

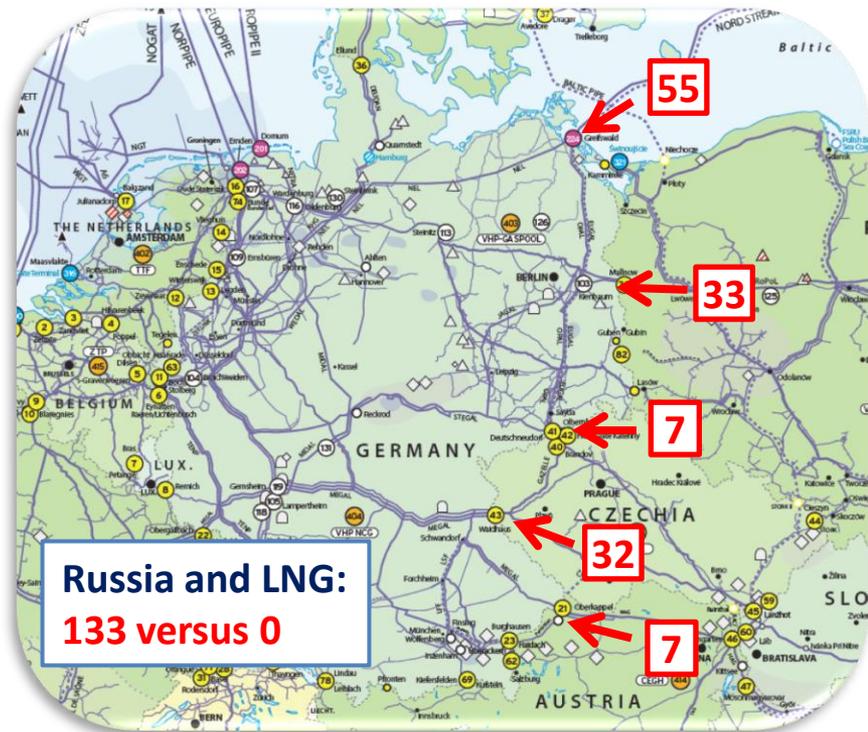
The Real Cost of Nord Stream 2 for the EU and Russia

European Union House, Tallinn, March 6, 2018

Mikhail Korchemkin, East European Gas Analysis, USA



Facts About Gas-to-Gas Competition



- Current capacity of pipelines delivering Russian gas to the German border is above **133 bcm/y** (at +20°C, ENTSOG).
<https://www.entsog.eu/maps/transmission-capacity-map>
 - NS2 would raise it to **188 bcm/y**.
 - In 2017, Germany imported 53.4 bcm from Russia and the whole EU – less than 163 bcm.
- There are no LNG terminals in Germany.
 - Total LNG capacity of NW Continental Europe (from the Atlantic coast of France to Lithuania) is 61 bcm/y (at +20°C, ENTSOG).
- NS2 is more about moving gas transit revenue from Slovakia to Germany.
- **Concentration instead of diversification.**

NS2 Does Not Guarantee Secure Supply

- *“If somebody thinks that they can resolve the problems of Ukrainian energy supply through reverse supplies, they are deeply mistaken. For two reasons: first, if we see that somebody is violating our contracts for gas supplies, **we will reduce the volume**, and the physical volume on the European market will simply be insufficient, there will simply not be enough,” – V. Putin, 6-June-2014.*
<http://en.kremlin.ru/events/president/news/45869>
 - German RWE and other EU firms didn't listen Mr. Putin.
 - In the winter of 2014-2015, he ordered Gazprom to reduce daily gas exports through Ukraine and Nord Stream by 50%.
- With NS2, the supply of Russian gas to the EU would be **dangerously dependent on bilateral relations of Moscow and Berlin**.
 - There is a risk the Kremlin doesn't like "bad behavior" of another German firm or a local German judge.
 - There is no doubt Russia would use gas tap again.



