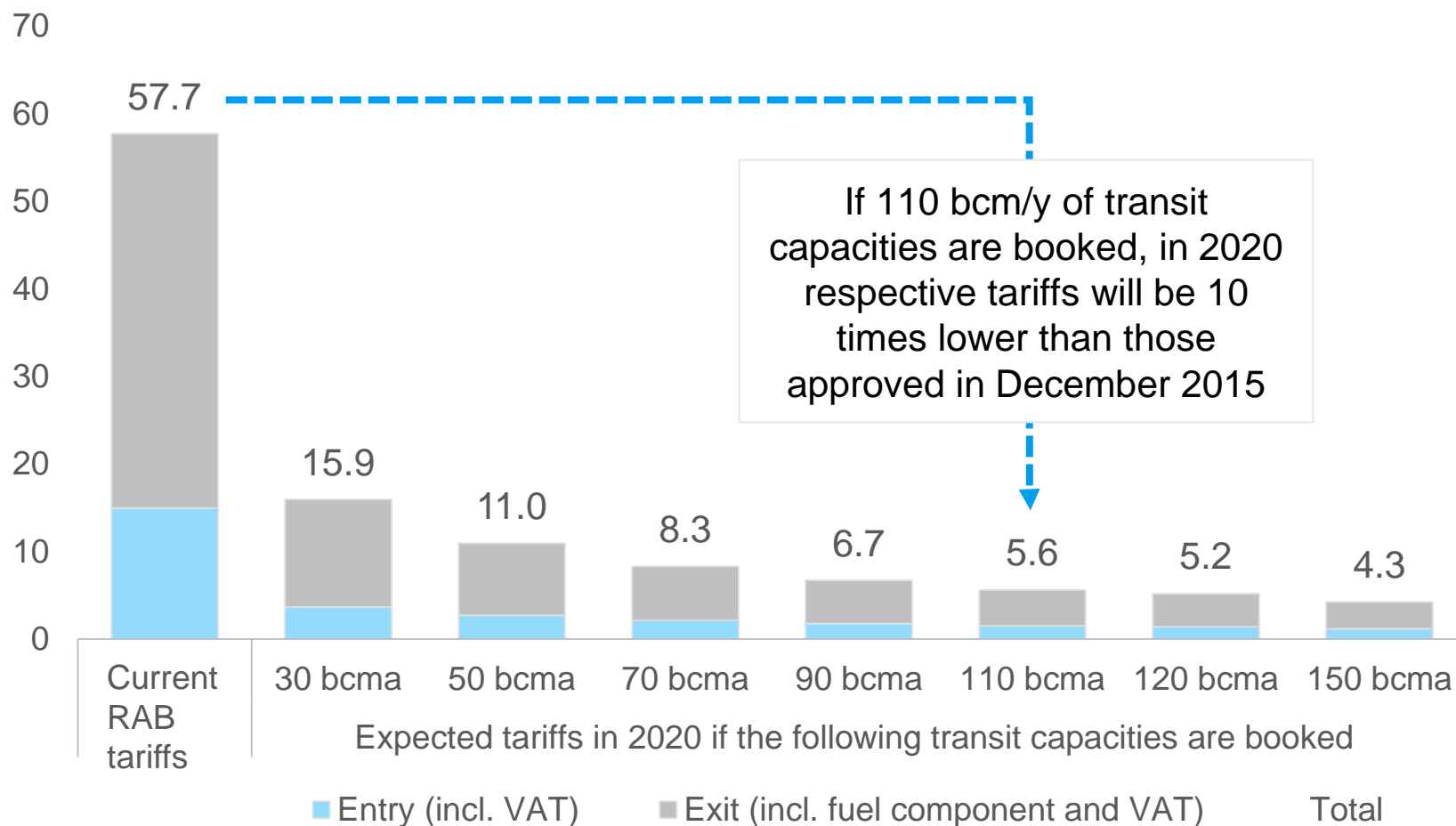
Distribution of annualized daily transit volumes through Ukraine in 2009-Jan'17:



What would be after 2019?

