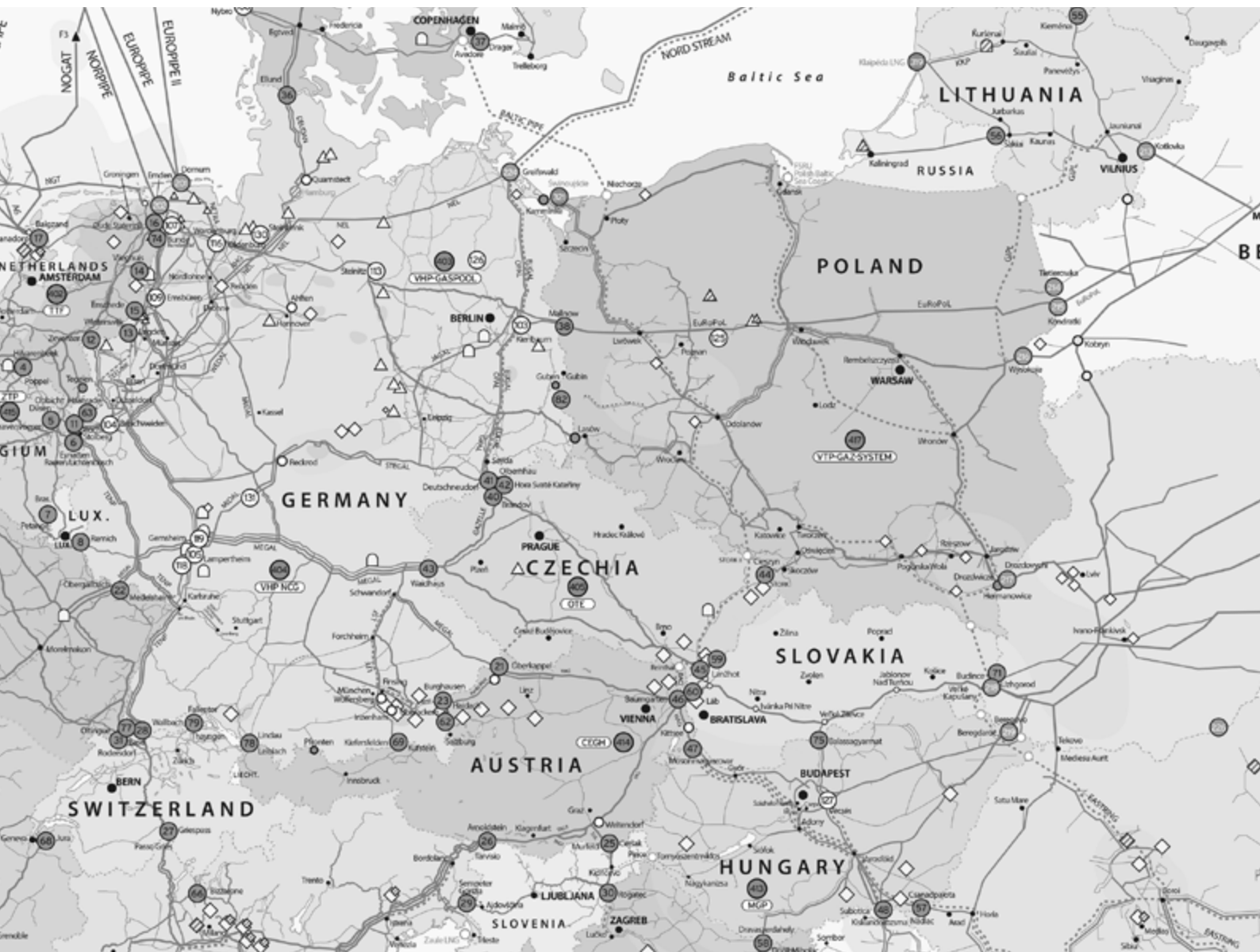




Poland, a 'failed state' in gas trading

Poland's deliberate obstruction of European traded gas market integration and its misguided quest for diversity hinging on 'ideological physicality'



Executive Summary¹

Poland can be regarded as the fiercest opponent of the Nord Stream 2 pipeline project claiming ever increasing dependency on Russia, going as far as depicting Russian pipelines in military 'pincer movement' fashion. It also comes forward with headline-grabbing diversification projects such as the Baltic pipe, claiming the urgent need to mend its lack of supply diversity. A look at the facts provides a different picture.

Poland is blessed with a generous diversity of physical supply availabilities, namely 5 'distinct sources of origin'. The diversity of respective supply routes is even larger. Moreover, Poland scores well as to ACER's market health metrics if one ignores the discounts applied to certain supply sources as ACER does. The alleged Russian dependency turns out to be a myth, in that the sum of non-Russian sources comprises 117% of domestic consumption and almost 260% of the Russian minimum offtake quantities.

There are no obstacles for Poland to become part of the fully integrated, deep, liquid and price-wise closely correlated traded wholesale markets of Northwest-Europe, which notably include the VOB hub of the Czech Republic. The absence of integration is merely the consequence of the barriers to free cross-border trade and free trade at the Polish wholesale market put up by Poland. This has consequences also for the Polish retail market, which must be qualified as the 'perfect storm' of a commercial 'no-go' area due to 'margin squeeze' or 'predatory pricing'.

PGNIG's 2017 sourcing behavior belies Poland's alleged lack of diversity and Russian dependency. PGNIG made use of all of its 5 available sources in turn, notably including considerable quantities by virtual reverse flow from the German hub GPL. Russian supplies were taken in excess of minimum offtake quantities, apparently due to an attractive price.

Poland's quest for diversification appears misguided by 'ideological physicality', promoting the expensive Baltic pipeline project, thereby ignoring the benefits of entry/exit enabling the transport of Norwegian gas landed at the German beach for a few cents per MWh.

The 'true story' of the Polish market situation, as opposed to the 'alternative facts' presented by Poland itself, calls into question Poland's needs for EU funding of various multi-billion diversification projects, e.g. the expansion of its LNG terminal and the Baltic pipe.

Poland's aspiration to become the 'pivotal hub' for Central Europe, the Baltic states and possibly Ukraine could mean putting 'the fox in the henhouse' if this would enable Poland to charge an 'above market' premium to these countries as is its present practice in the Polish market.

The pending proceedings instigated by the EC against Poland because of the so-called storage obligation are only scratching the tip of an iceberg. In order to finally enable free cross-border as well as free trade at the Polish hub and also liberalize the retail market effectively, a whole suite of aspects and measures is offered for consideration.

¹ I am indebted to Prof. Jonathan Stern, from The Oxford Institute for Energy Studies ('OIES'), Dr. Harald Hecking, from the ewi.Energy Research & Scenarios gGmbH (ewi ER&S) and Tomasz Marzec-Manser, from ICIS Heren, for their invaluable help.

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1. Introduction

The – admittedly somewhat assertive – title of this article was inspired by the respective statement of a trader² at the Flame Gas Conference³ in Amsterdam in May 2017.

I have no intention to add to the lament of a frustrated trader. Rather, this article aspires to shed light on some factual realities of the Polish gas market which appear to either have gotten lost or are ignored in the highly emotional political debate e.g. pertaining to the Nord Stream 2 and the Baltic Pipe projects.

My ire to look somewhat more deeply into the Polish gas market was provoked by controversial discussions at various conferences about Poland's ability to achieve price convergence with Northwest-European traded markets. I had suggested that Poland could take similar steps as its neighbor Czech Republic had implemented some 10 years ago, namely the introduction of entry/exit for the whole Czech transportation infrastructure – including the transit pipelines – the latter carrying volumes by far larger than the domestic consumption: This had enabled unbridled virtual reverse flow from the adjacent German NCG and achieved price convergence in a very short period of time. I contended that Poland could, similarly, introduce entry/exit for the Yamal transit line and enable unbridled virtual reverse flow from the German hub GPL. This was emphatically dismissed as 'impossible' or 'possible only to a very limited extent'.

It is therefore mere coincidence that, on 8 March 2018, the European Commission ('EC') sent a Letter of Formal Notice to the Polish Government⁴ which, at first glance, appears to 'only' claim non-compliance with the EU's Security of Gas Supply Regulation. However, if one looks at the EC's preliminary assessments more closely, one could rather say the EC is concerned about anticompetitive behavior of Poland, engineered by 'excessive misuse' of Polish security of supply measures:
"... unduly distorting competition or hampering the functioning of the internal market".

The matter at hand is the gas storage obligation imposed on undertakings importing gas to Poland such that some 20 international trading companies surrendered their import licenses, essentially bringing cross-border trade to a halt safe purchases by incumbent PGNIG.

As we shall see, the EC's concerns are only scratching the tip of an iceberg.

² See also Jonathan Stern in an interview with the Polish journalist Marta Kobrańska on 20 March 2018: <https://www.polityka.pl/tygodnikpolityka/rynek/1741922,1,jonathan-stern-o-polskich-problemach-z-gazem.read>

³ Flame (<https://energy.knect365.com/flame-conference/>) is Europe's largest midstream and LNG event.

⁴ http://europa.eu/rapid/press-release_MEMO-18-1444_en.htm

2. Northwest-European hubs comprise a ‘fully integrated trans-national market behaving like a single price area’ – but Poland is not part of it

For better orientation, the Northwest-European hubs in question can be found on the graph below from ewi⁵, hinging on an excerpt from the ‘ENTSO-G Capacity Map 2017’⁶.

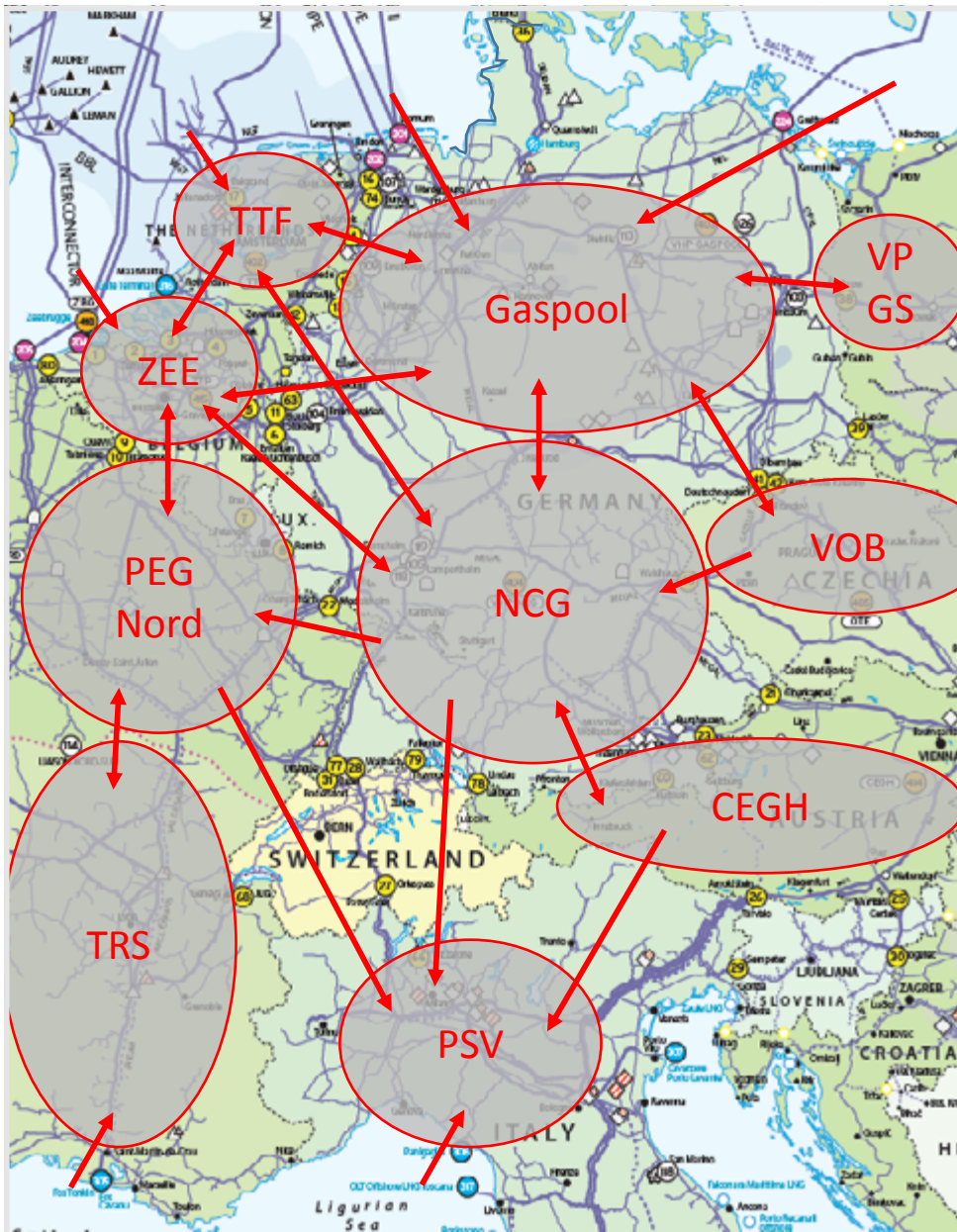


FIGURE 2: SCHEMATIC ILLUSTRATION OF EUROPEAN GAS MARKET AREAS
(Source: Source: ENTSO-G (2017))

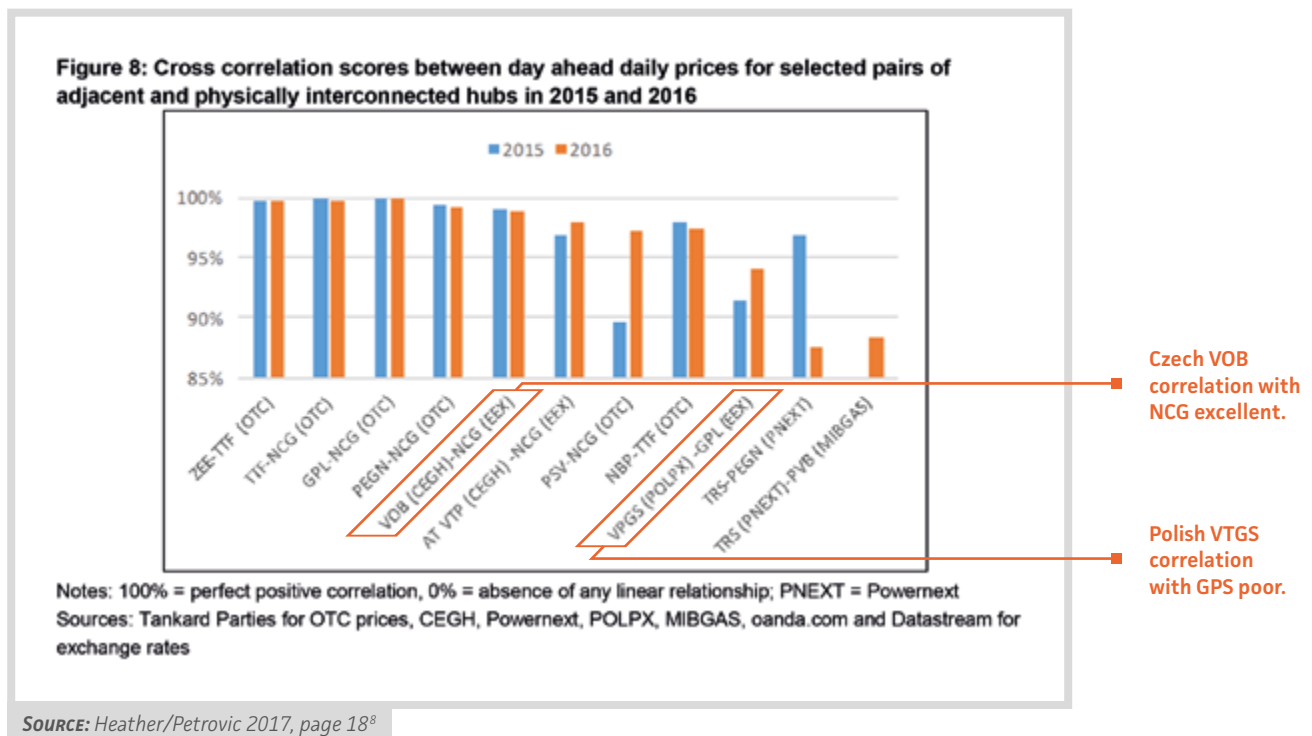
SOURCE: ewi Central European Gas Market Congestion Analysis

5 'ewi Central European Gas Market Congestion Analysis 2018', page 8.
6 https://www.entsog.eu/public/uploads/files/publications/Maps/2017/ENTSO-G_CAP_2017_A0_1189x841_FULL_064.pdf

To spare the reader repetition of extensive analysis on the state of the European traded markets, I simply quote Heather / Petrovic 2017:

*“In Northwest Europe (TTF, NCG, Gaspool, ZEE, PEGN), price alignment and price level convergence continues to be strong: this region **behaves as if it is a single price area, i. e. a fully integrated trans-national market for gas**⁷. Interestingly, the younger and relatively scarcely liquid Czech hub shows prices very closely correlated to this interconnected price area (as reflected in the high correlation score between VOB and the neighboring NCG). This suggests a good level of market openness and the absence of barriers to cross-border trade in this market region.”*

In contrast, the Polish hub VPGS, in the graph below compared with the neighboring German GPL, exhibits significant price-disconnection instead.



We will get back to this ‘Polish phenomenon’, not least because of the stark contrast to its Central-European neighbor Czech Republic below.

⁷ Emphasis added.

⁸ Note the graph, somewhat confusingly, adds to the Czech VOB in brackets ‘CEGH’ (as it also does for the Austrian hub VTP next to it). CEGH is the Austrian exchange which, for lack of sufficient business, tried to expand its exchange business to the Czech Republic.

3. Benefits of full traded market integration through the eyes of a commercial operator

There is extensive and excellent research work on the state of development of European hubs and market integration, particularly by Heather and Petrovich from OIES⁹, but prominently also by ACER¹⁰, in pursuit of the European Gas Target Model ('GTM') aspiring the completion of a single European gas market, further by EFET and others.

Albeit I will draw on some of their insights and conclusions, it is neither my place nor intention to replicate similar kind of analysis. Rather, I aim to explain the benefits of full integration into a deep and liquid traded market through the eyes of a commercial operator.

- **Diversity increase, reduction of physical dependency and amplified negotiating leverage:** Your diversity as to the physical sources of supply comprising the molecules traded increases in that your market now has access to the 'full mix of commingled (and thus 'anonymous') molecules' of the larger traded market. E.g. in the case of the Polish gas market, if it were part of the aforementioned integrated trans-national Northwest-European traded market, also e.g. Dutch and Norwegian molecules as well as LNG imported at the Dutch Gate terminal, the Belgian Zeebrugge terminal or even at UK terminals would become part of its diversity. This means you reduce your dependency on one particular physical source: You 'can buy elsewhere' by sourcing from the traded market. Thereby, you strongly leverage your negotiating power with your long-term gas supplier.
- **Demonstrable 'achievable price':** If you have an argument with your long-term gas supplier about price, be it in negotiations or even in arbitration, you can demonstrate unequivocally that the achievable price is the wholesale traded market price – at the point of first sale – namely the wholesale traded market. The most powerful argument you can have. The recent decision of the ICC Stockholm court of arbitration in the dispute between Ukrainian Naftogaz and Russian Gazprom export underpins this: By exclusively sourcing from the Northwest-European traded markets¹¹, Naftogaz achieved a land-slide ruling for 100% German NCG hub price indexation¹².

I recall that Ukraine is located East of Poland, i.e. farther away from NCG and GPL than Poland. It therefore makes you wonder why Poland's easterly neighbor can bring this about whilst Poland claims 'dependency' instead.

- **Alleviated supply / demand management:** If you hold a long-term gas supply contract ('LTC') indexed to hub pricing and there is less demand than your minimum offtake obligation, you sell the 'surplus' into the traded market¹³, thus managing your 'volume risk'¹⁴. Moreover, this will drop the – in a time of oversupply likely already depressed – traded price further and find its way back into the hub-based pricing formula of your long-term contract, thus lowering your purchase costs to a market price level.

⁹ Oxford Institute for Energy Studies (www.oxfordenergy.org).

¹⁰ Agency for the Cooperation of Energy Regulators (www.acer.europa.eu)

¹¹ At times even at prices higher than what Gazprom offered, ICIS Heren EGM 24.13 of 17 July 2017, p.1: 'Russian gas for Ukraine linked to hubs'.

¹² ICIS Heren, EGM (ICIS' fortnightly analytical report 'European Gas Markets'), 24.13, page 1.

¹³ If you have not already done so anyways for hedging purposes.

¹⁴ It should be noted that, depending on the agreed price formation, time lags apply causing delay for the 'appropriate price' to kick in, which means the volume risk borne by the buyer is not entirely gone.

4. Polish ‘ideological physicality’ ignores benefits of integrated traded markets

As shall be demonstrated, Poland has ‘all it takes’ to become an integrated part of the Northwest-European traded markets. It is the lack of political will to allow, or should we say the determination to prevent, free cross-border trade as well as free trade on the Polish hub VPGS by a multitude of competing counterparties enabling price formation in Poland by supply and demand. The Polish government is, instead, pursuing a misguided quest for security of supply in essence comprising the following elements:

- No physical Russian molecules, wherever they come from.
- Complete control of its own market by state-owned incumbent PGNIG and its subsidiaries, thus keeping competitors out.

The author cannot help but join Prof. Jonathan Stern from OIES in qualifying such view of the gas markets and the approach to security of supply as ‘*ideological physicality*’¹⁵. The last time I encountered this view was in the mid-nineties of the last century, i. e. more than 20 years ago, in the Czech Republic. Having applied for accession to the European Union and set to join NATO, it pursued diversification of gas supplies with a vengeance¹⁶. From the multitude of Western would-be suppliers only 2 made the short list, the Norwegian GFU and American Mobil Europe Gas. All others were thrown out because they had, in one way or another, Russian molecules in their portfolio. Meanwhile, the Czech Republic has come a long way: Not only is it regarded as the ‘mother’ of virtual reverse flow, but it is, as already indicated, part of the Northwest-European traded markets, behaving like a trans-national single price area.

The ‘physical view’ may indeed have been understandable given the state of the European gas markets in the mid-nineties of the last century, but it is entirely inappropriate today, in the face of liberalized, competitive traded wholesale markets. The above aspects explained ‘through the eyes of a trader’ make this apparent: If your gas market is a large, deep and liquid traded wholesale market, fed by multiple supply sources, and with lots of participants and lots of transactions, the physical origin of the molecules becomes entirely irrelevant: they commingle and become ‘anonymous’. The same is true if your gas market is fully interconnected with an adjacent (neighboring) traded gas market meeting these criteria, which for Poland is the case.

Importantly, and frequently overlooked by these governments, traded market integration achieves, besides the obvious commercial benefits of lower, competitive prices, a crucial *political* benefit. The aforementioned leveraged commercial negotiating position (you can buy ‘elsewhere’) affects, by the same token, the political dimension of security of supply: you have eliminated any exposure to potential political blackmail¹⁷.

Moreover, the pursuit of erroneous security of supply arrangements driven by ‘ideological physicality’ is prone to cause substantial economic disadvantage: E. g. you deprive yourself of reaping the benefits of supplier competition resulting in low traded price levels to the benefit of your country’s end-users and the economy at large – by no means a trivial matter. We shall come back to this important aspect – commonly called the ‘consumer welfare benefit’ (or loss) in somewhat more detail in section 8.below.

¹⁵ Expression coined by Jonathan Stern.

¹⁶ Stern 1999, Competition and Liberalization, page 27.

¹⁷ For a more detailed analysis of the irrelevance of the so-called ‘Putin phobia’ see W. Peters, ‘Implications of a global gas market for traditional gas economical paradigms’ (<https://www.naturalgasworld.com/ggp-implications-of-a-global-gas-market-for-traditional-gas-economical-paradigms-59197>; http://gasvaluechain.com/cms/wp-content/uploads/2018/03/2018-02-20-Implications-Global-Gas-Market...-W.Peters_Gas-Value-Chain.pdf), page 11.