Gas tap works better than arbitration

Gas Becomes a Backup Fuel for Renewable Energy

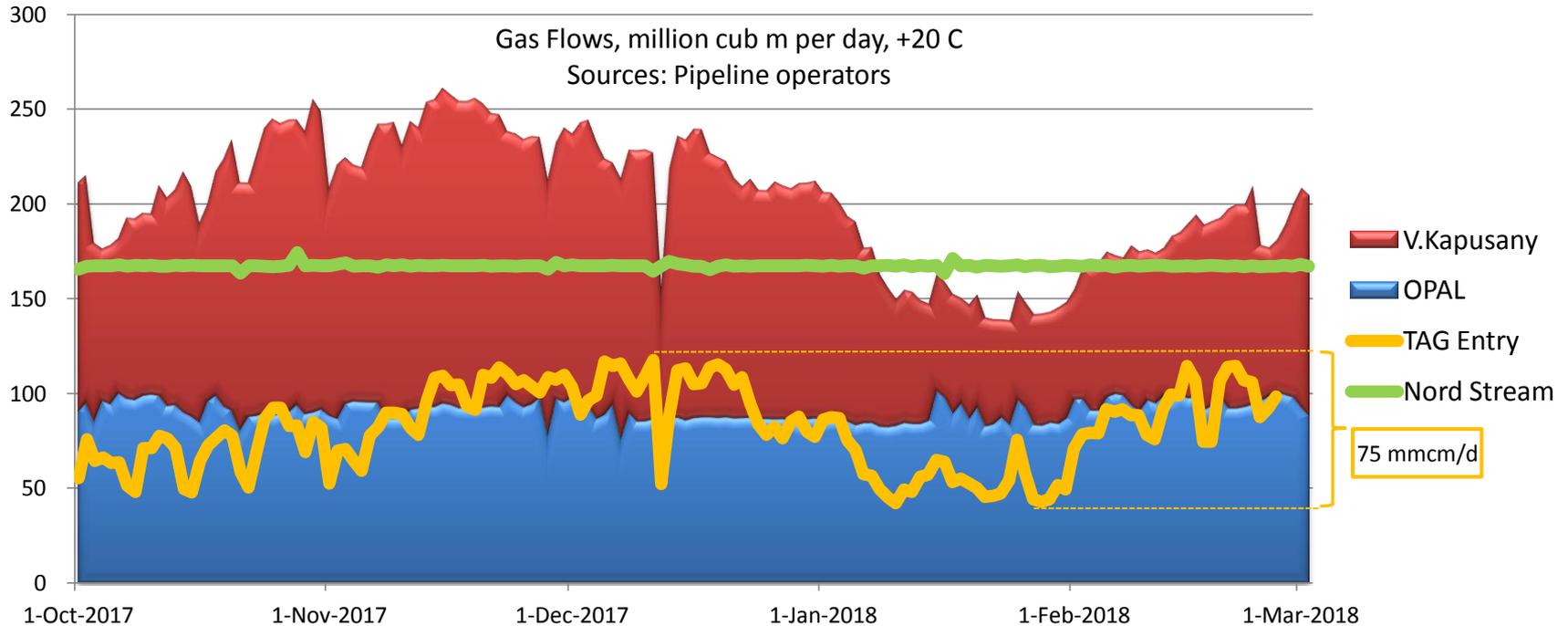
- Consumers want to receive gas when they need it:
 - More on weekdays and less on weekends; more in the winter and less in the summer.
- Gas becomes an important backup fuel for renewables in the power generation sector.
 - Gas infrastructure should be able to respond to short term swings in supply/demand balance (e.g. low wind conditions, cold snap).
- Closure of the largest gas storage facility in the UK and decline of Dutch gas production increase the need for flexible supplies of gas from outside of the European Union.

Daily electricity generation from **gas** power plants in Germany in 2016-2017



Flows of Russian Gas to Slovakia and Czech Rep.