Decision of Russia to bypass Ukraine leads to requirement to apply accelerated depreciation to gas transit assets. Therefore these assets will be almost fully amortized in 2020, tariff will decrease, our route will become the cheapest

in USD/'000m³ (incl. VAT)



Stockholm Arbitration: monetary claims (cont'd)

Supply Case			Transit Case		
	Retroactive compensation (incl. interest)	Future Value of claims (for 2017-'19)		Retroactive compensation (incl. interest)	Future Value of claims (for 2017-'19)
Gazprom Claims	\$ 46.0 bn	\$ 29.7 bn*	Gazprom Claims	\$ 0.007 bn	Avoided higher transit costs
Naftogaz Claims	\$ 17.9 bn	\$ 3.3-3.6 bn**	Naftogaz Claims	\$ 12.1 bn	\$ 14.9 bn***

* – Based on all take-or-pay volume (41.6 bcm p.a.) and expected contractual price without any amendments in contract formula or discounts

** – expected savings on natural gas imports/purchases due to lower expected import price (see next slide for details)

*** – includes \$13.9 bn from higher transit revenues including VAT and expected \$1.0 bn revenues from use of Ukrainian UGSs by third parties

3. Decrease of gas import price

	2017	2018	2019
Expected volumes of imported natural gas ¹ , bcm	10.5	7.8	5.3
Hub+ price ² , \$/'000m ³	247	246	251
Hub- price ³ , \$/'000m ³	97	93	94
<i>Difference if compared with price based on hub+</i>	2.6x	2.7x	2.7x
Potential savings on natural gas imports, \$ bn	1.6	1.2	0.8

4. Decrease of retail gas price

	2017	2018	2019
Retail price at Hub+ import parity price, \$/tcm	318 ⁵	358	364
Retail price at Hub- import parity price, \$/tcm	165	159	160
<i>Difference if compared with price based on hub+</i>	1.9x	2.3x	2.3x

5. Fiscal effect

> \$ 45 bn in 2017–'19

Out of which ~80% could be received in 2017

140 % of 2016 general government revenues⁴

50% of Ukraine's 2016 GDP

Notes:

1 – Based on conservative scenario for gas production growth and improvement in energy efficiency & savings. Under optimistic expectations Ukraine could be net exporter of natural gas by 2020