5. Poland's supply situation scores well on ACER 'market health metrics'

ACER¹⁸, in pursuance of the European Gas Target Model (GTM), has i.a. developed 'market health metrics'¹⁹, which it periodically assesses in annual monitoring reports.

In the 'ACER Gas Wholesale Monitoring Report 2016', Poland meets the first market health metric – the number of other 'distinct supply origin sources' – by far.

On the second metric, the so-called Residual Supply Index ('RSI'), essentially measuring the degree of single source dependency or, respectively, independency, ACER rates Poland below target. However, it shall be demonstrated that this is only the case because ACER – in an overly careful and somewhat contradictory approach – heavily 'discounts' certain potential supply sources.

A third market health metric used by ACER, namely the Herfindahl-Hirschmann Index ('HHI'), where Poland scores poorly, shall be discussed and dismissed as inappropriate.

5.1 Impressive multitude of Polish Interconnection Points

Poland features an impressive multitude of interconnection points ('IPs') with respective supply capacities. For better optical orientation, the below excerpt of the 'ENTSOG Capacity Map 2017' highlights the abovementioned multiple IPs of the Polish gas system as well as the entry for supplies from the LNG terminal Świnoujście.



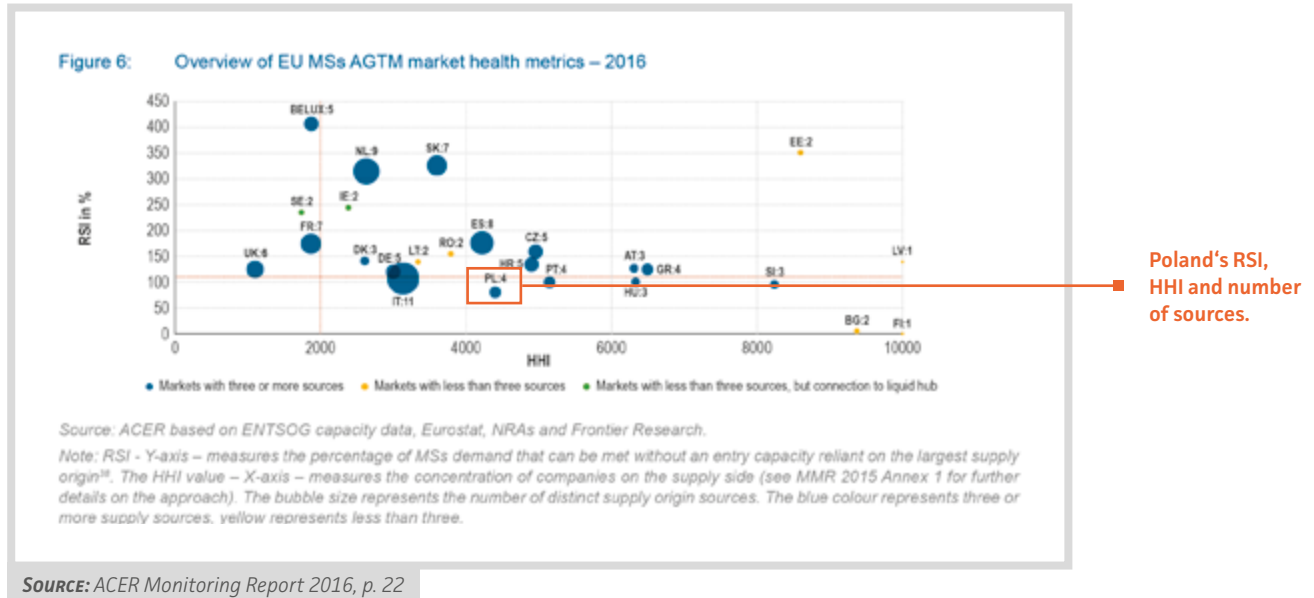
SOURCE: ENTSOG Capacity Map 2017

18 Agency for the Cooperation of Energy Regulators (www.acer.europa.eu).

19 ACER's entire spectrum is larger in that it also measures 'market participant needs' metrics. These would reveal further deficiencies of the Polish market. We restrict ourselves to the market health metrics to make the point.

5.2 ACER supply source count: 'distinct supply origin sources'

Poland belongs to the category of gas markets with 3 or more physical sources of supply, 3 sources being the threshold for a positive market health score.



Indeed, Poland avails as of today of **5** distinct physical sources of supply, with the diversity of transport routes (e.g. German and Russian supplies) even larger:

- Indigenous Polish production.
- LNG imports via the LNG terminal Świnoujście.
- Imports from the German gas hub GPL via the IPs Mallnow and Lasow.
- Imports from the Czech gas hub VOB via the IP Cieszyn.
- Imports from Russia via the IPs Tietierowka, Kondratki and Wysokoje (Belarus) as well as the IP Drozdowicze (Ukraine).

The above ACER graph erroneously indicates 'only' 4 sources of supply instead of 5. On inquiry, ACER advised it did not account for the Czech/Polish IP Cieszyn for lack of physical flows in 2016²⁰. According to Czech TSO net4gas data, this is incorrect. The IP Cieszyn saw in 2016, albeit small quantities, 61 GWh of supply from the Czech VOB into Poland²¹. Also in 2017 and 2018, Czech supplies were shipped into Poland²².

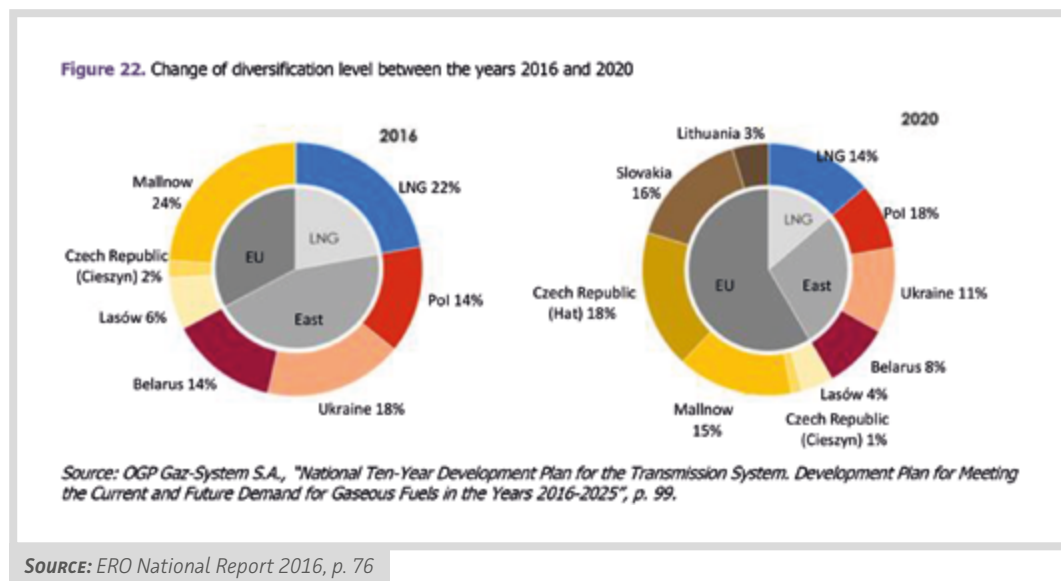
²⁰ ACER advised that they relied on Eurostat data.

²¹ http://extranet.net4gas.cz/allocation_ee_point.aspx.

²² http://extranet.net4gas.cz/allocation_ee_point.aspx.

5.3 Regulator ERO's (implicit) acknowledgement of ample supply diversity

Also the Polish national regulator, ERO²³, notably already in its 'ERO National Report 2016' (i. e. on 2015), shows a diversity of accessible supply sources which does not necessarily impress an alarmingly large single source supply dependency on the reader.



When reading ERO's next year's report, i. e. the 'ERO National Report 2017', one searches in vain for an update of the above instructive pie-charts. An oversight or the omission of an inconvenient truth?

5.4 ACER's 'Residual Supply Index'

Poland meets, in the opinion of the author, also a further criterion of the ACER market health metrics assessment, namely the so-called Residual Supply Index ('RSI').

ACER's approach to assess the RSI is about '*capabilities stemming from available capacities*': i. e. the methodology disregards actual physical flows (i. e. 'market shares'), but rather considers the sum of available *potential* supplies (other than the largest source), in which it includes indigenous production but not storage stocks. It then computes the ratio between such 'alternative supply potential' and domestic consumption.

$$\text{Calculation of the RSI: } RSI = \frac{\text{total gas capacity} - \text{largest supplier's capacity}}{\text{gas consumption}}$$

SOURCE: 'ACER European Gas Target Model 2015 Annex'

²³ Energy Regulatory Office', frequently also 'URE' (acronym for the Polish title).

ACER regards its RSI method as closely related to the concept of 'pivotality', which determines whether the largest supplier is indispensable and thus has price-setting power:

"The RSI is closely linked to the concept of pivotality which determines if a certain source of supply is pivotal, i. e. the market cannot be supplied without supply from that specific source. Therefore the RSI focuses on capacity²⁴ and determines the relationship between the sum of the supply capabilities²⁵ of all suppliers except the largest source – and total demand in the market. This ratio is the RSI. ... If the RSI is less than 100 %, the respective supplier is considered to be pivotal"²⁶.

In the 'ACER Gas Wholesale Monitoring Report 2016', Poland scores, with 79%²⁷, below the 110 % RSI threshold ACER regards as 'healthy'. However, this result only transpires because ACER, overly cautious and somewhat contradictory, deviates from its own initial approach to assess capabilities on the back of capacities rather than actual physical flows: it is heavily discounting nameplate capacities, e. g. IPs with 15 % (unless physical use has been higher) and LNG send-out capacity with 25 %²⁸.

ACER's extreme carefulness works like a 'double whammy' in the negative direction: First, ACER elevates the RSI health level to 110 % whilst an RSI of 100 %²⁹ would clearly suffice to neutralize the market power ('pivotality') of the largest supplier. Second, it heavily discounts, as already mentioned, the 'alternative' supply source capacities.

E. g. ACER's reasoning for discounting LNG capacity by 25 % is price: Given the 'low utilization of European LNG terminals due to unattractive European price levels' (vs. other regions in the world) ACER deems it appropriate to discount the available LNG capacity. ACER is, thereby, defeating its own purpose: If the largest supplier successfully exercises his presumed 'pivotality' and increases price levels, it will attract LNG potentially up to full capacity, thus defeating the largest supplier's alleged price-setting power by taking market share³⁰.

Indeed, the mere potential availability of destination-flexible and price-responsive LNG makes LNG the marginal price setter: it puts a 'cap' on the maximum achievable price of the (also the largest) pipeline suppliers³¹. The best example to underpin this hypothesis is the Lithuanian Klaipeda terminal: Already its mere presence forced the Russian import price down significantly.

The same goes for the Polish/ German and Polish/ Czech IPs: Since they connect the Polish market to liquid traded markets (German GPL and Czech VOB), commercial operators would – provided free cross-border trade were possible – supply into the Polish VPGS from these hubs at full IP capacity by means of arbitrage as long as any price delta exists.

Hence, there is neither a rational reason to discount the LNG terminal send-out capacity nor that of the German and Czech IPs. Moreover, an approach ignoring ACER's discounts supports the main thrust of this paper, namely to find out whether Poland's alleged lack of diversity and dependency on Russia is real or rather falls into the category of 'alternative facts'.

24 Emphasis added.

25 Emphasis added.

26 'ACER European Gas Target Model 2015 Annex', page 24.

27 ACER's source data for the 'ACER Gas Wholesale Monitoring Report 2016' for figure 6 at

https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Gas%20wholesale-List%20of%20Figures%202016.pdf

28 'ACER European Gas Target Model 2015 Annex', page 26.

29 Economic theory would usually regard even the 'marginal' source of supply as the price setter, provided you have a functioning market.

30 On the role of LNG as the 'price cap' for pipeline supplies to Europe and, subsequently, the need to reformulate security of supply as a 'functionality of price signals' see W. Peters, 'Implications of a global gas market for traditional gas economical paradigms' (<https://www.naturalgasworld.com/ggp-implications-of-a-global-gas-market-for-traditional-gas-economical-paradigms-59197>); http://gasvaluechain.com/cms/wp-content/uploads/2018/03/2018-02-20-Implications-Global-Gas-Market...-W.Peters_Gas-Value-Chain.pdf), page 11.

31 Ibid.

5.5 RSI assessment conform author's approach

As to the relevant numbers, we use the IEA Natural Gas Information data on domestic consumption and production and otherwise ENTSOG data. To avoid complexity, we abstain from upscaling ENTSOG's 'Normal Cubic Meters' into 'Standard Cubic Meters' as used by the IEA and others³².

POLAND								
Table 3A. Natural gas supply and consumption								
Milion cubic metres								
	1973	1990	2000	2012	2013	2014	2015	2016p
Indigenous production	6 458	4 095	5 224	6 317	6 206	6 080	6 078	5 794
+ From other sources	-	-	-	-	-	-	-	-
+ Imports	1 680	8 266	8 097	12 248	12 485	11 819	12 121	14 680
- Exports	-	1	41	3	94	76	56	805
+ Stock changes	-	- 204	49	- 324	- 356	42	178	- 445
- Statistical difference	-	-	- 17	141	12	207	119	1
Total consumption	8 138	12 096	13 346	18 097	18 229	17 658	18 292	19 143

SOURCE: IEA Natural Gas Information 2017

According to the IEA Natural Gas Information 2017³³ Poland's 2016 domestic consumption was **19.143 bcm**³⁴.

The non-Russian 'supply origin sources' that could be made available to supply the Polish gas market comprise:

- Indigenous production conform the above IEA table of **5.794 bcm/a**.
- According to the 'ENTSOG Capacity Map 2017' the physical reverse flow capacity from Germany to Poland at the IP Mallnow comprises 117.6 GWh/d equaling, with an average GCV of 11.075, **3.875 bcm/a**.

038 Mallnow		GAZ system (PL-DE)				
GASCADE	→	GAZ-SYSTEM (ISO)	117,6	B	11,070	11,080
GAZ-SYSTEM (ISO)	→	GASCADE	931,5			

SOURCE: ENTSOG Capacity Map 2017

This ENTSOG figure is not in line with the information from ERO in its 'ERO National Report 2017'³⁵. According to ERO, the Mallnow IP is capable of providing:

- firm 'physical reverse flow' supplies of up to **5.5 bcm/a**
 - and further 'interruptible capacity'³⁶ of **2.7 bcm/a**
- from the German hub GPL.

³² For a detailed explanation, see 'Sharples, Ukrainian Gas Transit Still Vital', page 12. Ignoring the factor of 1.055 makes our calculations conservative, but sufficient to make the point.

³³ www.iea.org

³⁴ The IEA follows 'Polish methodology' of converting 'all gases' to H-gas. I.e. lower calorific Polish domestic production and, partially, consumption will result in lower volume figures. See 'IEA Poland 2016 Review', page 139.

³⁵ 'ERO National Report 2017', page 62, footnote 25.

³⁶ It is unclear whether ERO means 'virtual reverse flow' or additional physical reverse flow which may be blocked from time to time if Russian volumes flowing from East to West are supposed to exit the PWP.



On inquiry, ENTSOG has provided updated numbers on physical reverse flow capacities at the IP Mallnow:

DEg>PL/YAM	Mallnow	184,8
	Total	184,8

SOURCE: ENTSOG Capacity Map source data, updated



According to ENTSOG’s update, the physical reverse flow capacity from Germany to Poland at the IP Mallnow comprises 184.8 GWh/d equaling, with a GCV of 11.075, **6.05 bcm/a**. We shall use this figure for our calculations.

– According to the ENTSOG Capacity Map 2017³⁷ the IP Lasow comprises a capacity of 48.7 GWh/d equaling, at a GCV of 11.15, **1.59 bcm/a** from the German GPL.

082	GCP GAZ-SYSTEM/ONTRAS		 				
	ONTRAS →	GAZ-SYSTEM	48,7	-	B	11,150	11,150
	GAZ-SYSTEM →	ONTRAS	0,1	B	-	11,150	11,150
<i>According to Art. 19 (9) of CAM NC, ONTRAS and GAZ-SYSTEM to agreed to offer the capacity at one virtual interconnection point - GCP GAZ-SYSTEM/ONTRAS</i>							



SOURCE: ENTSOG Capacity Map 2017

– According to the ENTSOG Capacity Map 2017³⁸, the IP Cieszyn comprises a capacity of 28.0 GWh/d equaling, at an average GCV of 11.235, **0.9 bcm/a** from the Czech VOB.

044	Cieszyn (PL) / Český Těšín (CZ)		 				
	NET4GAS →	GAZ-SYSTEM S.A.	28,0	Y		11,220	11,250
<i>CZ > PL: 4,3 GWh/d from May to September</i>							

SOURCE: ENTSOG Capacity Map 2017

– According to the ENTSOG Capacity Map 2017 the send-out capacity of the LNG terminal Swinoujscie comprises 158.0 GWh/d equaling, with an average GCV of 11.55, **4.99 bcm/a**³⁹.

321	Świnoujście (LNG)		 			
	Polskie LNG →	GAZ-SYSTEM	158,0	N	N	11,550

SOURCE: ENTSOG Capacity Map 2017

37 .ENTSOG Capacity Map 2017; IP no. 82.

38 .ENTSOG Capacity Map 2017; IP no. 38.

39 See also ,ERO National Report 2017; page 11: 5 bcm/a.

The above numbers applied conform the author’s approach result in the following RSI computation:

Poland	bcm / a	GWh/d	GCV (GWh / mcm)
Domestic consumption	19.14		
Indigenous production	5.79		
LNG	5.00	158.0	11.55
Mallnow physical reverse	6.05	184.8	11.075
Lasow	1.59	48.2	11.15
Cieszyn	0.90	28.0	11.235
Sum ‘distinct origin sources’	19.33		
RSI without Mallnow interruptible	101%		

SOURCE: Own calculations based on IEA and ENTSOG data

The sum of undiscounted ‘distinct origin sources’ other than the Russian source comprises **19.33 bcm/a**, thus clearly exceeding domestic consumption and rendering an **RSI of 101%**.

In other words, the recomputed RSI does not meet ACER’s ambitious 110% target, but, to say the least, is casting serious doubt on the implied Russian ‘pivotality’ which the ACER RSI of 79% suggests.

5.6 ‘Crying wolf’⁴⁰: Alleged but unfounded Russian dependency despite ‘high HHI’

The above clearly demonstrates that the Polish gas supply situation is by no means a ‘desperate’ single source dependency narrative.

Also the – in the context frequently belabored – Herfindahl-Hirschmann Index (‘HHI’) is unfit to prove the contrary. The HHI is the third ACER market health metric, on which Poland scores poorly with 4,394⁴¹ whilst ACER considers 2,000 or less as ‘healthy’. ACER uses the HHI method to assess ‘market shares’ - based on actual physical volumes – in each respective Member State.

In doing so, ACER deviates once more from its point of departure, namely to assess market health by ‘capabilities based on capacities’ with a view to determine whether the ‘pivotality’ of the largest supplier can be neutralized. ACER also disregards whether an individual Member State is the ‘relevant market’ for such assessment⁴². By just looking at physical volume shares of upstream suppliers, ACER also disregards how the market of such Member State deals with such physical volumes as to price formation. Most striking is perhaps that both Germany and The Netherlands, with well diversified markets and fully integrated in the Northwest-European transnational traded market, also come out with ‘bad’ HHI scores considerably above 2.000 at 2,949 and 2,662, respectively⁴³. Last but not least, it completely ignores the ‘market merit order’:

40 An expression forged by Tom Marzec-Manser from ICIS Heren, see ‘Crying wolf, ICIS Heren EGM 25.09’.

41 ACER’s source data for the ‘ACER Gas Wholesale Monitoring Report 2016’ for figure 6 at https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Gas%20wholesale-List%20of%20Figures%202016.pdf.

42 E.g. in the Statoil/Norsk Hydro merger case, the Northwest-European market was deemed the relevant market.

43 ACER’s source data for the ‘ACER Gas Wholesale Monitoring Report 2016’ for figure 6 at https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Gas%20wholesale-List%20of%20Figures%202016.pdf.

If Russian gas is cheaper than other sources (even traded products), LTC buyers will nominate maximum and the share of Russian gas can be high. Not because of Russian price setting power or 'dominance', but simply because of an attractive price.

Also the fact that traded volumes from Germany and the Czech Republic contain 'large shares' of Russian gas (which the HHI method uses, since focused on upstream supplier market shares), is missing the point of traded markets. As already explained⁴⁴, molecules become 'anonymous' and it is entirely irrelevant from which initial source they stem.

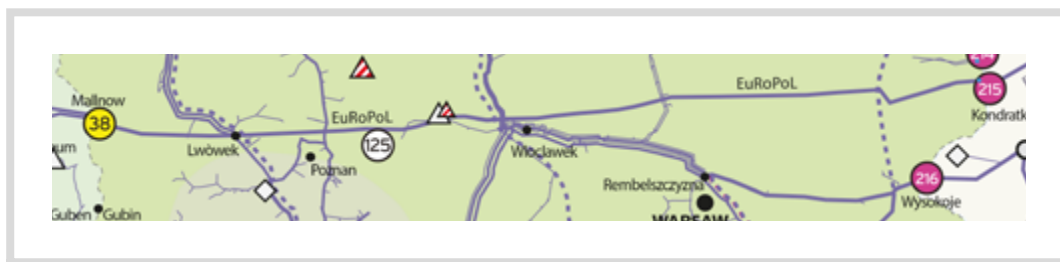
Already at this point, it is difficult to accept that Polish voices, ranging from government-, administration- and state-owned PGNIG representatives towards even members of the European Parliament⁴⁵, so loudly claim, in 'crying wolf' fashion⁴⁶, their 'terrible dependency' on Russia/Russian gas.

The absence of Poland's integration into the Northwest-European traded markets 'behaving like a single price area' is not the consequence of dependency, but rather of its own deliberate obstruction of free cross-border trade and free trade at the VPGS.

6. The 'next level': unbridled Yamal virtual reverse flow Mallnow / PWP

The ample Polish diversity is clearly capable of neutralizing Russian 'pivotality'. Such diversity can be taken to 'the next level' by unbridled virtual reverse flow in the Yamal transit line between the IPs Mallnow and PWP⁴⁷, the latter being the Yamal exit point into the VPGS. This would further increase the potential of achieving price convergence with the Northwest-European traded markets, provided however that free cross-border trade as well as free trade at the VPGS are possible. We shall briefly review the additional potential.

The Yamal transit pipeline enters Poland at the IP Kondratki⁴⁸ at the Belarus / Polish border and exits Poland at the IP Mallnow⁴⁹ at the Polish / German border. In order for volumes carried in the Yamal transit line – no matter whether flowing in East-West or West-East direction – to enter the Polish hub VPGS the available exit capacity of the PWP is crucial.



SOURCE: ENTSOG Capacity Map 2017

⁴⁴ See above, page 5.

⁴⁵ Prominently e.g. MEP Jerzy Buzek, the head of the European Parliament's Committee on Industry, Research and Energy: "We would like to end something that is very dangerous – using energy decisions as a political weapon. It is very important for us." (<http://www.thenews.pl/1/6/Artykul/355292,Nord-Stream-2-plans-hit-stumbling-block>)

⁴⁶ See 'Marzec-Manser, 'Crying wolf, ICIS Heren EGM 25.09'. We shall come back to the observations of Marzec-Manser in more detail.

⁴⁷ "Punkt Wzajemnego Połączenia Rewers...", ENTSOG Capacity Map 2017, IP no. 125

⁴⁸ ENTSOG Capacity Map 2017, IP no. 215.

⁴⁹ ENTSOG Capacity Map 2017, IP no. 038.

As shall be demonstrated, the Yamal transit line can be used both for 'physical reverse flow' (West-East flow) as well as 'virtual reverse flow' (East-West flow 'diverted').