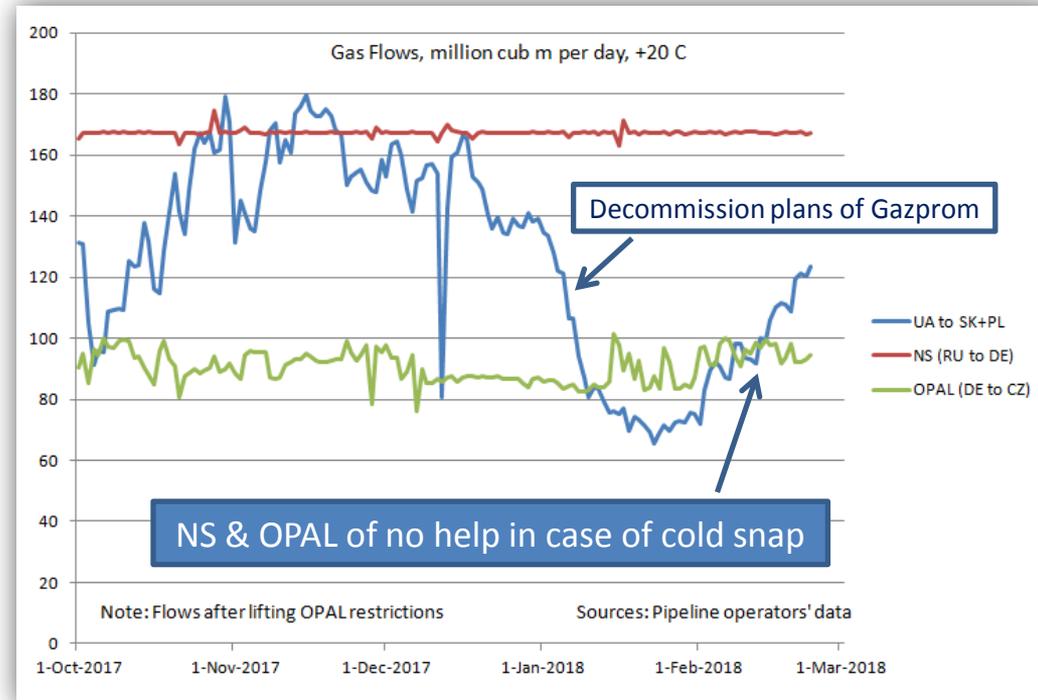
Compared with Nord Stream and Trans Austria Gas Pipeline



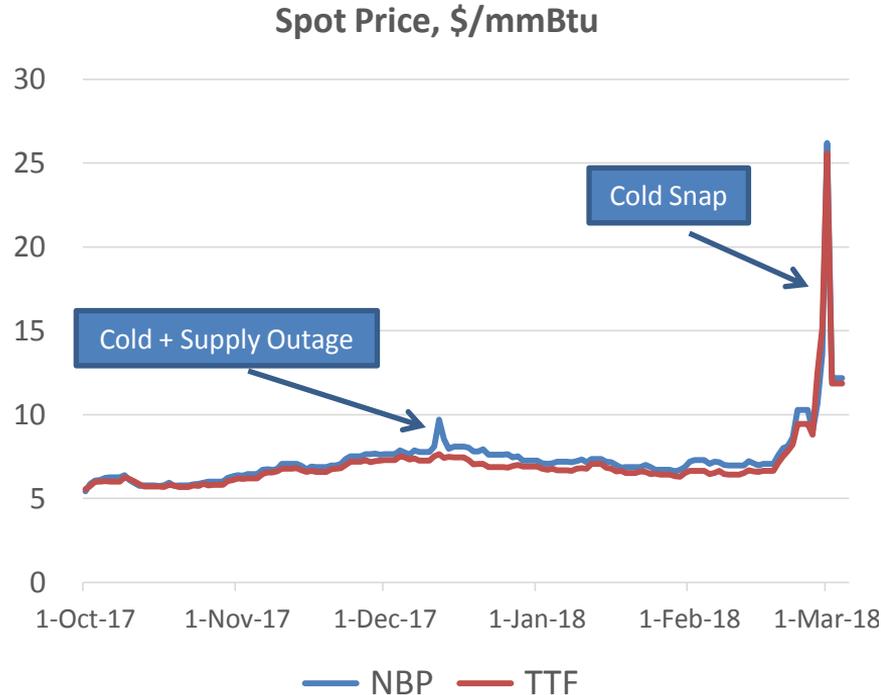
Note: After the lifting of the OPAL gas pipeline capacity restrictions.

Replacing Flexible Ukrainian Transit by Equal Daily Supplies of NS2

- NS and NS2 are designed to ship roughly equal daily volumes through the year, ignoring even the seasonal variations of demand.
 - After the lifting of capacity restrictions, OPAL flow fluctuated in a narrow corridor from **76 to 101 mmcm/day**.
 - Gas flow from Ukraine to Slovakia and Poland varied from **66 to 180 mmcm/day** in accordance with the demand.
- NS2 creates a risk of gas shortage on a cold winter day.
- NS2 creates additional costs for European consumers.