2 – Estimated weighted average price for Naftogaz and private importers

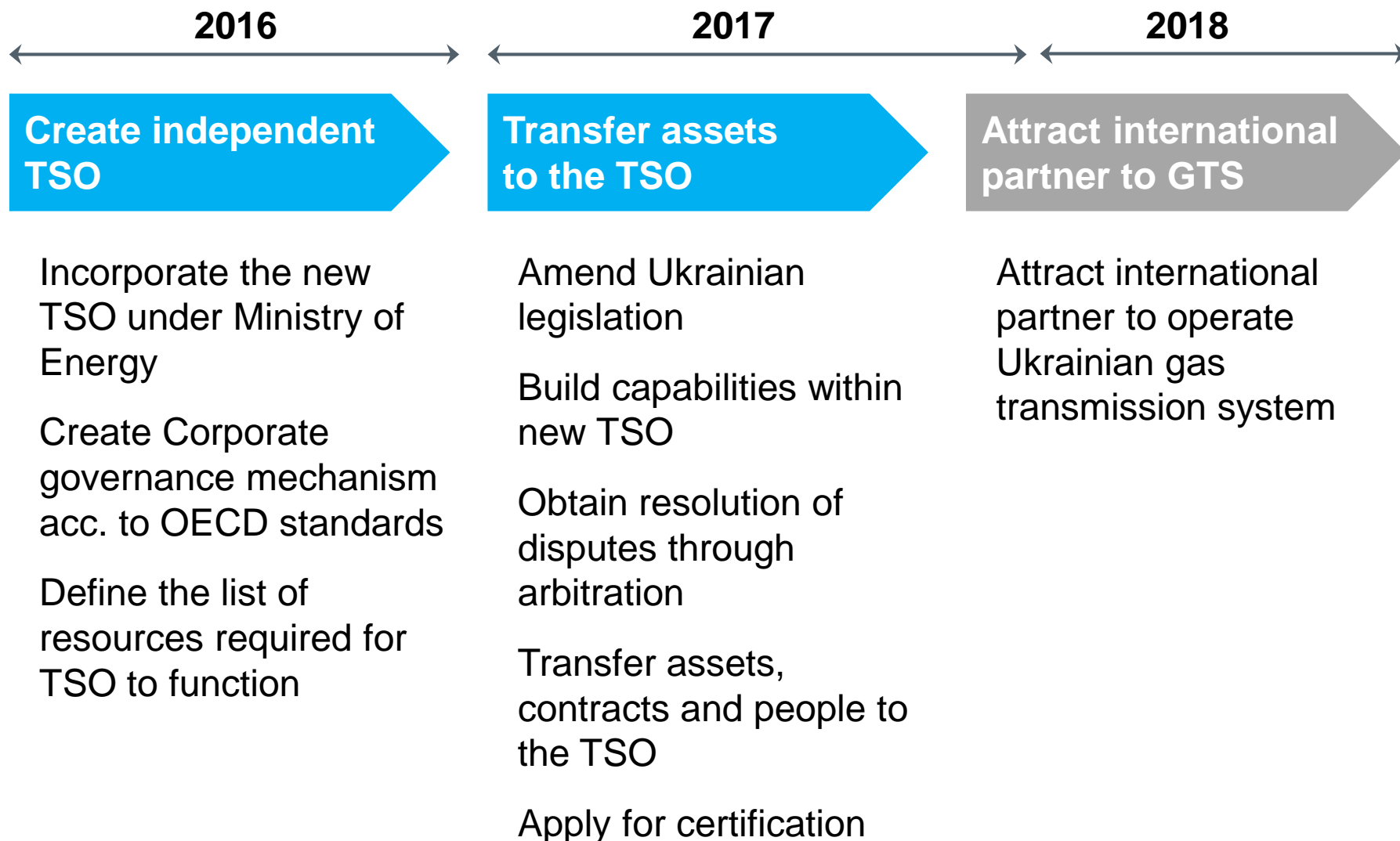
3 – Hub price (NCG) minus cost of transportation from the Eastern Ukrainian border and minus reasonable margin. Summer "hub-" prices are used for calculation, as if Naftogaz has an opportunity to buy all imported Russian gas in summer period

4 – based on 2016 general government revenues

5 – based on price expected in October 2017 under discussed new PSO regime

- Allows to finish in Ukraine:
 - Unbundling of gas transmission (TSO)
 - Implementing other requirements of the EU energy legislation (TEP)
- Tectonic shift in the Central and Easter European gas market:
 - Sustainability with lower market prices for Ukrainian and CEE industrials
 - Liquidity
 - Little Room for corruption and political influence by Russia

Unbundling of the TSO should be finalized in 2017



UKRAINIAN SIDE

- **Most powerful** transit system in Europe:
 - **300+** bcm/y entry capacity
 - **146** bcm/y exit capacity to Europe
- Gas transited through Ukraine is:
 - supplied to **18** countries
 - **18%** of Europe's consumption (**36%** of imports)*
- EBRD and EIB are onboard

**Unbundled
TSO
in partnership
with the
European
Operator**

PARTNER

- Trust from EU off-takers of Gazprom => Additional argument to **move delivery points** to the UA-RU border
- Commercial and technical **know-how** to enhance **efficiency**
- Promote **standard European practices** on the gas market
- Fight corruption and fraud

European off-takers from Gazprom, such as Eni, OMV, Engie, Uniper, BOTAS, and others could **enjoy more flexibility** receiving gas at UA-RU border, **especially given that:**

- International partner for Ukrainian TSO will help to provide necessary comfort for **security of supply**
- starting from 2020 tariffs will be 10x lower than currently making Ukrainian route extremely attractive for the EU shippers

Above 80 bcm of gas, procured by the EU shippers could be delivered at UA-RU border, providing options for:

- flexibility to send gas to different markets;
- fair gas price (“Hub –”);
- access to huge storage capacities in Ukraine;
- low transmission costs

There are strong economic reasons for European off-takers to request from Gazprom to move delivery points to the UA-RU border.

In case Gazprom refuses, it can be considered as anti-competitive behavior and then DG-Competition can help.