6.1 Physical and virtual reverse flow

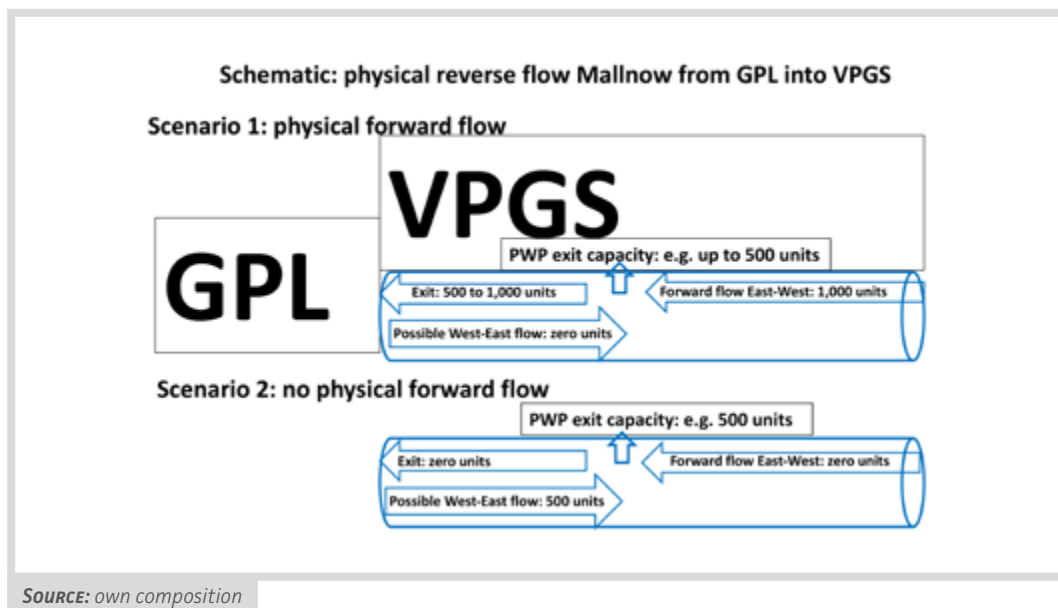
In order to better understand how 'virtual reverse flow' works we shall first briefly discuss 'physical reverse flow'.

6.1.1 How physical reverse flow works

Physical reverse flow from the IP Mallnow would move physical molecules from the German GPL to the Polish VPGS. Physical 'reverse' flow is therefore actually forward physical flow, however, in an existing pipeline which usually flows gas in the opposite direction (hence 'reverse'). This makes the respective IP Mallnow 'bi-directional'.

The investment required to achieve such is, in comparison to a new-built pipe, usually negligible: essentially all you need is to enhance the metering devices⁵⁰ such that they can also accurately measure the flow in the opposite direction⁵¹ and, depending on technical circumstances, enable compression in the opposite direction. In some cases, more substantial investment may be required if the hub grid from which the 'replacement sourcing' is done needs to be reinforced.

Since gas can physically only flow in one direction, the basic concept is simple: if there is forward flow, there can be no physical reverse flow. If there is, for whatever reason, no forward flow, physical reverse flow can be deployed.



Hence, whilst physical reverse flow is usually offered as 'firm' (as opposed to 'virtual reverse flow qualified as 'interruptible'), somehow insinuating that physical reverse flow is the more solid and reliable method, it is actually rather the exception than the rule: Under normal circumstances, you will have forward flow in a transit line constraining physical reverse flow but at the same time enabling virtual reverse flow.

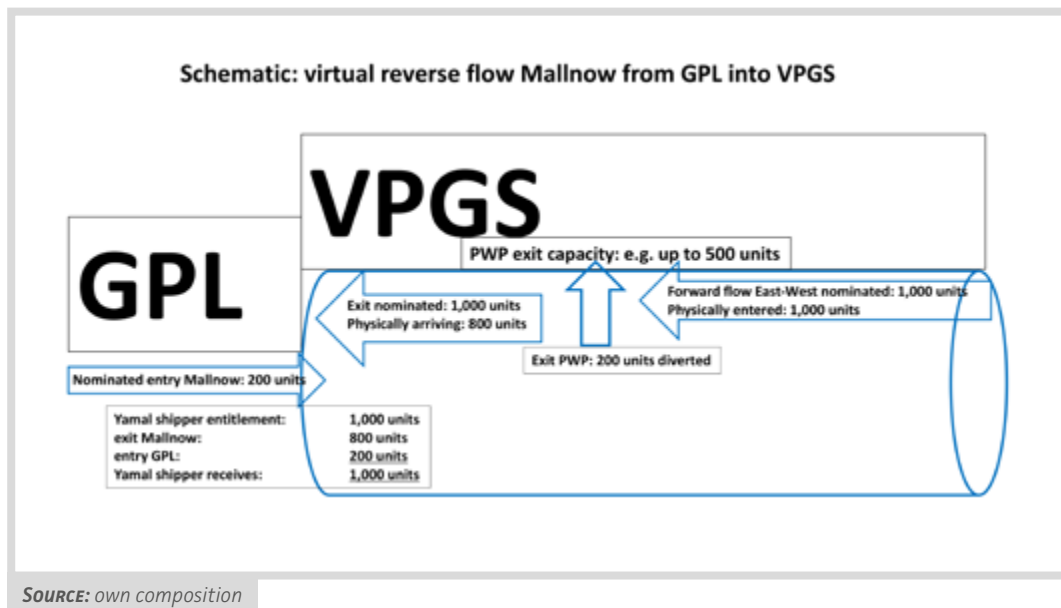
⁵⁰ Gaz System press release 'Physical Reverse Flow in the Yamal Pipeline' of 04.12.2012 (<http://en.gaz-system.pl/pdf/press-centre/news/information-for-the-media/arttykul/201595/>): "According to the Agreement, the German operator – GASCADE – will complete the necessary investments at the cross-border point metering station ..."

⁵¹ In case of serious emergency, you can also do physical reverse flow without respective metering devices, resulting in a larger bandwidth of metering tolerances. Such was done at the IP Lanzhot in January 2009 from the Czech Republic to Slovakia during the 'Ukrainian gas crisis'.

6.1.2 How virtual reverse flow works

In contrast, in the case of virtual reverse flow, no physical molecules ever leave the GPL. Instead, respective portions of the Yamal East-West flow are 'diverted' directly into the Polish VPGS.

A counterparty ('CP1') active on the GPL consummates a sale of say 200 units to counterparty 2 ('CP2') active at the VPGS. CP1 would buy the 200 units at the GPL hub and indeed nominate entry for these quantities at Mallnow as well as exit at the PWP. However, they would never physically be shipped there.



As we can see, the shipper transporting gas in the Yamal line is no longer 'master of the molecules'. They have become anonymous and are managed by the TSOs in what they deem the most efficient way. All the Yamal shipper is entitled to is to receive, at Mallnow exit/entry GPL, the 1,000 units which he entered at the Yamal Kondratki IP in the first place. Because of the diversion of 200 units at the PWP the Yamal volume arriving at Mallnow is only 800 units, i.e. 200 units short. Because CP1 has purchased such 200 units at the GPL and nominated their entry at Mallnow, the TSOs 'match' the respective positions of the Yamal shipper (who now receives his 1,000 units) as well as CP1 (long) and CP2 (short) via shipper codes.

In theory, there is no limit to such virtual reverse flow. Indeed, the entire Polish net import demand, i.e. 13.49 bcm/a⁵², could theoretically be satisfied in this fashion. In reality, there are the following potentially constraining factors:

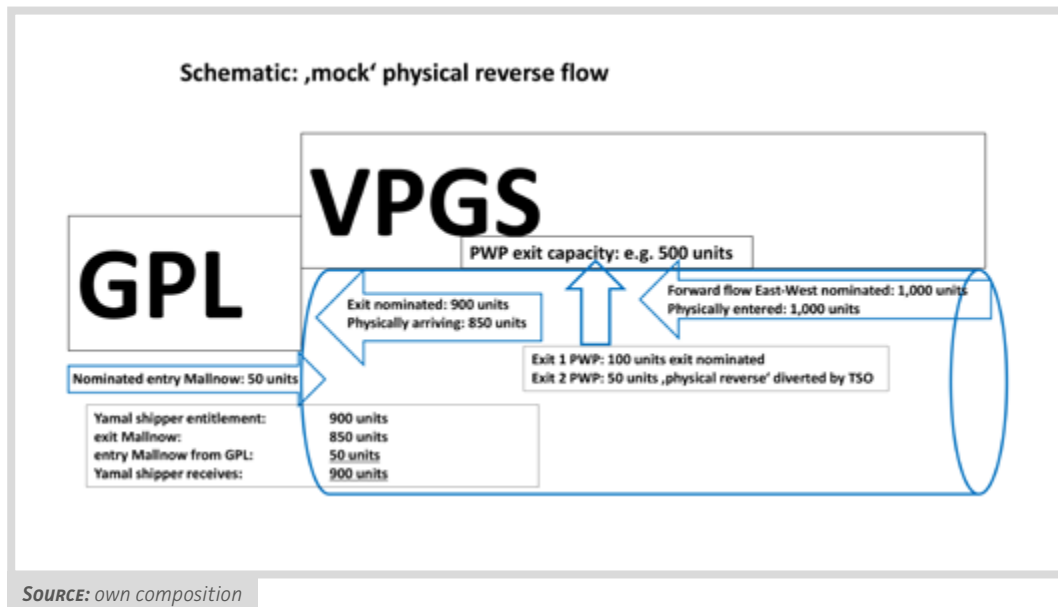
- An East-West forward flow quantity exceeding or at least matching the desired virtual reverse flow quantity into the VPGS.
- The nameplate Yamal / PWP exit capacity (equaling entry capacity into VPGS).
- Depending on technical circumstances, a possible minimum flow requirement at the IP Mallnow.
- Sufficient capacity of the (GPL) hub grid to carry the substitution volumes to Mallnow⁵³.

⁵² 19.143 minus indigenous production of 5.794 bcm/a in 2016, see above.

⁵³ Note this is a simplified demonstration of the mechanism. In reality, the TSOs avail of further flexibilities, e.g. line-pack, the ability to make the volumes available not at Mallnow but at another exit point to match shippers' positions etc.

6.1.3 'Mock' physical reverse flow

If physical reverse flow is nominated whilst there is forward East-West flow in the Yamal transit line⁵⁴, we are in reality dealing with 'virtual reverse flow in disguise' or 'mock' physical reverse flow. It should be noted that this is not a recognized third category of reverse flow, but specifically 'designed' by the author to assist in looking through Polish intransparency.



The above schematic illustration assumes that the Yamal shipper (arguably Gazprom export)

- nominates and physically delivers 1,000 units at the IP Kondratki
- receives a PGNIG nomination and accordingly exits 100 units at the IP PWP
- nominates, as you would expect, 900 units exit at the IP Mallnow/entry GPL.

The thus far 'business as usual' operation now experiences a 'disruptive interference': A trader active at the GPL (CP1) has sold 50 units to CP2 active at the VPGS and has accordingly nominated 50 units 'physical reverse' entry Mallnow/exit PWP.

Those 50 units are not (and cannot be) physically transported to the PWP. Instead, the TSO will 'divert' these 50 units out of the Yamal East-West flow on top of the 100 units nominated for exit by PGNIG. The 50 units nominated by CP1 for entry Mallnow/exit PWP, which CP1 had purchased at the GPL, will be used to match the shortfall of the Yamal shipper entitlement (850 units instead of 900) at Mallnow.

In other words, we have 'pretended' to operate in physical reverse flow fashion whilst in reality a virtual reverse flow transaction took place: hence 'mock' physical reverse flow.

⁵⁴ Which is, as discussed, physically not possible.

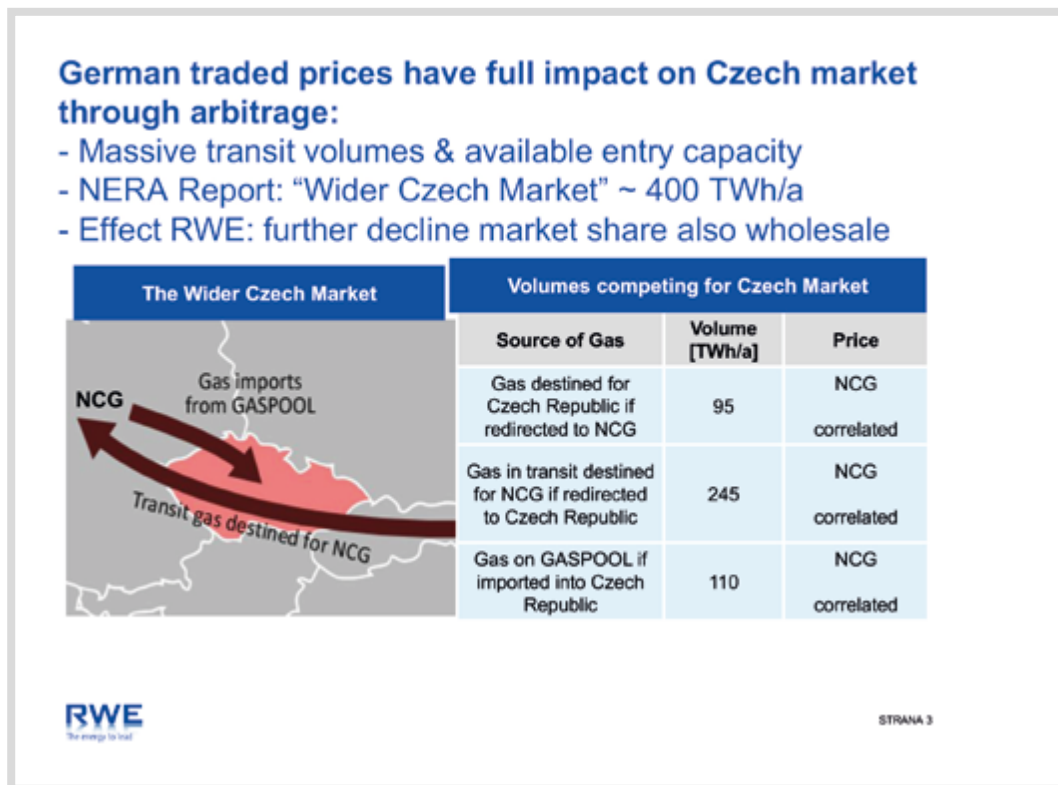
6.1.4 Implications: virtual reverse flow capacity exists up to PWP nameplate capacity

The implication of this TSO practice is of important relevance for our RSI assessment: Virtual reverse flow capacity exists up to PWP nameplate capacity. There is no constraint by physical reverse capacity, since GPL molecules will not physically enter Yamal at Mallnow.

This is by no means a ‘theoretical exercise’. As we shall see in section 9. below, where we analyze the 2017/18 sourcing behavior of PGNIG, PWP reverse flow offtakes exceeded the allegedly limited availability of virtual reverse flow by far, whilst there was forward East-West flow in Yamal. Hence, ‘mock’ physical reverse flow is real – it was actually used.

6.2 The Czech virtual reverse flow experience

Introducing unbridled virtual reverse flow for Yamal quantities is by no means an irresponsible act of madness, quite the contrary. As already indicated, the Czech Republic, with a ~9 bcm/a domestic market and a transit stream of some 40 bcm/a, introduced entry/exit for its entire grid including the transit lines, thus enabling virtual reverse flow at the German IPs Waidhaus⁵⁵ and Deutschneudorf/Hora Svaté Kateriny⁵⁶ some 10 years ago. Price conversion between the Czech VOB and the German NCG transpired within a very short period of time.



SOURCE: RWE Transgas a.s. Annual Press Conference, Prague, 16 April 2012

55 ENTSOG Capacity Map 2017, IP no. 043.

56 ENTSOG Capacity Map 2017, IP no. 041.

This laid the foundation for the Czech VOB being part of the “trans-national Northwest-European market behaving like a single price area”⁵⁷ with near 100 % price correlation between the respective national hubs⁵⁸.

6.3 Poland’s full virtual reverse flow potential

As indicated above, my suggestion for Poland to introduce unbridled virtual reverse flow for Yamal quantities was emphatically dismissed as ‘not possible’ or only in ‘very limited quantities’. A brief look at the technical circumstances reveals significant potential instead.

6.3.1 Yamal forward flow entry/exit capacity

According to the ENTSOG Capacity Map 2017 the Yamal entry point Kondratki at the Belarus/Poland border comprises a capacity of 1,024.3 GWh/d equaling, at a GCV of 11.08⁵⁹, **33.7 bcm/a**.

215	Kondratki			1.024,3	-	N	11,080	11,080
		Gazprom Transgaz Belarus	GAZ-SYSTEM (ISO)					

SOURCE: ENTSOG Capacity Map 2017

According to the ENTSOG Capacity Map 2017 the exit capacity of Yamal at Mallnow comprises 931.5 GWh/d equaling, with an average GCV of 11.075, **30.7 bcm/a**.

038	Mallnow			117,6	B	11,070	11,080
		GASCADE	GAZ-SYSTEM (ISO)				
		GAZ-SYSTEM (ISO)	GASCADE				

SOURCE: ENTSOG Capacity Map 2017

Hence, the forward East-West flow capacity of the Yamal transit line exceeds the entire Polish consumption of 19.143 bcm/a by ~60% and the ‘net-import’ requirement of 13.349 bcm/a by ~130%. As indicated above, forward flow in a transit line is the rule rather than the exception. Hence, the ‘perfect storm’ for high quantities of virtual reverse flow from the German GPL.


57 Heather / Petrovic, see above page 4.

58 It should be noted that the Czech Republic, by some called the ‘mother of virtual reverse flow’, during these days barely uses virtual reverse flow but, due the reversal of flow directions in conjunction with Nord Stream 1/ OPAL flows, mostly physical reverse flow. This underpins the point made earlier that it does not matter whether you use virtual or physical reverse flow, so long as free trade driving price formation by supply and demand is encouraged.

59 The, for Russian gas high, GVC follows from different temperatures applied by Russian and European operators.

6.3.2 PWP exit capacity

As already indicated, the amount of virtual reverse flow potential is technically limited by the PWP exit capacity required to divert Yamal volumes into the VPGS. Conform the ENTSOG Capacity Map 2017, the exit point PWP comprises a capacity of **275.5 GWh/d** equaling, at a GCV of 11.08, **9.08 bcm/a**.

125	Point of Interconnection (PWP) (PL)					
	GAZ-SYSTEM (ISO) YAMAL	GAZ-SYSTEM Poland	275,5	Y	11,080	11,080

SOURCE: ENTSOG Capacity Map 2017

This finding stands in stark contrast to the ‘ERO National Report 2017’ claiming that only 1.5 bcm/a of ‘interruptible’ (virtual reverse flow) capacity is available⁶⁰. Applying the GCV of 11.08 as indicated above by ENTSOG, this results in **45.52 GWh/d** only. In contrast, the press release of Gaz System of 26.02.2016⁶¹, such press release by the way announcing the ‘*introduction of virtual reverse flow*’, points to its website to determine available capacities. The Gaz System website informs that “*Punkt Wzajemnego Połączenia Rewers ...*” avails, throughout 2018, of a nominal exit capacity of **9,971,020.00 kWh/h**⁶², i.e. **239.30 GWh/d**. Applying the GCV of 11.08 as indicated above by ENTSOG, this results in **7.88 bcm/a**. Less than what ENTSOG indicates as technical nameplate exit capacity, but significantly more than what ERO reports as available ‘interruptible’, i.e. virtual reverse flow capacity.


6.3.3 No constraints through minimum offtake obligations vs. Gazprom

We shall also take a quick look at PGNIG’s long-term contract (‘LTC’) with Gazprom as to whether PWP capacity might be partially ‘blocked’ for virtual reverse flow use lest PGNIG were unable to satisfy its minimum offtake obligation vs. Gazprom.

According to the ‘Polish Oil and Gas Company Overview December 2017’⁶³, the Gazprom LTC features an annual contract quantity (‘ACQ’) of 10.2 bcm/a, with an annual minimum quantity (ACQMin) of 85%, i.e. **8.67 bcm/a**.

This volume can easily be received at other delivery points, namely the IPs Wysokoje (Belarus) and Drozdowicze (Ukraine):

According to the ENTSOG Capacity Map 2017, the IP Wysokoje comprises a capacity of 169.1 GWh/d equaling, at a GCV of 11.27, **5.48 bcm/a**.

216	Wysokoje					
	Gazprom Transgaz Belarus	GAZ-SYSTEM S.A.	169,1	-	N	11,270

SOURCE: ENTSOG Capacity Map 2017



⁶⁰ ERO National Report 2017, page 62, footnote 25.

⁶¹ <http://en.gaz-system.pl/press-centre/news/information-for-the-media/artykul/202219/>

⁶² https://swi.gaz-system.pl/swi/public/embed.seam?lang=en&viewId=E_PUB_003NP&cid=760069

⁶³ http://en.pgnig.pl/documents/1910852/1923959/Company-Overview_EN_December_2017.pdf/21aabf8f-005e-4fd4-962c-23c9e77476e1

According to the ENTSOG Capacity Map 2017, the IP Drozdowicze comprises a capacity of 135.6 GWh/d equaling, at a GCV of 11.3, **4.3 bcm/a**.

217	Drozdovichi (UA) - Drozdowicze (PL)	  (UA-PL)
Ukrtransgaz	→	GAZ-SYSTEM S.A.
	135,6	- N 11,300 11,300

SOURCE: ENTSOG Capacity Map 2017

The sum of both IPs amounts to **9.78 bcm/a** and hence exceeds the minimum offtake obligation of 8.67 bcm/a vs. Gazprom. Therefore, there should be no LTC contractual constraints (and if there are, they are technically unwarranted) to fully use PWP for virtual reverse flow⁶⁴.

6.3.4 No constraints from the Polish/Russian Intergovernmental Agreement

One of the ‘frequently used excuses’ for the use of virtual reverse flow in the Yamal pipeline is the Polish / Russian Intergovernmental Agreement on Yamal (‘IGA’). These ‘excuses’ are unfounded. However, this is not the place for a ‘deep-dive’ into the Polish / Russian IGA and the raft of complex amendments.

Instead, I refer to the in depth review of Stern and Yafimava⁶⁵. They i. a. observe on Art.3 of ‘The 2010 Protocol amending the 1993 IGA’, essentially an agreement between the Polish TSO Gaz System and EuroPolGaz (the joint venture company owning the Polish Yamal section):

“This amendment brought the IGA in line with the TEP⁶⁶ in respect of TSO unbundling and certification requirements.”⁶⁷

Stern and Yafimava further discuss the somewhat complex raft of further amendments (e. g. Additional Protocols). In a nutshell, they conclude that the regulator ERO has the authority to approve non-discriminatory entry/exit tariffs and Gaz System, as certified ISO, is obligated to provide non-discriminatory third party access:

“Our analysis of the IGA, as amended in October 2010, suggests that it is compatible with the EU energy acquis, as represented by the TEP, in respect of the latter’s main requirements of ... TSO certification and unbundling, transportation tariffs, and TPA. ... It is worth noting that Russia, although continuously maintaining that IGAs prevail over the EU energy acquis (including the TEP), adopted a cooperative stance towards the Polish government and agreed to renegotiate the 1993 IGA to bring it in line with the changing energy acquis.”⁶⁸

Perhaps the best indication of ‘all clear’ (or should we rather say “it is not us”) on the TSO side is the press release of Gaz System of 04.12.2012 on the introduction of physical reverse flow⁶⁹ and the press release of 26.02.2016 on virtual reverse flow⁷⁰. Indeed, Gaz System appears to be operating the Polish section of Yamal as a certified ‘Independent

64 I realize there may be operational requirements to exit certain quantities of gas at the Yamal PWP. If so, I can see no reason why that would have to be Russian gas.

65 ‘Stern/Yafimava EU competition investigation 2017’, page 14 ff.

66 The ‘EU Trans-European Networks Programme’.

67 ‘Stern/Yafimava, EU competition investigation 2017’, page 17.

68 ‘Stern/Yafimava, EU competition investigation 2017’, page 19.

69 <http://en.gaz-system.pl/pdf/press-centre/news/information-for-the-media/artykul/201595>

70 <http://en.gaz-system.pl/press-centre/news/information-for-the-media/artykul/202219/>

System Operator' ('ISO') and my own impression when visiting Gaz System's website (e. g. on PWP exit capacity) did not indicate any specificities on the PWP IP as opposed to other IPs.

In other words, the 'instruments' for the Polish market to achieve price convergence with the Northwest-European traded markets are in place, and references to the Yamal IGA hindering such are a diversion from the real motive, namely Poland deliberately obstructing free cross-border trade and thereby also free trade by a multitude of parties at the VPGS.

6.3.5 Re-computation of RSI conform author's 'total capacity' approach

A re-computation of the Polish RSI based on the author's 'total capacity' approach, and including the full virtual reverse flow potential only limited by the PWP nameplate exit capacity⁷¹ (necessitating to put physical reverse capacity at zero), renders the following:

Poland	bcm/a	GWh/d	GCV (GWh/mcm)
Domestic consumption	19.14		
Indigenous production	5.79		
LNG	5.00	158.0	11.55
Mallnow physical reverse	–	184.8	11.075
Mallnow virtual reverse	9.08	81.92	11.075
Lasow	1.59	48.2	11.15
Cieszyn	0.91	28.0	11.235
Sum 'distinct origin sources'	22.37		
RSI	117%		

■ Limit: PWP exit capacity

SOURCE: Own calculations based on IEA and ENTSOG data

Poland's **RSI rises to 117%**, i. e. the sum of 'distinct origin sources' exceeds domestic consumption by 17%. In other words, when adjusting ACER's overly careful approach by not applying discounts to the IP capacities and the LNG capacity, which in the author's view would defeat ACER's own purpose, we see an RSI comfortably exceeding ACER's ambitious threshold of 110%.

Moreover, the sum of non-Russian supplies comprises some **258%** of the **Russian minimum offtake** quantity. In my book, dependency looks different.

Even more important than the change in RSI computations however is the above insight that the possibility of 'mock physical reverse flow' allows to ramp up virtual reverse flow capacity to the name-plate capacity of PWP without having to consider the constraints of physical reverse flow capabilities. In other words, so long as the 'normal' circumstance of ample forward East-West flow prevails, only the nameplate exit capacity at the PWP is the limit.

⁷¹ For simplicity, we have put Mallnow physical reverse flow capacity at zero and virtual reverse flow capacity at full nameplate capacity PWP. As discussed above, it may occur that 'mock' physical reverse flow is nominated which, as explained, is in reality nothing but virtual reverse flow 'in disguise'.

6.3.6 Price setting power in the Polish market sits with PGNIG, not Gazprom

Also ACER's point of 'pivotality', i. e. the potential price-setting power of the largest supplier Gazprom, vanishes completely. If nonetheless the price formation of PGNIG's LTC with Gazprom does not reflect hub-based price levels, it is not the consequence of Russian price setting power. Rather, it is the direct consequence of Poland deliberately obstructing free cross-border trade, thereby preventing price convergence and, subsequently, undermining the 'burden of proof' as to the 'demonstrably achievable price'. As already discussed above, being able to demonstrate the achievable price being the wholesale traded market price in a price review or in arbitration is the most powerful argument you can have. It would clearly be 'self-inflicted damage' if Poland has, through its own behavior, deprived itself of this argument.

Moreover, since Poland obstructs free cross-border trade and, at the same time, hampers free trade at the VPGS by a multitude of counterparties, price formation at the VPGS is not forged by supply and demand, but rather by the price setting power of dominant incumbent PGNIG: The products offered at the exchange, POLPEX, or OTC, are not '*traded bids*', but rather '*take-it-or-leave it puts*' by dominant PGNIG towards market participants who have no alternative. We shall see below in section 10. on the retail market that PGNIG is misusing its dominant position at the wholesale level to set prices to end-user suppliers in a more than questionable fashion.

7. Poland's deliberate obstruction of European traded market integration

Given the huge potential for Poland to equalize VPGS/GPL price levels and become fully integrated in the Northwest-European traded wholesale market, and assuming that such insight is not lost on at least PGNIG hosting a staff of shrewd commercial operators, I have no hesitation characterizing Poland's lack of integration as deliberate and the issues discussed below as intentionally aiming at obstructing free cross-border trade and free trade at the VPGS.

A strong indication of lack of traded market integration is the so-called 'price-disconnect', i. e. the absence of robust price correlation. If such is observed in a market with an adjacent (i. e. neighboring) deep and liquid traded market, there are usually only two explanations: Either, physical barriers to free cross-border trade exist (typically pipeline congestions) or non-physical barriers were inadvertently or deliberately put up with the consequence of obstructing free cross-border trade. As explained above, Poland is adjacent to the Northwest European traded markets which are behaving like a trans-national single price area. We also demonstrated that Poland could indeed very easily become part of this 'trans-national single price area' if it wanted to instead of obstructing free cross-border trade.

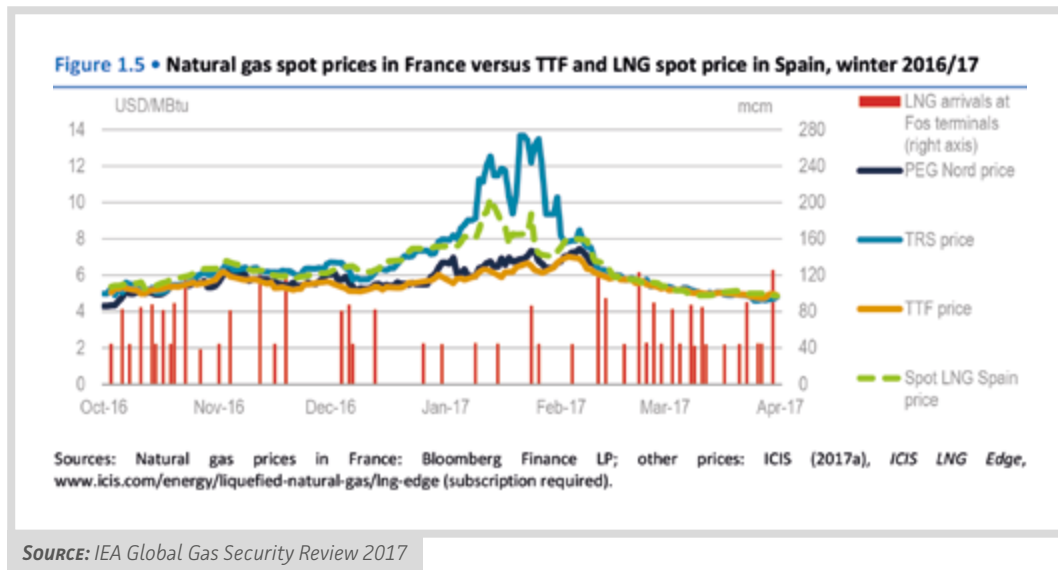
7.1 Poland has no physical barriers hindering free cross-border trade

In order to better understand what a physical barrier means and what its effects are, we shall briefly discuss two examples of such in other markets.

7.1.1 Physical barrier example France

A typical example of insufficient interconnectivity and hence a physical barrier hindering free ‘cross-border’ (or in this case ‘cross-regional’) trade is Southern France.

As could be observed in winter 2016/2017, the sudden unavailability of a multitude of nuclear power plants resulted in a massive surge in gas demand, which could neither be satisfied by supplies from PEGN⁷² nor from Spain: in both cases the interconnector capacities were insufficient. The resulting price spike in the TRS (the Southern French gas hub), a significant ‘price-disconnect’, lasted until LNG supplies arrived at the LNG terminals of Southern France⁷³ and leveled the price delta.



I hasten to add that such ‘physical barriers’ (as opposed to the ‘non-physical barriers’) are by no means to be misunderstood as a ‘force majeure’ type, unavoidable calamity. E.g. the French interconnection insufficiencies both between Northern and Southern France as well as Spain have been known for many years. In France, it was probably a lack of political will in the face of high costs for grid reinforcement which prevented fixing them. Also the possibility of re-loading LNG stored in tanks along the PEG-Nord beach and transport them to terminals at the TRS beach may have played a role. Perhaps the intended merger of PEG Nord and TRS in the face of incidents as described above may help overcome the previous reluctance.

7.1.2 Physical barrier example Austria

Whilst, as already mentioned, the Czech VOB displays almost perfect correlation to the adjacent German NCG hub, Heather/Petrovich identify, somewhat surprisingly, a physical barrier to trade also for the Austrian VTP (‘CEGH’):

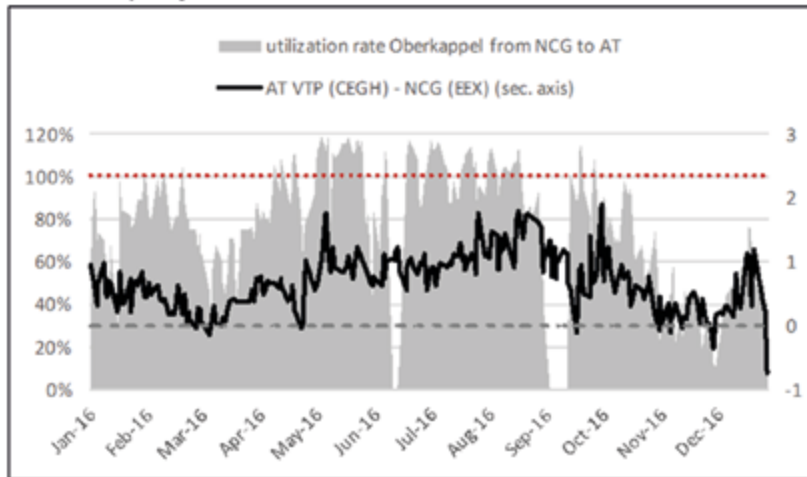
“... notwithstanding its direct interconnection to Germany, continues to exhibit a slight price disconnection to the adjacent NCG, with a rather volatile premium over the German price, over the summer months.”

As the below graph demonstrates, the utilization of the Oberkappel IP was high but insufficient to arbitrage away a premium of over 1.5 €/MWh.

⁷² The northern French hub.

⁷³ Partially at first by ‘reloads’ from storage tanks at terminals in Northern France.

Figure 10: Austrian VTP-NGC exchange day ahead price spread (€/MWh) and utilization rate of the transmission capacity from NCG to Austria²⁵



Sources: CEGH, EEX, ENTSOG Transparency Platform

SOURCE: Heather/Petrovic 2017, p. 20

A clear case of a physical barrier to unbridled cross-border trade caused by pipeline congestion.

7.1.3 No physical barriers for Poland

As already established above, pipeline constraints, i. e. physical barriers to trade, do not exist for Poland: the VPGS trading hub in Poland features ample capacities connecting its market to the German GPL and the Czech VOB. Nonetheless, e. g. Polish day ahead prices are weakly correlated to the adjacent markets.

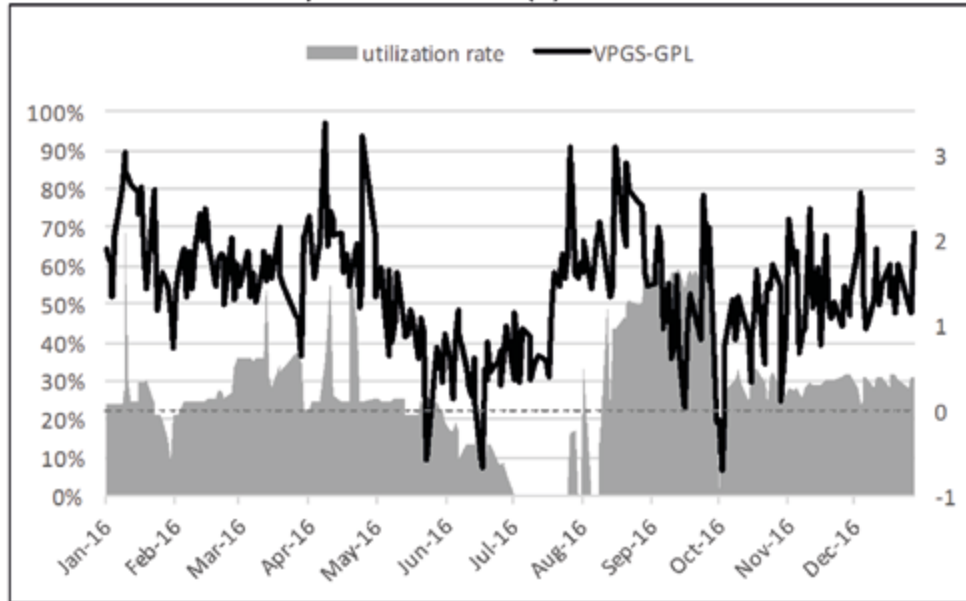
Heather / Petrovic 2017⁷⁴ observe:

“... notwithstanding the high premium for day ahead gas quoted on the Polish exchange and the presence of ample spare cross-border capacity gas did not flow from the lower-priced Czech/GPL markets to the higher priced Polish hub.”

As the below graph shows, capacity utilization was low whilst the price spreads were at times larger than 3 €/MWh.

⁷⁴ Heather/Petrovic 2017, p. 26

Figure 18: Gaspool-VPGS day ahead price spread (€/MWh) and utilization rate of the interconnection between Gaspool and VPGS hub³⁸ (%)



Sources: EEX, POLPX, ENTSO-G Transparency platform

SOURCE: Heather/Petrovic 2017, p. 26

Accordingly, Heather/Petrovic 2017 conclude:

“This signals a non-physical barrier to trade gas into Poland⁷⁵, and suggests that the market in this country is not yet fully integrated and not fully liberalized. Polish gas price levels appear to be heavily dependent on local conditions ...”

Even the Polish regulator ERO, in its ‘ERO National Report 2017’, otherwise throughout its report rather eager to reassure compliance with ‘all EU rules’, is taking issue with the apparent price-disconnect between Polish ‘home-made’ products transacted at the Polish exchange POLPX and Over-the-Counter (‘OTC’) at the Polish VPGS on the one hand and the products⁷⁶ purchased ‘OTC abroad’⁷⁷ on the other hand.

In an effort to continue delivering as many ‘good news’ as possible, ERO attempts to put liquidity at the VPGS in a bright light. It qualifies the total quantity of 15.7 TWh transacted OTC at the Polish VPGS as ‘highly liquid’:

“The level of liquidity of this market is high in comparison to final consumption.”⁷⁸

⁷⁵ Emphasis added.

⁷⁶ ERO does not identify which products were traded, given the below table addressing quarters, it stands to reason that not only spot products but also prompt and curve products (e.g. Month ahead etc.) were purchased.

⁷⁷ ERO National Report 2017, p. 54.

⁷⁸ ERO National Report 2017, p. 54.

I cannot help but to respectfully disagree with this 'rosy picture':

- First, VPGS OTC transactions of 15.7 TWh vs. a total domestic consumption of ~189.10 TWh do not at all suggest a 'high level of liquidity'.
- Second, ERO includes in its erroneous liquidity assessment, as it concedes itself, non-brokered bilateral transactions (between PGNIG subsidiaries⁷⁹) which are not accepted as relevant in any liquidity assessment I have seen:

"However, a large part of transactions is executed between entities from the PGNIG group, which may impact the transparency of price terms."⁸⁰

When it comes to the blatantly obvious price differences between both POLPX and VPGS OTC transactions vs. OTC transactions purchasing from the German GPL and the Czech VOB, ERO cannot help but for once get outright critical:

"It stems from the analysis of data presented in this part of the report that gas prices in transactions executed at the commodity exchange were significantly higher than prices of gas purchased from abroad⁸¹"

Table 13. Comparison of average prices from contracts of sales in the virtual point on OTC and purchase from abroad, in particular quarters of 2016 (data in PLN/MWh)

	QI	QII	QIII	QIV
Average prices from contracts on sales in the OTC virtual point	87.43	72.90	76.14	78.26
Average prices from contracts on sales via POLPX	91.77	80.34	85.75	83.15
Average prices of natural gas purchase from abroad from EU Member States or EFTA Member States – parties to the EEC Agreement	74.37	63.90	61.95	73.74

Source: Own analysis.

SOURCE: ERO National Report 2017, p. 54

Significant discrepancy 'homemade' Polish prices and sourcing prices at GPL

In other words, ERO not only criticizes the high concentration of midstream import and 'family' trading activities conducted by PGNIG and a network of subsidiaries. It is also accusing PGNIG of 'intransparent price setting' and setting the prices of Polish 'homemade products' at POLPX and OTC VPGS significantly above Northwest-European traded market price levels. ERO falls short, however, of drawing any conclusions from this insight as to possible anti-competitive practices by misuse of a dominant position.

7.2 Poland's non-physical barriers hindering free cross-border trade

The issue which apparently triggered the ire of the EC, namely the so-called storage obligation, is only the tip of an iceberg. I shall discuss the storage obligation first, but subsequently also other aspects which will further underpin Poland's deliberate obstruction to become part of an integrated Northwest European trans-national traded market.

7.2.1 Storage obligation

Poland prescribes by law that suppliers must hold a defined fraction, namely 11%⁸² of their average annually transacted quantities, in storage⁸³. From the start, no distinction was made between suppliers serving end-users and mere wholesale traders. Indeed,

⁷⁹ PGNIG features some 30 subsidiaries (including ~10 foreign upstream companies), <http://en.pgnig.pl/about-us>

⁸⁰ ERO National Report 2017, p. 54.

⁸¹ Emphasis added.

⁸² Or 40 days 'worth'.

⁸³ ICIS Heren, European Gas Hub Report, Q4 2017 Update, page 44.

foreign traders were required a separate import license on top of the Polish trading license, such import license specifically stipulating that the storage obligation was also applicable if such trader only pursued cross-border trading activities with wholesale market counterparties.

Initially, a threshold of 100 million m³/year (~1.2 TWh) applied, below which an exemption could be granted⁸⁴. However, the rules were tightened later and the storage obligation was imposed universally on all market participants. Due to the prohibitively high costs of Polish storage, number of foreign traders made use of the possibility to fulfill their storage obligation by booking abroad. It was required to combine this with the booking of firm transport capacity into the Polish VPGS.

In October 2017, the law was tightened once more by requiring that the booked firm transport capacity to carry the storage quantity in case of need was not allowed to be used at all for any other commercial purposes. In consequence, according to ICIS Heren⁸⁵, some 20 foreign traders surrendered their Polish import licenses.

The ‘catch 22’ is apparent: Either I leave the Polish market to PGNIG or I pay PGNIG’s subsidiary for storage services at excessive costs.

7.2.2 Also Polish storage prices show a remarkable price-disconnect

Polish storage is indeed excessively expensive in comparison to prevailing prices in Northwest- European markets. Based on own calculations of regulated Polish storage tariffs, prices range from > 8 (seasonal) to > 12 (short-term, i. e. ‘cavern’) €/MWh for a so-called ‘bundle, comprising injection and withdrawal capacity as well as working gas volume.

Own calculation of regulated gas storage tariffs in Poland for bundled units in 2017		Sanok	Wierchowice	Kawerna
Bundle size	Working gas volume [MWh]	1000	1000	1000
	Injection rate [MW]	0.43	0.417	0.864
	Withdrawal rate [MW]	1.243	1.136	1.856
Price per year [EUR/MWh of working gas volume]		8.63	8.63	12.15

SOURCE: Own calculation based on Gas Storage Service Tariff No.1/2017 (<https://ipi.gasstoragepoland.pl/en/menu-en/transparency-template/?page=tariffs-and-pricing/tariff-information/>); assumed FX rate 4.257 EUR/PLN (average annual 2017 reference ECB FX rate).

In order to determine whether the criticism regarding the storage obligation might have had an impact on Polish storage tariffs, we also calculated the costs for 2018. They are essentially unchanged (in PLN lower by less than 1%), the slightly lower price in Euros (-2%) is mainly attributable to the exchange rate.

⁸⁴ ERO National Report 2016, page 65.

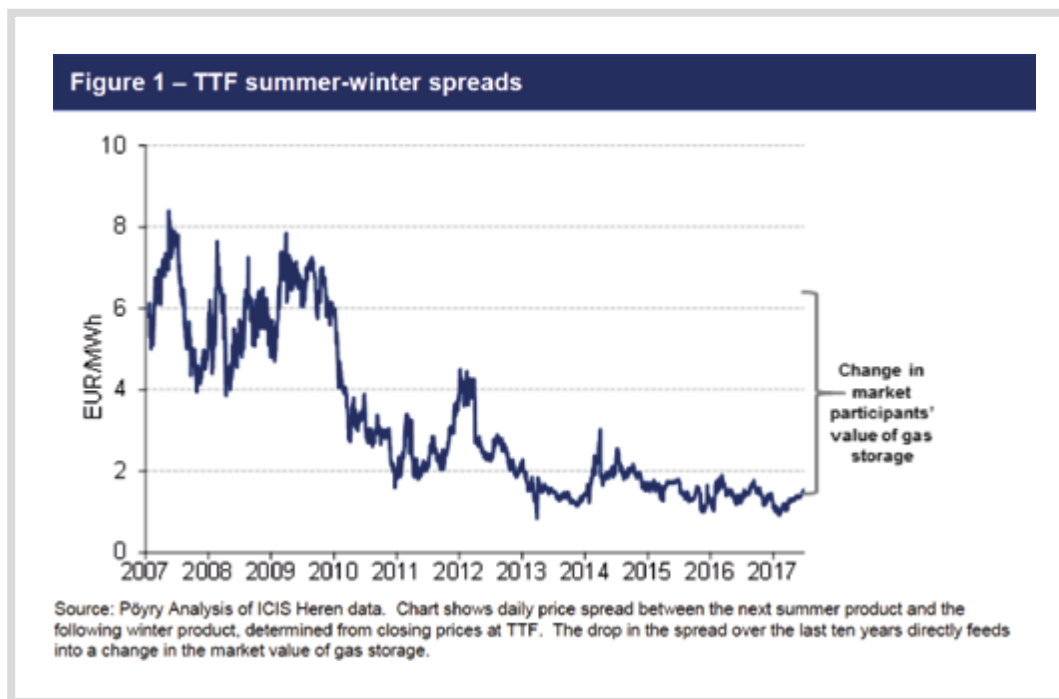
⁸⁵ ICIS Heren, European Gas Hub Report, Q4 2017 Update, page 45.

Own calculation of regulated gas storage tariffs in Poland for bundled units in 2018

		Sanok	Wierzchowice	Kawerna
Bundle size	Working gas volume [MWh]	1000	1000	1000
	Injection rate [MW]	0.43	0.417	0.864
	Withdrawal rate [MW]	1.243	1.136	1.856
Price per year [EUR/MWh of working gas volume]		8.50	8.50	11.98

SOURCE: Own calculation based on Gas Storage Service Tariff No.1/2018 (https://ipi.gasstoragepoland.pl/wp-content/uploads/2018/04/Full-version-of-Gas-Storage-Services-Tariff-No-1_2018.pdf); assumed FX rate 4.3088 EUR/PLN (reference ECB FX rate as of 23/05/2018).

In contrast, e.g. German or Czech bundled storage products more or less emulate pricewise the so-called traded ‘summer-winter spread’, i.e. the price difference between molecules traded in summer (usually at a lower price) and in winter (usually at a higher price) which, for the last several years, has hovered around +/- 2 €/MWh. The below graph from the ‘GIE Pöyry Gas Storage 2017 Report’ demonstrates this⁸⁶.



SOURCE: GIE Pöyry Gas Storage 2017 Report

Hence, if the storage requirement is 11 % of your annual traded volume, the above means a non-recoverable cost of **0.935 €/MWh** if you use a Polish storage⁸⁷. We abstain from exploring additional transport cost in the Polish system.

⁸⁶ It should be noted that prices for short-term storages (as opposed to seasonal storages emulating the summer-winter spread) fetch somewhat higher prices in North-West European markets. However also these prices are ‘commoditized’, i.e. the price marker is set by the cost of available flexibilities in traded markets, e.g. day ahead and within day prices and the volatility of such. Without going into detail, also the above prices for ‘Kawerna’ (caverns) are way above market.

⁸⁷ We use the 2018 cost for seasonal storage of 8.50 €/MWh.

If you instead use foreign storage at a price of say ~2 €/MWh, your 11 % storage obligation would cost you some **0.22 €/MWh**, i. e. 23.5 % of the Polish charge.

On top of this, we need to assess the foreign storage related transport costs.

7.2.3 Foreign storage related transport costs

The related transport for the storage obligation comprise exit GPL Mallnow (GASCADE) and entry Mallnow (GAZ-SYSTEM), as shown on the below excerpt from the ENSOG transparency platform.

01/01/2017 06:00 01/01/2018 06:00	Mallnow	entry	GAZ-SYSTEM (SO)	Firm	Yearly	0.00696764	Euro(kWh)/d	01/01/2017 06:00	01/01/2018 06:00
01/01/2018 06:00 01/01/2019 06:00	Mallnow	entry	GAZ-SYSTEM (SO)	Firm	Yearly	0.00696764	Euro(kWh)/d	01/01/2018 06:00	01/01/2019 06:00
01/01/2018 06:00 01/01/2019 06:00	Mallnow	exit	GASCADE Gastransport	Firm	Yearly	0.00728767	Euro(kWh)/d	01/01/2018 06:00	01/01/2019 06:00
01/01/2017 06:00 01/01/2018 06:00	Mallnow	exit	GASCADE Gastransport	Firm	Yearly	0.00758904	Euro(kWh)/d	01/01/2017 06:00	01/01/2018 06:00

SOURCE: <https://transparency.entso.eu/#/points/data?from=2017-10-01&indicators=Physical%20Flow%2CFirm%20Technical&points=de-tso-0001itp-00096exit%2Cpl-tso-0001itp-00096entry&to=2018-09-30&zoom=hour>

If we convert the indicated entry / exit costs into an annual capacity cost for 1 MWh/h/a, we arrive at **€ 5,203.19** of annual capacity costs⁸⁸:

exit GASCADE Mallnow	entry GAZ-SYSTEM Mallnow
Euro/kWh/h/d	
0.00728767	0.00696764
Euro/MWh/h/a	
2,660.00	2,543.19
Total Capacity costs for 1 MWh/h/a	
5,203.19	

SOURCE: own calculations

The below table demonstrates that the translation of a capacity payment, which is owed whether you use such capacity or not, into 'per-unit' costs (i. e. €/MWh) depends heavily on the utilization of such capacity. Ideal is when you use it all 8,760 loadhours of the year whilst, with low utilization, the per-unit costs increase dramatically.

⁸⁸ Note there may be additional capacity costs. The above calculation may suffice to make the point.

Transport cost per unit depending on utilization (GASCADE/GAZ-SYSTEM)

Utilization	Loadhours	Capacity in MWh/h/a	annual capacity cost €	average unit cost €/MWh
	8.760,00	1.00	5,203.19	
100 %	8.760,00			0,59
	-			
80 %	7,008.00			0.74
	-			
10 %	876.00			5.94
	-			
0.0114155 %	1.00			5,203.19

SOURCE: own calculations⁸⁹

The example computed for the utilization of 1 MW of capacity may sound ‘harmless’ but it is not: E.g. for a required storage volume of 1 TWh⁹⁰, the ‘lost’ payment for transport would amount to € 5.2 million. Add the costs for storage of 0.22 €/MWh and you arrive at € 5.4 million. A powerful non-physical barrier to trade.

7.2.4 Exposure to storage and transport costs through the eyes of a commercial operator

A commercial operator will only commit to costs (‘take a position’) if he is convinced that he has a fair chance to earn back these costs and make money on top. Even the costs of German or Czech storages to fulfill the Polish storage obligation are a tall order for a wholesale trader who is not supplying end-users (where he might be able to recoup them). He knows that the more active he (along with others) is, the smaller the price spread will get, until it eventually finds the floor at respective transportation cost⁹¹.

Such ‘temporary’ business case, even if burdened with exposure to a non-recoverable storage cost of 0.22 €/MWh, might be acceptable for a trading company with risk appetite. However, it must have a reasonable expectation to make money by arbitraging the above discussed significant day-ahead price spreads through multiple commercial deployment of the firm entry capacity booked in conjunction with the storage obligation. If, however, this optimization upside potential is taken away, no commercial operator/trader, even with the highest risk appetite, would be willing to engage and subsequently rather surrender his import license – as we saw happening in some 20 cases.

7.3 Further non-physical barriers to cross-border trade: Poland features prominently in the ACER commissioned Kantor ‘Barriers to Trade’ Report

The report by Kantor Management Consultants (‘KMC’) titled ‘*Barriers to gas wholesale trading*’ issued in February 2017 was commissioned by ACER apparently somewhat as a ‘back-check’ of its own findings and concerns:

“... across the EU and in specific Member States...”⁹².

⁸⁹ We choose 1 load hour instead of none for mathematical reasons only.

⁹⁰ 1 TWh has been chosen to make the point. It may well be the sum of more than one trading company’s activity.

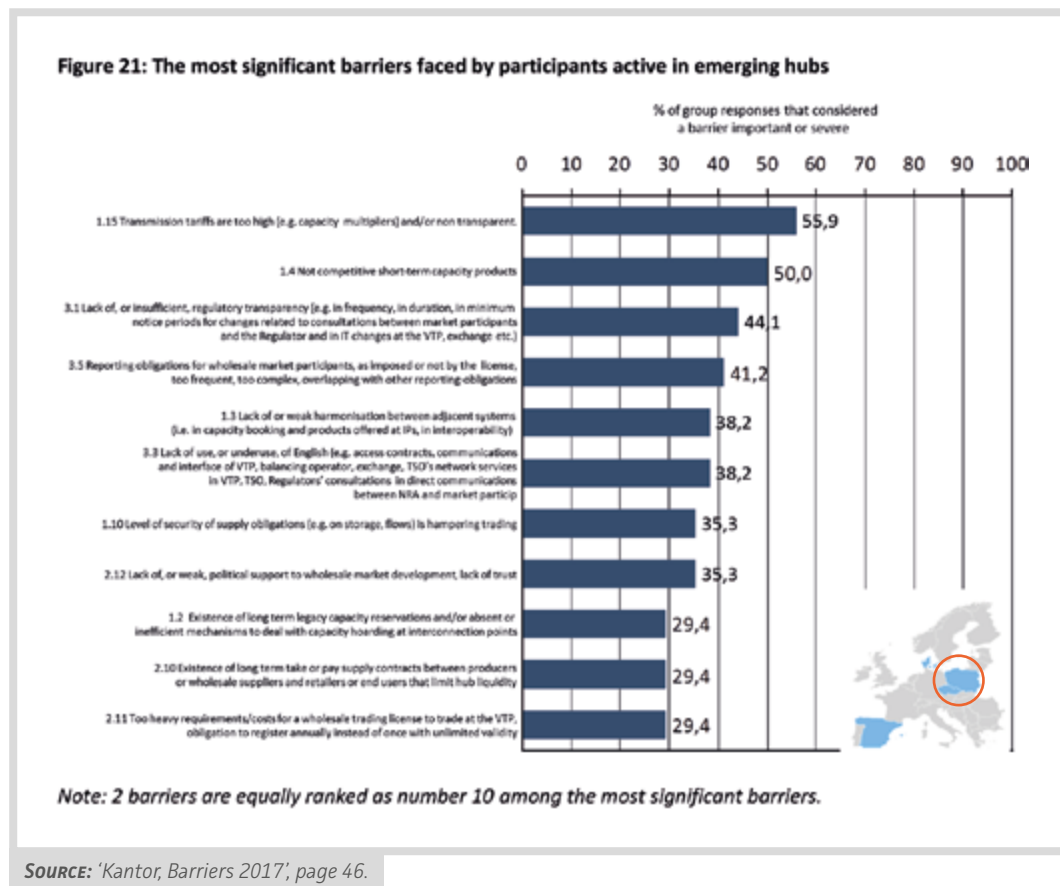
⁹¹ Or even below such, as can be observed at times e.g. between Northwest-European hubs.

⁹² ‘Kantor, Barriers 2017’, page 4.

The scope encompasses ease of entry, ease of operation and also ease of exit and is, in a nutshell, based on interviews with multiple market participants.

One could of course dismiss the entire report as ‘subjective’ since ‘only collecting participants’ views. However since Kantor, otherwise careful to avoid ‘finger-pointing’ at particular member states, mentions Poland several times as standing out negatively, namely in the category of ‘most significant barriers’ faced by participants, it appears appropriate in the context to take a closer look.

The below graph of Kantor already indicates how badly Poland, along only with few other member states, scores on barriers to free cross-border trade.



Kantor singles out Poland i.a. on the following significant trade barriers:

- “Participants argue ... the recently imposed **security of supply obligations** (storage obligations) on all imports in Poland is a substantial barrier to entry particularly considering that storage capacity is offered at high prices and monopolized by a subsidiary of the incumbent supplier.”⁹³
- “...all eSurvey participants noted a lack of, or insufficient, **regulatory transparency** in the Polish wholesale gas market. Over half the participants ... noted that English is significantly underused and several regulatory documents ... are either never published in English, or only ... with considerable delay.”⁹⁴
- “Over 75% of ... participants responded that **reporting obligations** in Poland are a significant barrier to trade ...”⁹⁵

93 'Kantor, Barriers 2017', page 47.

94 'Kantor, Barriers 2017', page 47.

95 'Kantor, Barriers 2017', page 47.

— “Licensing requirements are also identified as a significant barrier ... Licensing in Poland is cumbersome ... There are at least two significant barriers regarding the licensing procedure in Poland: one is the fact that everything needs to be submitted in the Polish language; the second is the extensive number of administrative documents requested (that need to be translated in Polish), whereas for some of them the issuance date cannot be **more than 3 months old**. As a consequence, **more than two years could not even be a sufficient period of time in order to obtain a license in Poland**”^{96, 97}

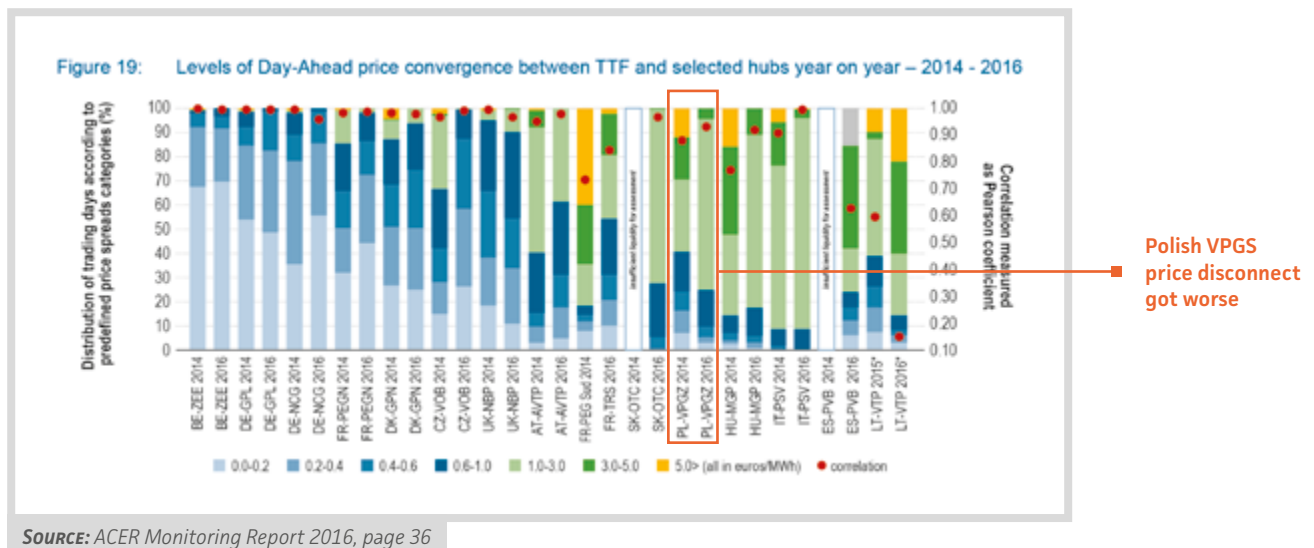
This may suffice to underpin that Poland is not simply a case of ‘lack of political will’. Rather, the Kantor report demonstrates that Poland is deliberately pulling all the strings possible to prevent free cross-border trade and free trade at the VPGS by intentionally making life miserable for interested market entrants.

8. Money left on the table absent price convergence

8.1 In Poland, unfavorable price spreads between 2014 and 2016 increased

The ‘ACER Monitoring Report 2016’⁹⁸ assesses improvements in hub-to-hub price correlation (spreads) between 2014 and 2016, with the TTF serving as the benchmark for each hub. It distinguishes categories of spreads ranging from 0.0 – 0.2 €/MWh to 3.0 to 5.0 €/MWh and >5.0 €/MWh.

Whilst e.g. the Czech VOB (and most others) shows improvement, the Polish VPGS shows *deterioration*: the percentage of spreads ranging between 1.0 to 3.0 €/MWh and also 3.0 to 5.0 €/MWh increased significantly. A clear sign of ‘money left on the table’ to the detriment of Polish end-users and the Polish economy at large.



96 Emphasis added.

97 'Kantor, Barriers 2017', page 48.

98 'ACER Monitoring Report 2016', page 36.

8.2 Poland has foregone significant consumer welfare benefits as a consequence of its price-disconnect with Northwest-European traded markets

As already indicated above, unfavorable price disconnects are not a trivial matter, because they immediately translate into forgone welfare benefits.

A rough assessment of Polish consumers' forgone welfare simply because of Poland's lack of integration into the Northwest-European traded markets reveals a significant number. If we, conservatively, use only the mid-point⁹⁹ of the price spread ranges prevailing in 2016 between VPGS and TTF, as presented by ACER in the above graph¹⁰⁰, we see a foregone consumer welfare benefit of € 0.3 billion.

Spread category	Spread mid point	Percentage	€/MWh lost welfare
0.0 – 0.2	0.10	3.16 %	0.0032
0.2 – 0.4	0.30	2.37 %	0.0071
0.4 – 0.6	0.50	4.35 %	0.0218
0.6 – 1.0	0.80	15.42 %	0.1234
1.0 – 3.0	2.00	70.36 %	1.4072
3.0 – 5.0	4.00	4.35 %	0.1740
		100 %	1.7366
Welfare loss for lack of market integration (189.10 TWh) Euro:			328,387,278.00

SOURCE: own calculations based on ACER source data at: https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Gas%20wholesale-List%20of%20Figures%202016.pdf

In my book, the entirely unnecessary welfare loss of € 0.3 billion as a mere consequence of Poland obstructing free cross-border trade instead of doing all it can to equalize price levels with the Northwest-European traded wholesale markets for gas appears untenable.

8.3 Poland stands to lose further significant welfare benefits absent Nord Stream 2 volumes

The 'ewi Impacts of Nord Stream 2 on the EU Natural Gas Market 2017' report¹⁰¹ has essentially analyzed whether, in the face of higher European import demand (with consumption assumed to remain flat but indigenous production further declining) additional pipeline gas or reliance on LNG are more beneficial. ewi depicts scenarios where LNG and pipeline gas compete for market share. In the case of abundant pipeline gas supplies, the respective volume pressure (including Nord Stream 2 volumes) keeps European price levels low and thereby relatively unattractive for LNG imports. LNG would be the marginal source of supply stepping in if pipeline gas prices reach an attractive level, thereby essentially 'capping' the maximum achievable price for pipeline gas. Conversely, absent abundant pipeline gas market pressure, i. e. Europe relying for a larger share of its permanent supplies on LNG, it would be competing with Asian

⁹⁹ E. g. if ACER indicates above a spread range from 1.0 to 3.0 €/MWh (light green), we use the median of 2 €/MWh.

¹⁰⁰ The precise percentages of the spread ranges in the table below can be found at https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/Gas%20wholesale-List%20of%20Figures%202016.pdf

¹⁰¹ 'ewi Impacts of Nord Stream 2 on the EU Natural Gas Market 2017', page 22.

markets. In such case, European price levels would have to be higher, especially in the scenario with high global LNG demand.

Ewi quantifies the welfare benefit for Poland stemming from Nord Stream 2 volumes at between **€ 0.4 billion** (low LNG demand scenario) and **€ 1.3 billion** (high LNG demand scenario).

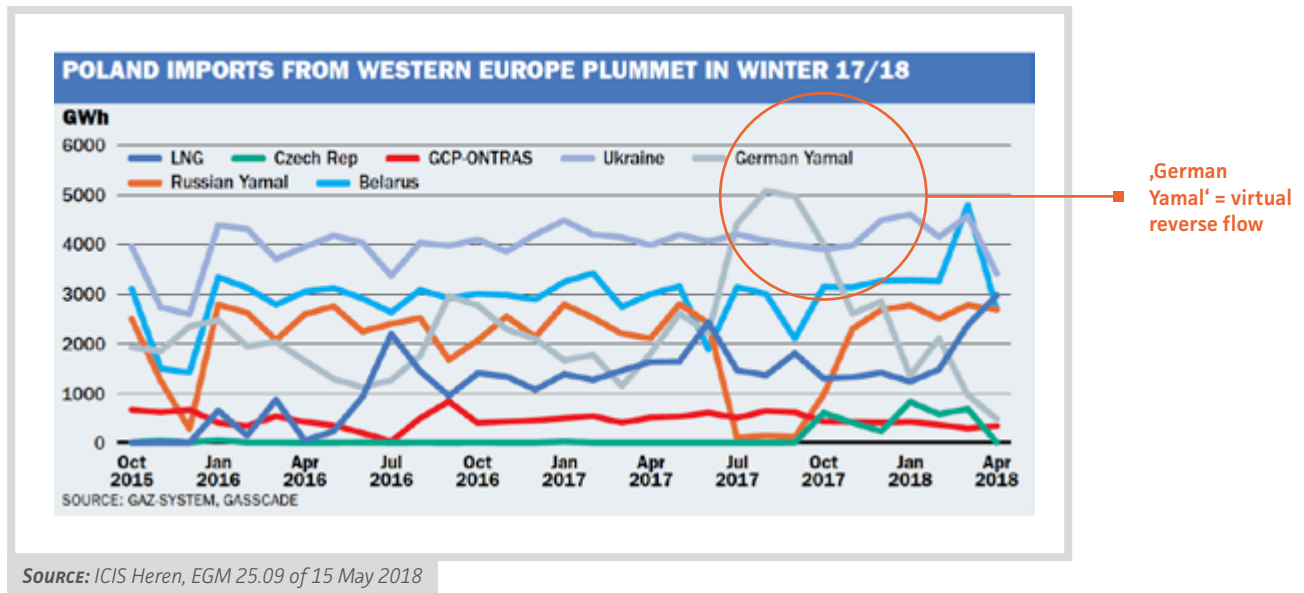
It should be noted that ewi has, as point of departure, assumed integration of the Polish market into the Northwest-European traded markets for its calculations. In other words, if Poland continues to obstruct free cross-border trade and succeeds with its efforts to derail Nord Stream 2, the lost consumer welfare benefits of section 7.2 and 7.3 above are **compounded**. I.e. we speak of between **0.7 billion €** and **1.6 billion €** per annum.

9. 'Alternative facts': Poland's sourcing 2017 belies alleged lack of diversity, virtual reverse flow constraints and dependency on Russia

Sourcing behavior in 2016, used thus far throughout this paper to avail of the full raft of reports and analysis, might be regarded as 'uninspired' and not taking advantage of portfolio optimization opportunities. In contrast, PGNIG's sourcing behavior in 2017 and into 2018 shows a different picture: PGNIG has used *all* of its ample and diverse sources in turn. One look at the graph below suffices to put the alleged lack of diversity into 'alternative facts' territory. PGNIG has also used virtual reverse flow beyond the alleged capacity constraint belying its alleged limited access to the German GPL. Moreover, its alleged Russian dependency was apparently not standing in the way of ramping up nominations for Russian gas supplies beyond minimum offtake (take-or-pay) levels.

9.1 Multiplicity of diverse supply sources confirmed

The below graph stems from the recent article “Marzec-Manser, Crying wolf, ICIS Heren EGM 25.09”, with the sub-title ‘Poland is castigating Russia’s Gazprom as a threat to its own and the EU’s supply security, while adopting laws that stifle competition and consolidate market power in the hands of incumbent PGNIG’. Whilst the graph vividly illustrates that the multiplicity of sources we discussed above do not only exist but all of them have been used, Marzec-Manser observes further: “Polish diversity increased, but PGNIG’s import share rose further ...”.



We shall look at some particularly revealing details.

9.2 Alleged virtual reverse flow limit exceeded: ‘mock’ physical reverse flow

Poland has, particularly in the 3rd Quarter 2017 (‘Q3’17’), by far exceeded the virtual reverse flow limit alleged by ERO.

ICIS Heren distinguishes in its analysis, based on data from GASCADE and Gaz System, between ‘Russian Yamal’¹⁰² and ‘German Yamal’¹⁰³. Both depict the exit of quantities via PWP into the VPGS, the ‘Russian Yamal’ quantities out of East-West’ forward flow and the ‘German Yamal’ quantities via reverse flow.

According to ICIS Heren data, Poland took in 2017:

- **21.124 TWh (i. e. 1.9 bcm)** of gas at the PWP in forward flow fashion from the Russian Yamal flow.
- **35.134 TWh (i. e. 3.17 bcm)** of gas at the PWP in reverse flow fashion from the German hub GPL.

¹⁰² ICIS Heren assesses the difference between Russian volumes entered at Kondratki and exited at Mallnow: the difference must have been nominated by PGNIG for exit at PWP. This methodology is more than plausible.

¹⁰³ ICIS Heren uses the total PWP exit quantities according to Gaz System data and subtracts the above computed Russian PWP volumes: these are ‘German Yamal’ reverse flow quantities from the GPL hub.

Notably, there were only 2 days (8th and 9th August 2017)¹⁰⁴ without East-West forward flow in Yamal. Hence, the bulk of reverse flow quantities from GPL has been procured in **virtual reverse flow** fashion.

We recall the conflicting messages we had on virtual reverse flow / PWP exit capacity:

- according to ENTSOG, PWP exit capacity comprises **275.5 GWh/d**
- according to Gaz System, PWP exit capacity comprises **239.30 GWh/d**
- according to ERO, virtual reverse flow capacity is limited to **45.52 GWh/d**

If we now look at the daily flows, particularly in Q3'17, we see, according to ICIS Heren source data for the above graph, in turn based on data collected from GASCADE and Gaz System, for illustrative days in Q3'17 the following:

		German Yamal' GWh	Russian Yamal' GWh	Sum
Aug 17	08/14/17	175.5	3.6	179.1
Sep 17	09/26/17	190.5	3.3	193.767861
Sep 17	09/27/17	186.4	3.3	189.623933
Sep 17	09/28/17	190.5	3.4	193.882594
Sep 17	09/29/17	190.5	2.9	193.433894
Okt 17	09/30/17	174.3	2.9	177.203181

SOURCE: own composition based on ICIS Heren data collected from GASCADE and Gaz System

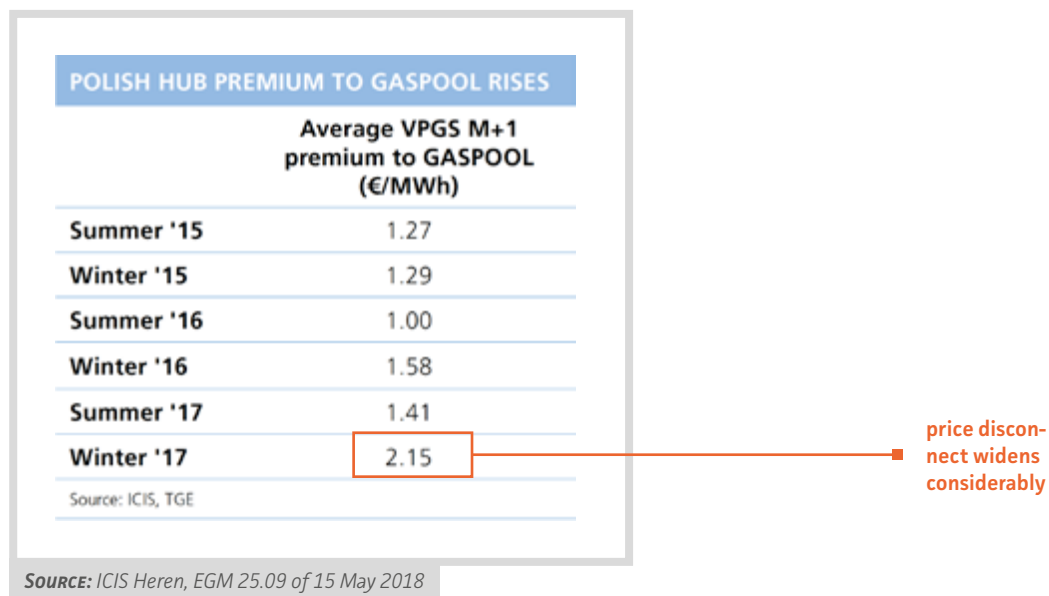
Two things become obvious: (i) There was, with the exception of 2 days, continuous forward East-West flow which makes 'physical reverse flow' impossible. (ii) The daily reverse flow quantities by far exceeded the virtual reverse flow limit of 45.52 GWh/d alleged by ERO and belie also PGNIG's contention that virtual reverse flow possibilities are 'very limited'. This means such limits are a myth and virtual reverse flow (in so-called 'mock' physical reverse flow fashion) is possible and was also extensively used.

It remains unclear why such 'hide-and-seek' game is necessary. We established already that the Yamal IGA as amended conforms to European laws and regulations and the practice of virtual reverse flow could be used openly so long as deemed commercially attractive. The only possible explanation in my book is that it may perhaps be undesirable for PGNIG to make the amount of cheap purchases from GPL all too transparent, since the price effect has not been passed on to the VPGS.

¹⁰⁴ Due to maintenance work at Kondratki. The volumes on these days were 121 GWh and 117 GWh, respectively, i. e. miniscule (0.238 TWh) relative to the total reverse flow quantity of 35.134 TWh.

9.3 Price disconnect GPL/VPGS widened

ICIS Heren data confirms that the increased use of virtual reverse flow quantities from GPL did not cause an approximation of wholesale price levels between GPL and VPGS. Quite the contrary, as of Q4'17, the point in time when the storage obligation was tightened, the price disconnect widened considerably.



Since cross-border trade conducted by international trading companies virtually collapsed, it stands to reason that PGNIG put the purchase advantage into its own pockets and continued its practice of offering overpriced 'take-it-or-leave it puts' to Polish market participants, thereby boosting its profits.

9.4 Russian supplies taken beyond minimum-offtake threshold

According to ICIS Heren source data, PGNIG took 9.45 bcm from Gazprom export in 2017, i.e. exceeding its minimum take obligation of 8.67 bcm by 9%.

Russian Supplies 2017 (without exports to Ukraine)					
	Drozdowicze	Hermanowice	PWP-Russia	Belarus	Sum
	Gross import	reverse flow Ukraine	Yamal forward	Wyskoje	
GWh	49,943.70		21,124.00	35,250.60	106,318.30
TWh	49.94		21.12	35.25	106.32
GCV	11.30		11.08	11.27	
bcm	4.42		1.91	3.13	9.45

SOURCE: own composition based on ICIS Heren data collected from GASCADE and Gaz System

Notably, parts of these volumes, albeit small quantities, were used for supplies back into Ukraine at the IP Hermanowice¹⁰⁵.

Hermanowice reverse flow	
GWh	(13,780.50)
TWh	(13.78)
GVC	11.30
bcm	(1.22)

SOURCE: own composition based on ICIS Heren data collected from GASCADE and Gaz System

Apparently, the price of Russian gas was attractive enough to resell it to Ukrainian Naftogaz, which is known to source from Western markets at Northwest-European traded wholesale prices. A clear indication that Polish dependency on Russia and its alleged price setting power are a ‘fairy tale’.

9.5 LNG ‘hypocrisy’?

Whilst Poland’s purchases of LNG increased from 0.97 bcm in 2016 to 1.6 bcm in 2017, they are a far cry from the full name-plate capacity of 5 bcm.

	Polish LNG send-out	
	2016	2017
GWh	11,255.20	18,467.30
GVC	11.55	11.55
bcm	0.97	1.60

SOURCE: own composition based on ICIS Heren data collected from GASCADE and Gaz System

Marzec-Manser from ICIS Heren appears to be particularly infuriated about the Polish LNG narrative. He writes:

“PGNIG’s supply deal with Qatargas, which initially was for 1.3 bcm/year, epitomizes the glaring hypocrisy of the PiS government when it comes to other gas contracts.”¹⁰⁶

He chastises the frequent criticism towards previous administrations to have accepted a further 10 year extension of the Gazprom export contract with an 85% minimum take flexibility. In contrast, the original 20 year contract with Qatargas featured a 100% minimum offtake obligation and oil indexation, which made it “... **one of the most expensive LNG contracts around the world.**”¹⁰⁷ This was apparently accepted without any comparable criticism. Only by increasing the volume to 2.7 bcm/a had PGNIG been able to amend the contract price somewhat lower.

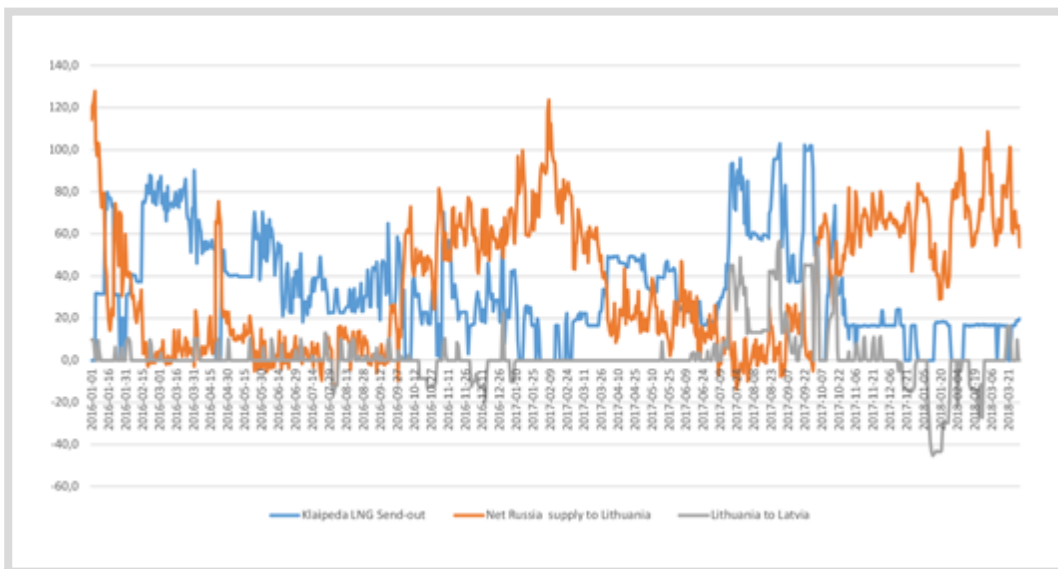
¹⁰⁵ Whilst not virtual but physical reverse flow, ICIS Heren analysis shows Drozdowicze and Hermanowice flows as ‘net-flows’. It is obvious that, given the proximity of the IPs, it was Russian molecules which were shipped.

¹⁰⁶ Marzec-Manser, Crying wolf, ICIS Heren EGM 25.09’, page 8.

¹⁰⁷ Emphasis added.

Indeed, whilst Poland is set to expand the LNG terminal capacity further, from 5 bcm/a towards 7.5 bcm/a, the record thus far is not anywhere near e. g. the smart and opportunistic use that one can observe at the Klaipeda terminal in Lithuania.

The initial excitement about the completion of the Lithuanian Klaipeda terminal was about Gazprom export ‘accepting’ a significant price discount¹⁰⁸ due to the mere presence of the terminal. Meanwhile, Lithuania has long reached the ‘next level’: as demonstrated on the below illustrative chart of ICIS Heren, Lithuania smartly arbitrages Russian gas against attractive LNG spot cargoes. Since H2’17, LNG was also used to export gas to Latvia for storage purposes.



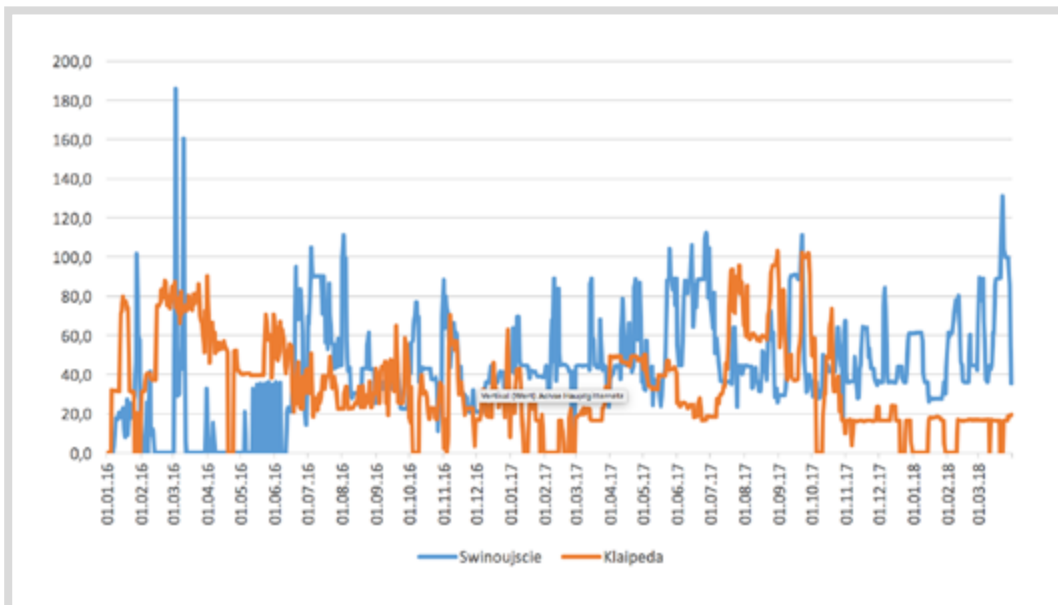
SOURCE: ICIS Heren

Noteworthy is also the response of Lithuania to the global LNG price spike in Q4’17 and Q1’18¹⁰⁹, combined with repetitive cold spells in Europe: LNG send-out dropped to a minimum whilst (apparently price-wise attractive) Russian supplies were nominated up.

In contrast, Poland has a sourcing pattern strongly deviating from the Lithuanian: When Lithuania takes plenty (indicating attractive spot purchase opportunities), Poland takes little and the reverse.

¹⁰⁸ Market rumor speaks of up to 25%.

¹⁰⁹ Caused by an LNG demand surge in East-Asia, particularly China.



SOURCE: ICIS Heren

Indeed, of the 14 cargoes PGNIG took in 2017, only 2 were spot cargoes (1, with much unfounded fanfare, from Cheniere, 1 from Statoil), the rest were Qatargas cargoes under the unfavorable, 100% take-or-pay and expensive oil-indexed LTC already discussed. In contrast, Lithuania procured, out of the total of 18 cargoes in 2017, 4 cargoes outright as 'spot' and further 8 cargoes under short-term contracts ('STC')¹¹⁰, which indicates smart, price-opportunistic sourcing behavior.

Hence, Poland's use of its LNG terminal looks more like 'yet another toy' thus far not put to good use. If anything, the expensive purchases from Qatargas may have strengthened the resolve of Poland to keep wholesale prices high by means of obstructing free cross-border trade, contrary to public statements praising increased competitiveness.

9.6 PGNIG dominance further strengthened

Unsurprisingly, subsequent the tightening of the storage obligation and the withdrawal of multiple international trading companies in Q4'17, the increased exploitation of Polish supply source diversity in 2017 has not led to increased 'diversity in suppliers' competing at the VPGS. Rather, the dominant position of PGNIG further strengthened.

Whilst one would not expect PGNIG's omnipresence to vanish quickly with regard to domestic production or the Russian LTC-based imports, LNG imports and imports from 'European hubs' are the ones where 'supplier diversity', fostering competition on the VPGS, should arguably arise but did not.

All 14 LNG cargoes in 2017 were purchased by PGNIG. Indeed, PGNIG is the only company holding booked LNG regasification capacity at the terminal. As to sourcing from 'European hubs', i.e. the Czech VOB and the German GPL, one observes, as demonstrated on the below table of ICIS Heren, an eye-watering deterioration of

¹¹⁰ According to sources familiar with the circumstances, Lithuania holds a master agreement with a multitude of companies and asks them to 'bid' in auction fashion when it sees an attractive spot opportunity.

supplier diversity: Whilst PGNiG had, in Q1'16, a share of 6.2% and in Q2'16 of even only 0.9%, Q3'17 and Q4'17 show 74.9% and 67.6%, respectively. A clear indication that the storage obligation turned out to be an effective entry barrier.

PGNiG GROWS SHARE OF POLISH GAS IMPORTS FROM EU		
	EU hub imports (TWh)	% of which under PGNiG
Q1 '16	7.79	6.2
Q2 '16	5.03	0.9
Q3 '16	7.33	30.4
Q4 '16	8.43	6.3
Q1 '17	6.03	21.9
Q2 '17	8.27	44.4
Q3 '17	16.23	74.9
Q4 '17	11.94	67.6

Source: GAZ-SYSTEM, GASCADE, PGNiG, ICIS assumptions

SOURCE: ICIS Heren, EGM 25.09 of 15 May 2018

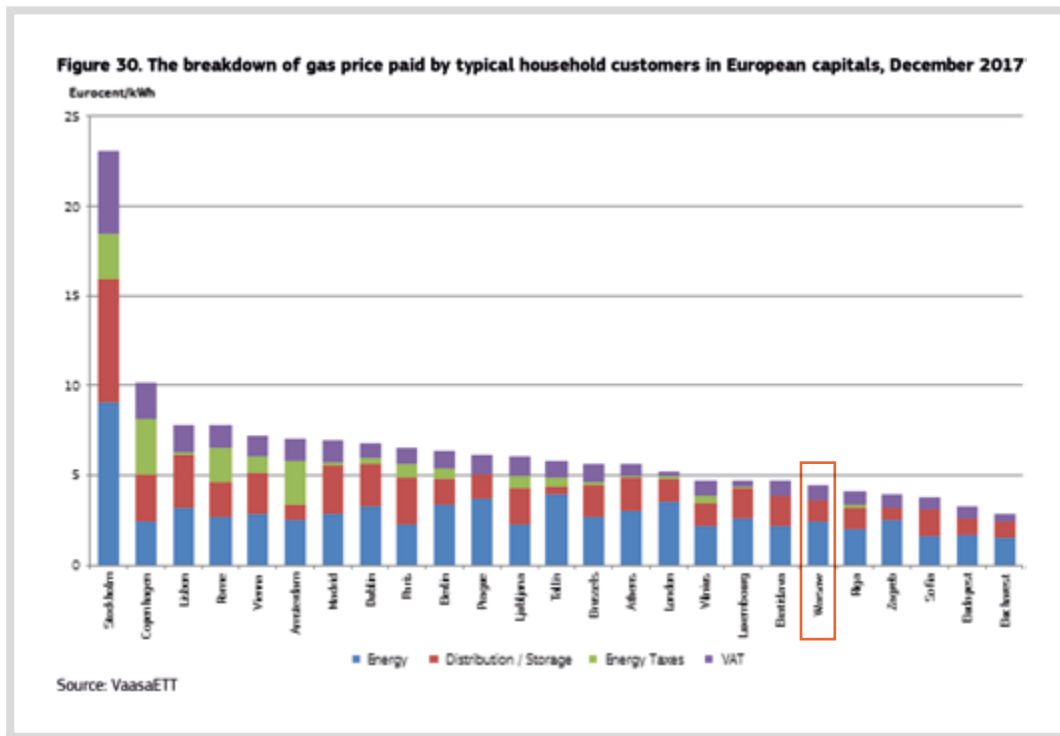
10. Retail market: the 'perfect storm' of a commercial 'no-go' area by 'margin squeeze' or 'predatory pricing'

Given the deliberate obstruction of free cross-border trade as well as free trade at the VPGS at the wholesale market level, it is unsurprising that also the Polish retail market is in poor shape and not anywhere near an at least modest state of liberalization.

10.1 Illusion of competitiveness: price level below EU28 average

A first look at Polish price levels and the composition of prices in comparison with other EU member states creates the appearance of a relatively consumer-friendly situation:

Polish end-user prices for households are below the EU28 average and the share of taxes is relatively modest.



Source: EC Q4'17 Gas Market Report, page 34.

At a closer look, however, this is not the result of Polish competitiveness, but rather the inherent consequence of further entry barriers keeping competitors out. The market shares of new entrants are a first indication.

10.2 Dominance of PGNIG subsidiaries

ERO describes the Polish retail market for gas as follows:

*"In 2016 in the group of alternative suppliers active on the domestic market two undertakings had a share between 2% and 3% in sales to final customers and for three undertakings this share was between 1% and 2%. The share of the remaining trading companies was below 1%."*¹¹¹

It is blatantly obvious that, with only 2 truly alternative suppliers (i. e. non-PGNIG subsidiaries) having market shares of 2% and 3% respectively, two further alternative suppliers having market shares between 1% and 2% and the rest having market shares below 1%, one must regard also retail market liberalization as a failure.

As to the PGNIG market share, ERO observes:

*"In 2016 gas sales to final customers was still dominated by undertakings of the PGNIG S.A. Group, whose share decreased in comparison to the preceding year to 73.76% (80.22% the year before)."*¹¹²

ERO is somewhat clouding the issue by not distinguishing in its market share assessment between small customers and large industrial customers. If one looks at the household- and 'small-medium enterprises' ('SME') segment only, yet another narrative of barriers to entry unfolds.

¹¹¹ ERO National Report 2017, page 55.

¹¹² ERO National Report 2017, page 55.

10.3 The ‘perfect storm’: entry barrier by ‘margin squeeze’ or predatory pricing

As shall be demonstrated, the regulated and ERO approved low PGNIG benchmark tariff for household customer commodity¹¹³ results, in the face of high sourcing prices at the POLPX exchange, in the ‘perfect storm’ of an entry barrier either by ‘margin squeeze’ or predatory pricing’.

10.3.1 ERO approved PGNIG sales tariff sets maximum benchmark

According to ERO, sales to large customers are performed by PGNIG S.A. whilst small customers are served by a subsidiary, namely PGNiG Obrót Detaliczny Sp. z o. o.:

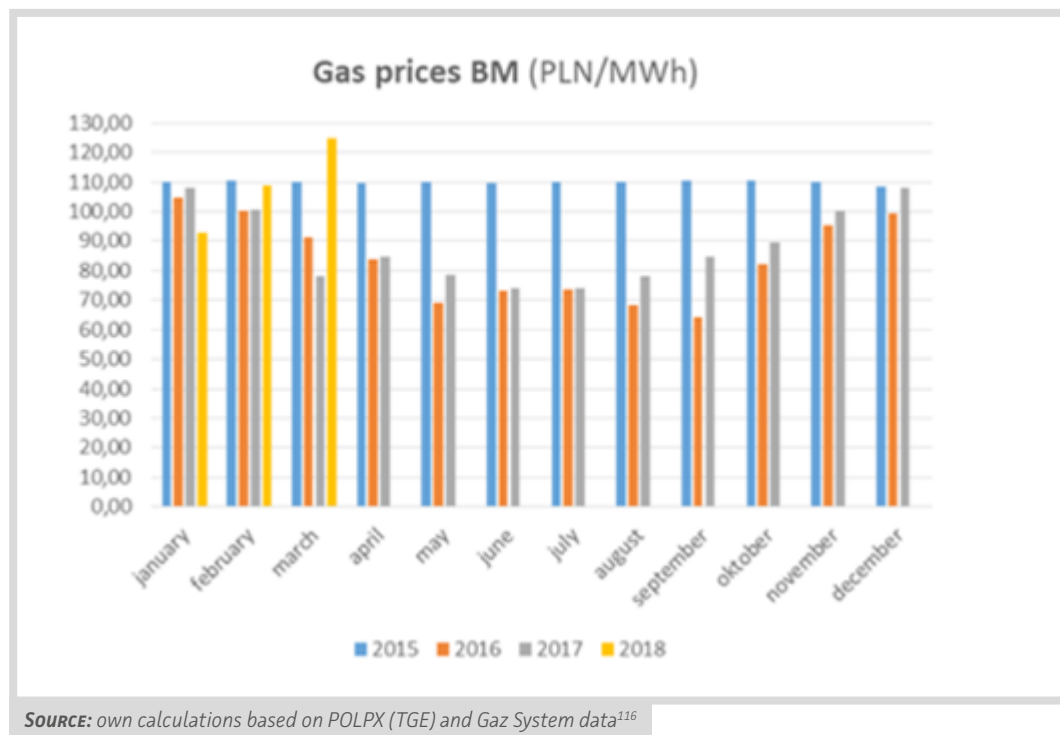
“In 2016 sales of gas to final consumers was still dominated by entities from the PGNiG S.A. Group (PGNiG S.A. – sales to wholesale customers and final consumers with the annual natural gas consumption above 25 mcm; PGNiG Obrót Detaliczny Sp. z o. o. – sales to the other final consumers).”¹¹⁴

In 2017, the ERO approved regulated tariff for PGNiG Obrót Detaliczny Sp. z o. o. comprised **92.40 PLN/MWh**.¹¹⁵

It is obvious that any new entrant aiming to compete with dominant incumbent PGNiG Obrót Detaliczny Sp. z o. o. would have to offer a price at least at and ideally below 92.40 PLN/MWh.

10.3.2 Sourcing costs exceed the ERO approved PGNIG sales tariff by far

If we now look at the sourcing costs, the following picture unfolds: The below graph shows the price development at the POLPX balancing market (‘BM’) from 2015 to 2018.



¹¹³ There are separate regulations for commodity and distribution.

¹¹⁴ ERO National Report 2017, page 56.

¹¹⁵ <http://bip.ure.gov.pl/download/3/8690/20170104TaryfaPGNiGObrótDetalicznyspzo.pdf>

¹¹⁶ Balancing Prices 1 (PSG 2018): https://www.psgaz.pl/cena_referencyjna_gazu; Balancing Prices 1 (PSG 2017): <https://www.psgaz.pl/docu-ments/21201/377795/CRG-2017/d8be6315-1488-4711-b124-30b328213eb5>; Balancing Prices 2(GAZ SYSTEM): https://swi.gaz-system.pl/swi/public/embed.seam?lang=pl&viewId=E_PUB_080&cid=7734

In order to determine the sourcing costs, you need to apply the above prices of the POLPX balancing market prevailing in 2017 to the structure of the standard load profile of a Polish household. The standard load profile is set nationwide by yet another subsidiary of PGNiG, namely Polska Spółka Gazownictwa Sp. z o.o., according to ERO the only unbundled DSO in Poland:

“Distribution System Operators: As of 31 December 2016, business activity in the scope of distribution of gaseous fuels was performed by 53 distribution system operators appointed by the decisions of the President of the ERO, including one legally separated operator – PSG Sp. z o.o. (Polska Spółka Gazownictwa Sp. z o.o.), which belongs to PGNiG S.A. Group. The company is carrying out business activity consisting in distribution of gaseous fuels through distribution networks of low, medium and high pressure for the needs of customers located in the territory of the Republic of Poland.”¹¹⁷

Standard profile W1-3.6		
Month	% SP	
january	15%	13,92
february	13%	13,91
march	10%	13,02
april	8%	7,15
may	6%	4,47
june	4%	2,96
july	4%	2,81
august	4%	3,18
september	4%	3,62
oktober	8%	6,92
november	11%	10,64
december	13%	14,17
	100%	96,76 average cost price SP
		1,45 white certificates
		98,21 COST PRICE

SOURCE: <https://www.psgaz.pl/documents/21201/329718/Miesi%C4%99czne+profile+zu%C5%BCycia+dla+punkt%C3%B3w+typu+WS/f0c0f96a-9926-420a-8d62-8de2b00dd956>

The weighted average cost price derived from the structure of the standard load profile amounts to **98.21 PLN/MWh**, i.e. **5.81 PLN/MWh above** the ERO approved regulated tariff for PGNiG Obrót Detaliczny Sp. z o.o..

The above sourcing costs include a ~1.5% charge for renewables certificates ('white certificates'), but not any other costs. With DSO charges and taxes being a pass-through, an outright commodity loss of -5.81 PLN/MWh (at the current exchange rate of ~4.30 PLN/Euro some **-1.35 € / MWh**) before any other costs is incurred.

The further, non-commodity related costs can be divided in 'imposed' and 'unavoidable' costs.

¹¹⁷ ERO National Report 2017, page 38.

An 'imposed' extra cost is the additional cash drain and cost of capital created by the DSOs asking, before the start of supplies, a hefty collateral in cash or by bank guarantee. This can be avoided by the so-called 'two-contract' model, where the customer has, besides the commodity supply contract, a distribution contract with the DSO directly. If you try this you will find that your acquisition 'conversion rate' deteriorates dramatically: The majority of switch-willing customers will be annoyed and withdraw from the new contract during the so-called 'cooling-down' period¹¹⁸. Moreover, excise taxes are due whether you are profitable or not.

'Unavoidable' costs for a new entrant are costs of acquisition. Further, applicable for anybody in this business, are the so-called 'costs to serve' (i.e. overhead comprising front office, back office etc.). If you consider very moderate costs for acquisition (e.g. on average ~30 PLN for a 1 year contract and extremely frugal 'costs to serve'), even a start-up with a lean organization operating in 'shoe-string' fashion would, by a rough, conservative estimate incur an annual loss per household customer of some -25.35 PLN, i.e. **-5.90 Euros**. This may not sound like much, and one could argue that a new entrant would eventually, with a growing customer base, enjoy 'economies of scale' and turn profitable. However if, even with unavoidable cost of zero, the outright commodity loss persists, there is simply no prospect to ever achieving a positive result.

The outlook for sourcing costs on the curve, i.e. H2 2018 and Y 2019, looks even more gloomy. In the second half of 2018, commodity sourcing costs would rise to PLN 113.94 and for 2019 to PLN 108.39, thus increasing the losses of new entrants further. Surely there will be a new regulated tariff for 2019, but there are, based on previous years' experience, no indications that ERO might consider to adapt it such that it would reflect prevailing sourcing costs on the wholesale market.

104,60 EM Commodity (TGE Forwards H2 2018)	99,04 EM Commodity (TGE Forwards 2019)
4,00 EM Wholesale	4,00 EM Wholesale
4,00 EM Balancing	4,00 EM Balancing
112,60 EM Gas + Flex	107,04 EM Gas + Flex
1,35 Colors Tax 1,5%	1,35 Colors Tax 1,5%
113,94 EM Cost Price	108,39 EM Cost Price

SOURCE: <https://gaz.tge.pl/pl/gas/index/>

10.3.3 Price setting power of PGNIG S.A. at POLPX – misuse of a dominant position?

PGNIG S.A. is essentially the only party capable of offering products at the wholesale market level. Indeed, it is obligated to do so by law: In recognition of PGNIG's dominant position on the supply/import market level, PGNIG must offer a specified portion of its available supplies¹¹⁹ to third parties at the TGE/POLPX, essentially a 'release program'.

¹¹⁸ The 'cooling-down' period is a common consumer protection tool allowing, under certain circumstances, to withdraw from a contract within a specified time period.

¹¹⁹ According to ERO, National Report 2017, page 10, 55% in 2016.

However, it appears to be free to set the prices as it pleases since respective price regulation seems to have been abandoned in 2016. ERO makes mention of such in the section ‘Monitoring supplier switching’:

“In 2016 the President of the ERO also released PGNiG S.A. from the obligation to submit tariff for approval with respect to sales of high-methane gas to wholesale customers, and under the amendment of 30 November 2016 to the Energy Law Act such release was effected with respect to sales in the virtual point. This situation was reflected in subsequent tariffs of PGNiG S.A.”¹²⁰

It is not quite clear whether ERO’s remark includes PGNiG’s obligatory sales to third parties at POLPX in recognition of PGNiG’s dominant position, although its wording (“... wholesale customers ...”) suggests it. In any event, ERO appears to take no issue with the apparent discrepancy between PGNiG’s approved sales price setting the competitive benchmark and sourcing prices clearly exceeding such.

10.3.4 Margin squeeze or predatory pricing?

There are far more competent experts than the author to determine whether the above constitutes anti-competitive misuse of a dominant position by an illegal ‘margin squeeze’ or ‘predatory pricing’.

If a new entrant can only buy at the POLPX, the question is whether those prices are ‘engineered’, i. e. deliberately set such that they are above the PGNiG benchmark sales tariff. Such appears to be the case in that price formation at POLPX is not performed by a multitude of bids and offers by a multitude of market participants but rather unilaterally by PGNiG in ‘take it or leave it “put”’ fashion.

If we look at PGNiG and PGNiG Obrót Detaliczny Sp. z o. o. as a consolidated ‘going concern’, the intentional margin squeeze is obvious.

If we look at PGNiG and PGNiG Obrót Detaliczny Sp. z o. o. as separate entities, there are two possibilities:

- PGNiG Obrót Detaliczny Sp. z o. o. pays the same POLPX based cost price as other market participants. We would then have an incumbent selling below his cost price which suggests predatory pricing.
- If PGNiG Obrót Detaliczny Sp. z o. o. in some fashion (e.g. special ‘internal’ agreement with parent company PGNiG S.A.) gets a better price (i. e. a cost price below its approved sales tariff), we have a case of collusion between PGNiG S.A. and PGNiG Obrót Detaliczny Sp. z o. o. jointly committing ‘margin squeeze’.

10.4 Further barriers for new entrants

There are further ‘hidden’ barriers to entry that are worth mentioning in the context¹²¹:

- Despite unbundling, DSOs, varying by area, appear to collaborate with the incumbent suppliers by informing them of switch requests, thereby enabling “win-back” campaigns during the cooling down period.

¹²⁰ ERO, National Report 2017, page 57.

¹²¹ The following information stems from own research and from informed sources familiar with the market, who wish to remain anonymous.

- Also otherwise DSOs, varying by area, make life miserable for the new supplier:
 - If the new supplier is lacking the customer's invoice of the previous year, he needs DSO information on consumption data. This is sent late and often wrong, and creates issues in cases of significant deviation from standard load profiles (e.g. imbalances).
 - Yearly settlements with customers, requiring submission of final consumption data by DSOs, are negatively affected by late and/or incorrect submission of such by the DSOs.

10.5 Commercial 'no-go' area for new entrants but beneficial for PGNIG and the Polish state – a potential case of hidden state aid?

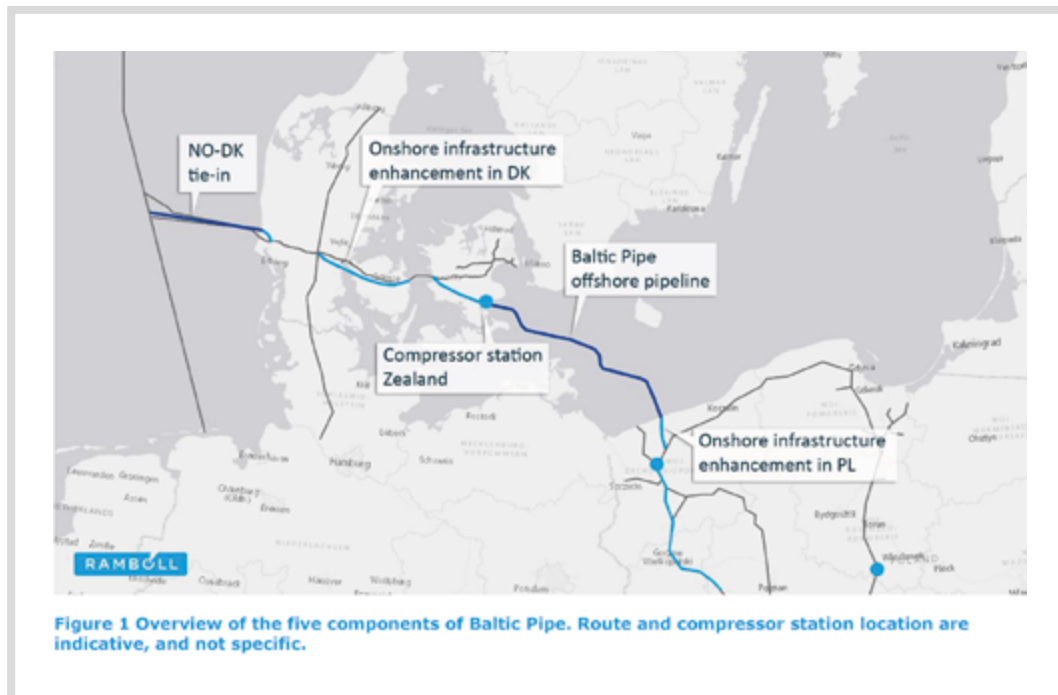
The above clearly renders the Polish gas retail market a commercial 'no-go' area for new entrants, lest you are eager to obtain education in Polish bankruptcy proceedings¹²².

Moreover, it strikes me that the Polish government appears to aim at keeping Polish voters happy by low end-consumer prices, not least also by charging a relatively low tax. Conversely, with 85% ownership in PGNIG, it stands to collect dividends on the hefty profits made by PGNIG i.a. by pocketing the profit from cheap purchases e.g. at the GPL, but also attractively priced Russian supplies, without passing them on to the wholesale market. Instead, PGNIG appears to be misusing its dominant position to impose, on the POLPX or OTC, purchase prices for end-user suppliers exceeding the maximum regulated end-user tariffs. Whilst not my area of expertise, it strikes me that the scheme might perhaps fall into the category of a 'hidden state aid' scheme. It shall be interesting to see whether DG Comp, which I understand is closely following the proceedings of DG Energy against Poland with regards to the storage obligation, takes issue with more than the storage obligation.

¹²² Alternatively, a new entrant with 'deep pockets' may accumulate customers awaiting a turn in tides down the road.

11. The Baltic Pipeline project: back to the stone ages

Poland is taking its 'ideological physicality' to the 'next level' by pursuing the so-called 'Baltic pipe project' (PGNIG calls it the 'Northern Gate Project'¹²³), essentially diverting gas from the existing Norwegian Europipe 2 pipeline by a 'tee-off' through the North Sea, across Denmark and through the Baltic Sea to the beach of Poland, with subsequent additional Polish infrastructure to connect to the Polish grid.



SOURCE: 'Ramboll Feasibility Study 2017', page 3.

11.1 'Back to the stone ages': entry / exit benefits of GPL / VPGS ignored

The ideologically driven physical diversion of Norwegian molecules through a multi-billion Euro pipeline project ignores that the same result can be achieved with a few cents per MWh for entry / exit fees. Namely, Eurogas 2 makes landfall at the German beach at Dornum with i. a. entry into the GPL hub. Any shipper entering a quantity of Norwegian molecules into the GPL is, at the *very same moment*, entitled to exit the equivalent energy quantity e. g. via Mallnow into the Polish VPGS.

With all respect, the perception behind this project strikes me as 'going back to the stone ages', where the transport of gas took place point-to-point and could indeed be perceived as 'carrying the molecules in buckets' from A to B.

It is obvious that this endeavor ignores the achievements of the Single European Market. The proclamation of an 'Energy Union' does not change that: To my understanding, the Energy Union aspires to incorporate the achievements towards the creation of a single European market and not to abandon them. Hence, already at first glance, the project does not make any economic sense - a striking example that erroneous 'ideological physicality' can lead astray.

¹²³ 'Polish Oil and Gas Company Overview December 2017', page 31.

11.2 Excessive costs downstream with a possible ‘bottleneck’ upstream the tee-off

The ‘Ramboll 2017 Feasibility Study’¹²⁴ assumes, with a wide range of uncertainties, capex between € 1.585 and 2.060 billion, without however specifying which of the five elements (as depicted in the above map) costs how much.

Table 1: CAPEX and OPEX

	Estimated range of CAPEX mEUR	Estimated annual OPEX mEUR
GAZ-SYSTEM S.A.	841 to 1,093	35.6
Energinet.dk	744 to 968	16.7
TOTAL	1,585 to 2,060	52.3

The figures reflect the CAPEX and OPEX, as per the study’s cost freeze at 12-10-2016. The CAPEX and OPEX estimates will continuously be improved by GAZ-SYSTEM and Energinet.dk towards the Open Season procedure expected in Spring 2017.

The compressor station OPEX is calculated assuming a load factor of 90 per cent.

Important Notice: The exact division of cost between GAZ-SYSTEM S.A. and Energinet.dk is yet undetermined. Allocation of Compressor Station costs is still subject to discussion between Promoters and NRAs and should be finalized before launching of the II phase of the Open Season Procedure.

SOURCE: ‘Feasibility Ramboll 2017’

It appears noteworthy that Ramboll has not included in its feasibility assessment a crucial ‘6th element’: Europipe 2 itself. Informed sources familiar with the matter explained that the ‘tee-off’ would work like a pipeline ‘loop’, increasing capacity upstream the tee-off (without affecting the capacity downstream the tee-off), but not by 10 bcm/a. Hence, investment of some sort or another in expanding Europipe 2 capacity is likely to be required.

It is, as far as I can see, unclear whether gassco, the Norwegian ‘TSO’ in charge of almost the entire Norwegian grid including Europipe 2, would be willing to take money in hand. When searching the website of gassco, several expansion and optimization projects are mentioned, but not the Baltic Pipe project. According to ‘Hall, Norwegian Gas Exports 2018’,

“Gassco has no publicly stated plans to expand Area D pipeline export capacity above 350 mcm/d. However, it is involved in investigating the viability of the proposed Baltic Pipe gas pipeline to take NCS gas from Europipe 2 to Denmark and on to Poland.”¹²⁵

Whilst it is, in the face of the most recent NPD¹²⁶ bullish production forecast¹²⁷, possible that gassco might consider Europipe 2 expansion upstream the tee-off, such investment would, conform the sober and efficient practices of gassco, only be considered if backed-up by sales of additional Norwegian gas and respective capacity bookings by Norwegian producers. Hence, the securization of commodity becomes a matter of serious urgency.

124 Accessible via: <https://en.energinet.dk/Infrastructure-Projects/Projektliste/BalticPipe>

125 ‘Hall, Norwegian Gas Exports 2018’, page 20.

126 Norwegian Petroleum Directorate

127 See ‘Hall, Norwegian Gas Exports 2018’, page 20.

11.3 A looming multi-billion blunder: 'long' ship-or-pay capacity but 'short' commodity

PGNIG claims to have bindingly booked 80% of the Baltic pipeline's capacity for 20 years at an estimated cost of PLN 8.1 billion¹²⁸, i.e. at the current exchange rate of 4.30 PLN/Euro of **€ 1.88 billion**. This is a massive ship-or-pay commitment where you have to pay for the capacity whether you use it or not. Whilst the thus assured revenue stream probably enables project financing, the ship-or-pay commitment is capable of setting PGNIG up for a significant commercial blunder: Firmly committing to ship-or-pay obligations (i.e. going 'long' capacity) can only responsibly be done if one has, at the same time, secured respective supplies to ship.

I am not aware of any Norwegian supplier having concluded a 20 year LTC with PGNIG over 8 bcm/a and neither have I seen any PGNIG announcements on such, commensurate with its capacity announcements. Last but not least, I am not aware that any buyer of Norwegian gas at the German beach would be interested in either supplying Poland directly (see above) nor selling to PGNIG at the tee-off.

Perhaps we have, however, overlooked the *'stroke of a genius'*: Poland simply buys its own gas! E.g. Mr. Piotr Woźniak, CEO of PGNIG, stated that

*"Planned production of natural gas in Norway by PGNiG should reach 2.5 bcm annually in 2022."*¹²⁹

Besides that 2.5 bcm (in 2025, not 2022) are a far cry from the 8 bcm/a needed to cover PGNIG's capacity long position, let alone 10 bcm/a, PGNIG might consider to re-compute their well-head net-back which will clearly be negatively affected by the expensive Baltic pipe transportation as opposed to the economies of scale prevailing in Europe 2 and the competitive entry / exit fees charged at GPL / VPGS to get Norwegian gas into the Polish wholesale market. Perhaps the commingled molecules would even contain a few of PGNIG-Norwegian production origin.

11.4 The illusion of 'particularly cheap' Norwegian gas

Mr. Piotr Woźniak, CEO of PGNIG, has also stated interesting ideas about 'particularly cheap' gas stemming from PGNIG's Norwegian production:

*"Own gas will always be the cheapest and competitively priced."*¹³⁰

First, he appears to overlook the universal issue of transfer pricing (in the case at hand between PGNIG and its Norwegian subsidiary) which will undoubtedly be scrutinized by the Norwegian tax authorities. If the 'fair value' for Norwegian gas landed at Dornum is the GPL traded price, PGNIG will have a hard time justifying a lower fair value. On the contrary, since the Norwegian gas diverted through the Baltic pipe directly to the Polish market with a price level of at times up to 3 €/MWh above GPL level, it is well possible that Norwegian tax authorities might deem such level as the fair value for taxation and royalties.

A 'catch 22', similar to the Russian price arbitration discussed earlier: if you have locked up your market resulting in wholesale market prices higher than those of adjacent hubs, you have deprived yourself of the most powerful argument, namely the 'achievable price'. Second, even if PGNIG, for the sake of argument, got away with a particularly 'cheap price' (for the PGNIG part of the Baltic pipe volumes only), he overlooks the 'left pocket / right

¹²⁸ <http://biznesalert.com/pgnig-reserved-capacity-baltic-pipe-pln-8-1-billion/>

¹²⁹ <http://biznesalert.com/pgnig-poles-opt-diversification-gas-supplies-support-baltic-pipe-project/>

¹³⁰ <http://biznesalert.com/pgnig-poles-opt-diversification-gas-supplies-support-baltic-pipe-project/>

pocket' effect: If the Norwegian PGNIG subsidiary sells at a lower price than attainable say at the GPL entry Dornum, the Norwegian subsidiary would make less profit.

Besides, as we have seen, PGNIG pricing practices thus far have not exactly demonstrated any willingness to pass attractive purchases on to the Polish wholesale market, but rather to put the benefits into its own pocket. In the context of this obviously expensive diversification scheme, it stands to reason that the high costs will strengthen the resolve of PGNIG, supported by the Polish government, to continue the lock-up of the Polish wholesale market as long as possible. The purchase of cheaper gas at the GPL without pass-on would help PGNIG to plug some of the wholes caused by expensive 'diversification schemes' driven by 'ideological physicality' albeit prohibitively uneconomic.

12. Poland's Nord Stream 2 opposition: leveraging 'alternative facts' out of erroneous 'ideological physicality' only or is there a hidden agenda?

As has been demonstrated, Poland's alleged dependency on Russia is unfounded and clearly falls into the category of 'alternative facts'. It stands to reason that informed people in Poland are also aware of this. This begs the question whether Poland's aggressive anti-Nord Stream 2/anti-Russian gas quest is merely driven by 'ideological physicality' clouding its judgement or whether there might be a 'hidden agenda' beyond such.

12.1 Leveraging 'alternative facts'

Poland is depicting itself as the most vulnerable 'victim' of Nord Stream 2 and Russian gas supplies at large. To quote Marzec-Manser once more:

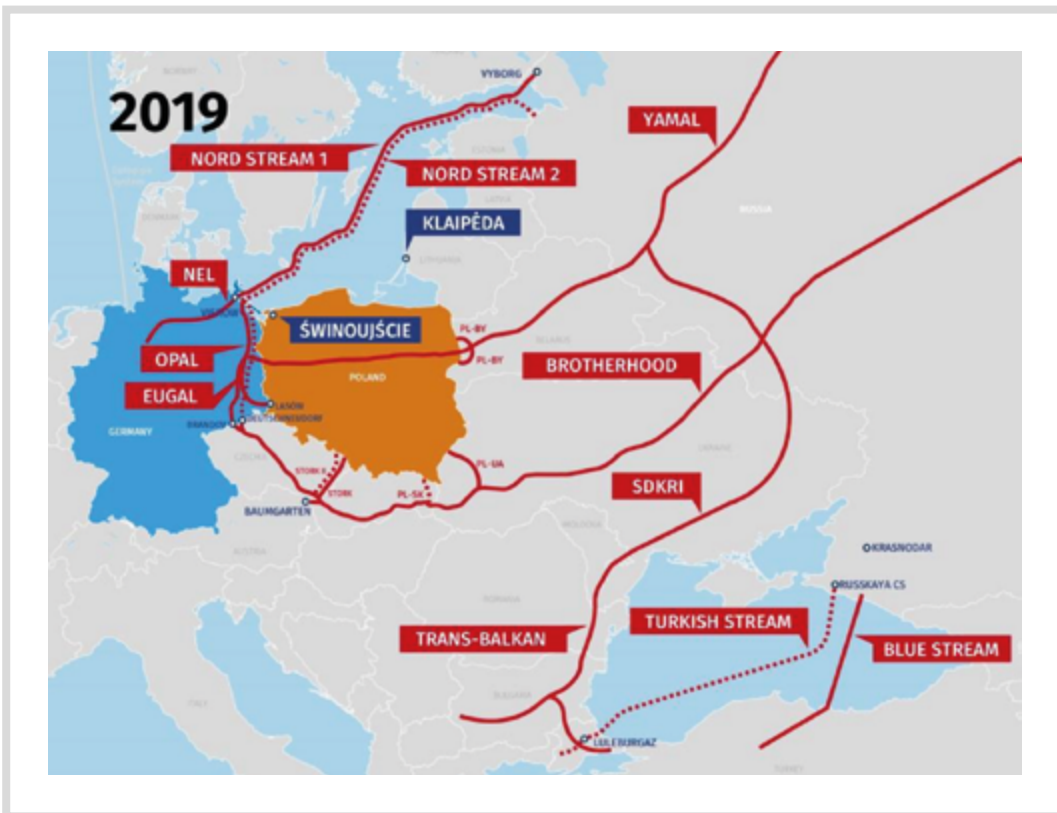
"... It has propagated a vitriolic anti-Russian campaign, even as Warsaw has clearly benefitted from competitively priced Gazprom gas."¹³¹

¹³¹ 'Marzec-Manser, Crying wolf, ICIS Heren EGM 25.09', page 7.



Source: <http://biznesalert.com/nord-stream-2-will-not-pay-back-putins-friends-will-make-a-profit/>

Poland also – unasked – takes liberty in declaring the whole of Europe as a victim. Indeed, Poland goes as far as depicting Russian pipelines – existing and planned – in military ‘pincer movement’ fashion.



Source: PGNIG '20171211 prezentacja NATO'

In reality, Poland's avails of ample supply diversity, facilitated by domestic production, direct access to the global LNG markets and considerable interconnectivity with the 'Northwest-European traded hubs comprising a transnational market behaving like a single price area'. We recall also that, with the sum of all non-Russian sources comprising 117% of domestic consumption and nearly 260% of the Russian minimum offtake quantities, any kind of alleged 'Russian dependency' is simply not credible. Even Poland's claim that it suffers from excessive pricing under the Russian LTC is cast in doubt in the face of Poland having taken 9% more than the minimum Russian offtake quantity in 2017. If indeed the Russian price would not reflect the Northwest-European hub price level, before or after the pending arbitration award, it would again not be the result of Russian dominance of any kind, but the direct consequence of Poland's deliberate actions preventing integration into the Northwest-European traded market and thus depriving itself of the powerful 'achievable price' argument. Hence, the above depiction of Poland asserting 'isolation' and getting 'surrounded' by Russian gas by means of Nord Stream 2 and Russian gas at large can only be regarded as an attempt to leverage 'alternative facts'.

Indeed, such appears the practice even in the 'highest of places': E.g., one reads with indignation the statements of the Polish Minister of Energy, Krzysztof Tchórzewski, drawing on the survey 'Poland's energy security 2017 – natural gas market' by GfK Polonia:

"The survey findings have confirmed that ... independence from the dominant gas supplier is a guarantee of competitive prices of the commodity."¹³²

How additional Russian supplies, needed to cover the widening European import needs, can be harmful for the Polish market remains a secret. All I can see is increased liquidity in the 'transnational Northwest-European traded markets', with Germany's GPL and NCG merging in the not too distant future. As already discussed, the relevance of the physical market share of a certain supply source depends decisively on how the receiving market is dealing with such on price formation. It appears useful to briefly look at how the Northwest-European markets are dealing with Russian supplies in terms of price formation.

12.2 The myth of Russian dominance by imposing (anti-competitive) oil-indexation

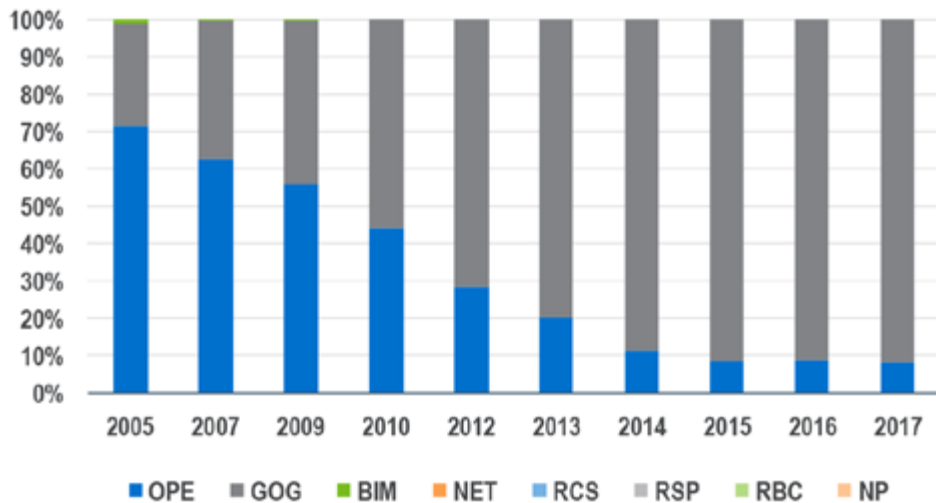
It is true that Gazprom has been particularly difficult¹³³ in the waves of price reviews and arbitrations which started as of 2008, when the financial crisis caused the 'break-out' of traded gas markets. However, and without any intention to 'defend' past misguided Russian policies on this, today's market reality shows a different picture.

If we look at the most recent 'Wholesale Gas Price Survey 2018 Edition' of the IGU, a renowned survey coming out for the 10th time, we see e.g. that, in the Northwest-European markets, gas-on-gas pricing ('GOG') is at 92% in 2017 whilst oil indexation ('OPE') has declined to 8%. More than a complete reversal of OPE and GOG between 2005 and 2017.

¹³² <http://biznesalert.com/pgnig-poles-opt-diversification-gas-supplies-support-baltic-pipe-project/>

¹³³ Albeit by no means the only one. The market at the time saw also arbitrations with Norwegian and Dutch suppliers.

Figure 6.5 Northwest Europe Price Formation 2005 to 2017

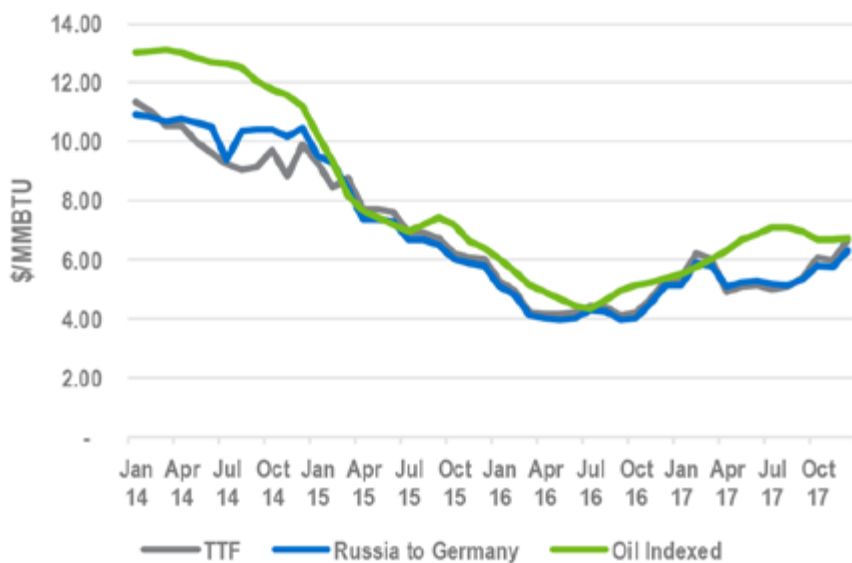


SOURCE: IGU Wholesale Gas Price Survey 2018 Edition, page 55.

With a physical market share of Gazprom clearly above 8%, it appears hard to maintain that Russia is 'bullying' Europeans with oil-indexed gas prices. Rather, it would be more appropriate to say that the market has 'beaten' past misguided Russian price policies 'into submission'.

Even more striking is the IGU analysis of Russian gas supplied into Germany, the beaching point of the 'scandalized' Nord Stream 2, according to Polish voices 'threatening Europe's energy security': Those supplies are not only correlated to the TTF at 100%, but quite frequently sit at a level below TTF. I dare say this is not a manifest of Russian dominance, but rather suggests that Russia might be 'leaving money on the table'.

Figure 6.6 Russia to Germany Prices v Hub and Oil Indexed



Source: Argus Media

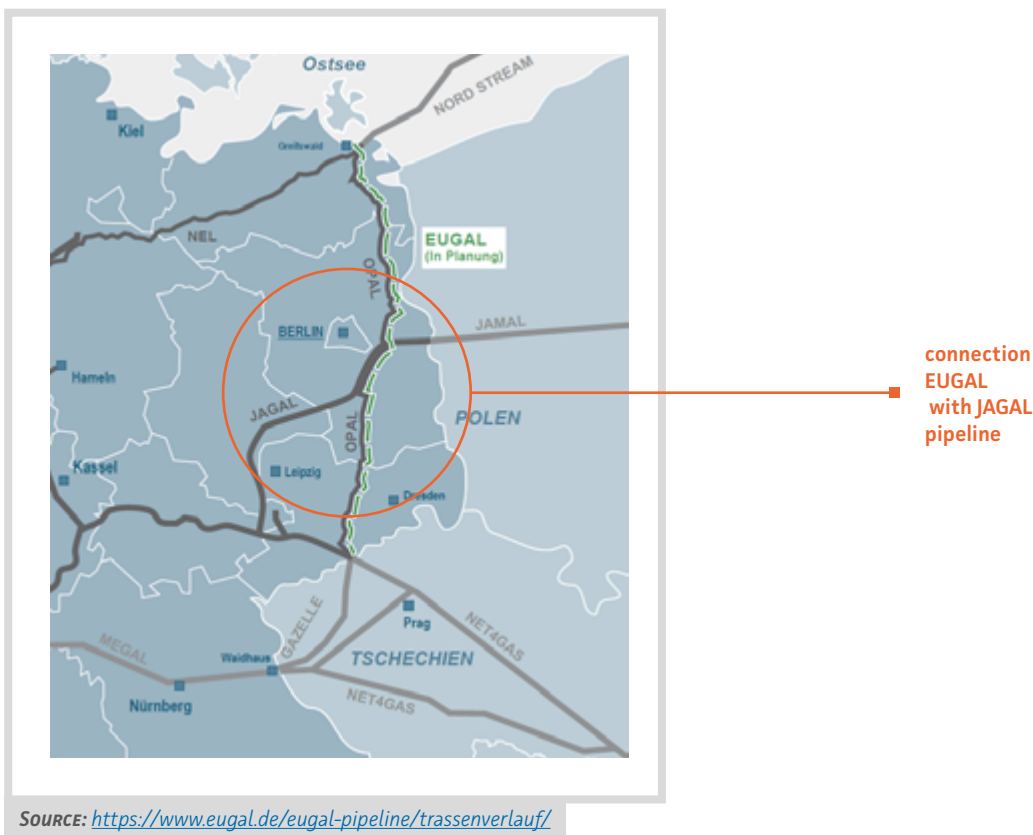
SOURCE: IGU Wholesale Gas Price Survey 2018 Edition, page 56.

12.3 ‘Thank you but no thank you’ to increased virtual reverse flow potential

In the context of planning the EUGAL¹³⁴ pipeline configuration, GASCADE¹³⁵ has expressed willingness to expand the reverse flow capacity at Mallnow into Poland further. Due to lack of use of existing capacities, it has temporarily suspended such plans:

“So far...only just over half of the existing capacities at the Mallnow network point to the east are booked – primarily on a daily or monthly basis.”¹³⁶

However, GASCADE is planning to in any event connect EUGAL with the JAGAL pipeline, the extension of Yamal on German territory. This will ensure enhanced availabilities of gas for virtual reverse flow at Mallnow. Whilst not at all an issue in the current operational environment, this would prevent a potential constraint in the ‘hub grid’¹³⁷ substituting diverted volumes in more substantial quantities than currently seen at Mallnow ... if Poland were to significantly increase its virtual reverse flow operations from the GPL.



GASCADE explains:

“The direct connection to the existing natural gas pipelines JAGAL and NEL ... mean that EUGAL can transport natural gas flexibly in all directions, thus significantly increasing network stability and supply security in Europe.”¹³⁸

¹³⁴ EUGAL: Europäische Gas-Anbindungsleitung (<https://www.eugal.de/eugal-pipeline/>)

¹³⁵ <https://www.gascade.de/en/>

¹³⁶ <https://www.gascade.de/en/press/press-releases/press-release/news/successful-booking-of-new-transport-capacities/>

¹³⁷ See above page 20.

¹³⁸ <https://www.gascade.de/en/press/press-releases/press-release/news/successful-booking-of-new-transport-capacities/>

Indeed, the most effective way to integrate its market further with the Northwest-European traded market would be for Poland to enhance the PWP capacity thus enabling virtual reverse flow beyond the already possible 9.08 bcm/a¹³⁹ from the GPL.

However, not only is there no interest in this opportunity, but rather fierce Nord Stream 2 opposition instead. Arguably, it might be predominantly (commingled) Russian molecules used to substitute diverted Russian molecules out of Yamal via PWP into the Polish VPGS, a proposition not sitting well with 'ideological physicality'. Perhaps however, it could also be the concern that increased availabilities for virtual reverse flow operations from a hub with even further enhanced liquidity might increase the pressure to finally open up its market and liberalize.

12.4 Concern about Yamal obsolescence?

It might at least be understandable if Poland were concerned about Nord Stream 2 potentially causing Yamal obsolescence. Such concerns, if indeed there were any, would be largely unfounded. However, the character of Poland's aggressive anti-Nord Stream 2 and anti-Russian gas campaign appears not to aim at retaining transit business, but rather entirely discrediting product and provider.

As a recent analysis of the OIES by Sharples¹⁴⁰ demonstrates, the growth of Russian exports to Europe in 2016 and 2017 has brought utilization of Russian export transportation capacity to its limits. More growth can reasonably be expected, not least due to a finally increasing displacement of coal fired- by gas-fired power generation in the context of battling climate change. It stands to reason that Yamal, being a pipeline partly owned by Gazprom, would enjoy preferential use over non-owned pipelines¹⁴¹. Hence, Poland's concerns would be largely unfounded.

In the face of Poland's aggressive anti-Nord Stream 2 and anti-Russian gas campaign it appears, however, not very plausible that Poland is aiming at protecting its transit business. In a - hypothetical for the sake of argument - 'dream come true scenario' with everybody following Poland in shunning Russian gas, any business case for continued transit of Russian gas would collapse as a consequence.

12.5 Trying to help its neighbor Ukraine?

Whilst also Ukrainian Naftogaz is aggressively opposing Nord Stream 2 in an effort to retain as much transit business as possible for Russian gas via Ukraine, the thrust of the Polish campaign falls into the category of 'beware of your friends'.

The same considerations just discussed with regard to Yamal transit business apply to the Ukrainian transit business: If everybody would follow Poland and not buy Russian gas anymore, the Ukrainian transit business case would collapse as well.

And, as already indicated above, Ukrainian Naftogaz took a completely different approach to price formation in its own market by embracing Northwest-European traded markets and, by way of arbitration, 'imposing' 100% hub-based pricing on Gazprom. In contrast to Poland, Ukrainian Naftogaz has been tough when it came to 'fixing' its contractual deficiencies with Gazprom, but is - or at least should be - aiming for a reasonable business relationship with Gazprom, presenting itself as a reliable service provider going forward.

Hence, the hypothesis of 'neighborly help' appears unconvincing.

¹³⁹ See above page 25.

¹⁴⁰ Sharples, Ukrainian Gas Transit Still Vital'.


¹⁴¹ Sharples, Ukrainian Gas Transit Still Vital', page 7.

12.6 Hidden agenda? Everybody wants to be a 'hub'

What remains as a plausible explanation is Poland's ambition to become the 'pivotal hub' for Central European markets and also the Baltic States. Planned interconnections to Lithuania, Slovakia and the Czech Republic, along with an increase of LNG terminal capacity, the Baltic pipe, a reinforcement of the Polish grid by means of the so-called North-South link, speak for themselves. I abstain from going into detail on each of these individual projects.

It is noteworthy though that Poland's campaign contains an implicit element of 'timing': With its Gazprom LTC expiring in 2022, a *delay* of Nord Stream 2 until such time appears expedient to 'buy' time for the implementation of the 'grand plan', the pivotal hub. The below slide from PGNiG's presentation to NATO Headquarters supports this hypothesis: "... only chance to catch up ...".

Central Europe race for diversification



- **Baltic Pipe project**
 - New pipeline from Poland through Denmark to Norway: 10 bcm/y in 2022
- **LNG Terminal in Świnoujście:**
 - Current regasification capacity: 5 bcm/y
 - Planned extension: 7,5 bcm/y
- **New pipelines in the Baltic States**
 - Balticconnector Finland – Estonia
 - Poland – Lithuania (GIPL)
- **Southern Corridor**
- **Ukraine – Romania – Bulgaria – Greece gas reverse flows**

Stopping Nord Stream 2 is the only chance for Central European States to catch up with diversification projects

PGNiG
10/13

SOURCE: PGNiG '20171211 prezentacja NATO'

Poland's quest, albeit entirely hinging on 'alternative facts', appears to have fallen on fertile ground in Brussels: all of the aforementioned projects are so-called 'projects of common interest' ('PCIs'), thereby qualifying for expedited regulatory clearing and, most importantly, lavish subsidies from the EU coffers, e.g. from the 'Connecting Europe Facility' and otherwise.

Whilst the fallacy of Poland becoming 'pivotal hub' concept should be obvious by taking just one look at the condition of both the Polish traded wholesale market and the retail market, the 'alternative facts' approach pursued by Poland appears to sit well in the highly emotional, politicized atmosphere. However, such atmosphere is prone to overlook hard gas-economical realities: If Poland were indeed in a position to operate as 'pivotal' hub between Northwest-European traded markets and Central European and Baltic gas markets, it would be like putting the 'fox in the hen house'. It cannot possibly be desirable to have Poland lock up its market against Northwest-European traded markets and impose the persisting Polish 'price premium' on neighboring markets, lining PGNiG's pockets in the process.

12.7 'Worst nightmare': Poland becoming the 'pivotal' hub

Just imagine that Poland were in a position to impose on the Czech market a price premium of between 1 to 3 €/MWh, the prevailing 'price disconnect' with Northwest-European traded markets as assessed by ACER for 2016 and confirmed by ICIS Heren to prevail also in 2017 and into 2018. I think everybody will agree that it would be entirely unacceptable to see e.g. the Czech Republic, already fully integrated in the transnational Northwest-European market 'behaving like a single price area' suddenly becoming exposed to the price setting power of Poland, charging a hefty premium.

The same goes for Slovakia and the Baltic states: If anything, it would be desirable to see, as soon as possible and as much as possible, price convergence with the Northwest-European traded markets and certainly not a money-making artificial price disconnect sitting in-between.

Last but not least Ukraine: Having succeeded in obtaining Northwest-European hub-based pricing for their Russian supply quantities¹⁴², it would be entirely unacceptable to see Poland leverage its 'cork in the bottle' position to charge a non-market based premium above prevailing Northwest-European traded prices.

Moreover, Ukraine, notably not a member of the EU, is taking all the necessary steps to adopt the European energy acquis and might at the end of the day possibly contribute to enlarge the 'European Henry Hub' towards an 'Eurasian Henry Hub'. In contrast, Poland sits like a 'cork in the bottle' in-between and obstructs free trade and liberalization every step of the way.

It would be high time to sit back, look at the real facts instead of the 'alternative facts' charade of Poland and put a stop to it.

13. Conclusions

In our 'new world' of 'alternative facts' it strikes me that it appears to suffice to create fake news about Russian dependency in order to ignore all facts to the contrary and get away with massive subsidies for a plan to create a 'brave new world', namely Poland 'finally' becoming independent of Russia and, whilst we are at it, Poland evolving as the 'pivotal hub' for Central-European and Baltic markets. With the EC having concluded its proceedings with Gazprom by settlement with wide-ranging commitments to facilitate further European market integration, it is perhaps timely to look at some of the member states themselves. The pending proceedings regarding the storage obligation are a promising start.

13.1 Will the removal of the storage obligation suffice?

Meanwhile, time has passed since DG Energy served the Letter of Formal Notice to Poland regarding the storage obligation. Sources involved in the matter advise that Poland has served a lengthy 'justification' of its (anti-competitive) practices. It stands to reason that a 'Reasoned Opinion' of DG Energy is likely to be served and the proceedings would go all the way.

I was asked by individuals involved in the matter whether I thought that the removal of the storage obligation would finally lead to free trade at the wholesale market and liberalization of the Polish gas market. My answer was emphatically 'no'. The same

¹⁴² With its minimum take substantially reduced by arbitral award.

question – with yet another emphatic ‘no’ as an answer was asked with regards to the Baltic Pipe project. Thus far we have never seen ‘attractive purchase costs’ passed on to the market by PGNIG. And it stands to reason that the purchases might not be all too attractive anyways because of excessive system costs hitting the consumer via rising grid charges.

Quite the contrary, the excessive costs are rather prone to strengthen Poland’s resolve to keep their market locked-up and retain the premium over Northwest-European traded prices.

As demonstrated, the storage obligation is only the tip of an iceberg and much more would be necessary to liberalize the Polish gas market both on wholesale and retail level.

13.2 Which other market aspects should be scrutinized?

In order to ‘help’ Poland to finally embrace free trade and liberalization to the benefit of its consumers and the economy at large, I think the findings of this paper might justify to more closely scrutinize the following aspects:

- Clearly, the storage obligation needs to be removed entirely for international wholesale traders not serving end-users, since imposing a non-recoverable cost thus operating as entry barrier.
- A storage obligation for end-user suppliers should be restricted to ‘vulnerable customers’ (as is the case in a variety of European member states), i. e. households and places performing vital public services, e. g. hospitals etc.
- Polish storage prices, which sit, as analyzed, way above Northwest-European market price levels, should be looked into separately and with urgency since creating a further formidable entry barrier for new entrants in the retail segment.
- The price setting behavior of PGNIG at TGE / POLPX as well as its conduct in OTC transactions should be looked into since it stands to reason that there is misuse of a dominant position resulting in a powerful barrier to entry by ‘margin squeeze’ or predatory pricing for new entrants in the retail market.
- The necessity of regulated end user prices should be scrutinized.
- The necessity to re-introduce regulation with regards to prices pertaining to PGNIG’s release program should be considered.
- The DSOs’ practice of asking collateral from new entrants and colluding with incumbents should be stopped.
- The practice of the Polish State to keep Polish consumer prices low whilst allowing PGNIG to overcharge new entrants on commodity sourcing and collecting dividend from PGNIG’s consequently hefty profits should be investigated as to whether potentially illegal state-aid.

13.3 Lavish European funding hinging on 'alternative facts' in pursuance of 'ideological physicality'

It has been demonstrated that Poland's 'crying wolf' approach, entirely hinging on 'alternative facts' in pursuance of 'ideological physicality', is nonetheless bearing fruit e.g. with regards to successfully obtaining ever more lavish European funding. This begs the question whether, although perhaps 'politically not correct', one might wish to consider making any such funding, apart from making economic sense in the first place, conditional on compliance with certain fundamental rules and practices of the European energy acquis.

Also other market observers are critical of some CEE governments' lack of political will to enable supply security through allowing competitive cross-border trade.

E.g. Katya Zapletnyuk, editor of EGM¹⁴³, writes in her editorial article titled 'To diversify gas supplies, CEE countries must allow efficient cross-border trade instead of maneuvering between the EU and Russia'¹⁴⁴, that certain CEE governments may make "*... official statements toeing the EU party line ...*" but playing "*... a double game ...*" when it comes to embrace liberalization and free trade.

It stands to reason that certain PCIs are so costly that they might, rather than furthering Polish market liberalization, strengthen Poland's resolve to keep its market locked up to enable PGNIG to compensate commercial blunders by cheap purchases e.g. from the GPL without passing the purchase price benefit onto the Polish wholesale market.

The most likely candidates for such are:

- The envisioned further expansion of the LNG terminal
- The construction of the Baltic Pipe.

All other planned new IPs or IP expansions should be scrutinized to distinguish whether:

- They are truly beneficial to further enhance the single European market
- They are only serving Polish dreams of becoming a 'pivotal' hub (as opposed to become integrated into the Northwest-European market), thus creating potential price setting power for PGNIG imposing the prevailing Polish price 'premium' also on other neighboring markets.

¹⁴³ ICIS' fortnightly analytical report 'European Gas Markets'

¹⁴⁴ ICIS Heren, EGM 25.08, p. 18.

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Wolfgang has been working in the oil and gas industry for some 35 years: with Mobil, Duke Energy and RWE. He served in different senior management positions across the entire gas value chain in a variety of countries. After an extended period in the international upstream business he was twice responsible for market entry into the liberalizing Dutch retail market. Later, engaged in the midstream segment, he served i. a. as RWE's chief negotiator for supplies in Azerbaijan, Iraq and Turkmenistan in conjunction with the Nabucco pipeline project. In the Czech Republic, Poland's direct neighbour, he served first as CCO and then as CEO of RWE Transgas a.s. (later re-named RWE Supply & Trading CZ a. s.) since 2008. He experienced the Ukrainian gas crisis 2009 and the measures taken hands-on. With Gazprom, he negotiated and litigated about the decoupling of oil and gas pricing. He retired as CEO of RWE Supply & Trading CZ a. s. in March 2016. Wolfgang now runs his own business: 'The Gas Value Chain Company GmbH' (GVC). GVC offers its services as 'commercial operator' (instead of mere consultancy), e. g. in project management and commercial negotiations. Wolfgang also acts as commercial expert in arbitrations and mediations. He strongly supports the product natural gas as an effective means to genuinely battle climate change. His gas advocacy engagement includes the publication of various articles and a multitude of presentations (www.gasvaluechain.com). Wolfgang has been retaining his ties with Brussels-based Eurogas (www.eurogas.org), where he served as board member for 8 years: GVC was the first company to join Eurogas in the new category of 'liaising members'.



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