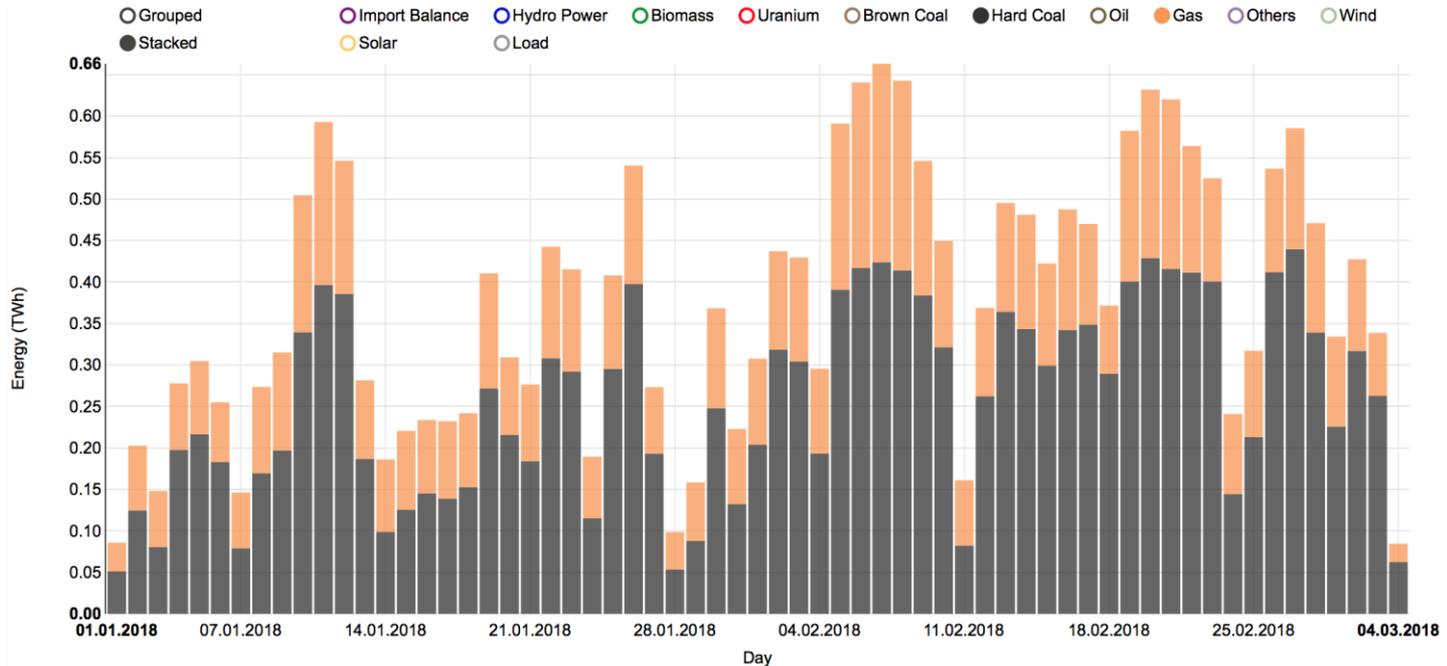
Additional Costs of EU Consumers after NS2



- In winter, consumers could buy additional gas in the spot market.
 - There would be less gas available at a **higher price** in the spot market after NS2.
- Importers could expand storage facilities and buy more gas in the summer.
 - The average storage tariff of **\$63 to \$106 per mcm** (in 2017) to be paid by consumers.
 - Storage expansion is possible in limited areas and it costs money (cushion gas).
- Power generation sector would use more hard coal for peak-load plants.

NS2 to Promote the Use of Coal in Central Europe

Daily electricity generation from hard coal and gas power plants in Germany in 2018



Net generation of power plants for public power supply.
 Datasource: 50 Hertz, Amprion, Tennet, TransnetBW, Destatis, EEG
 Last update: 04 Mar 2018 10:09

Source: Fraunhofer ISE

NS2 puts the time limit to the transit business of Eustream by transferring it to Germany

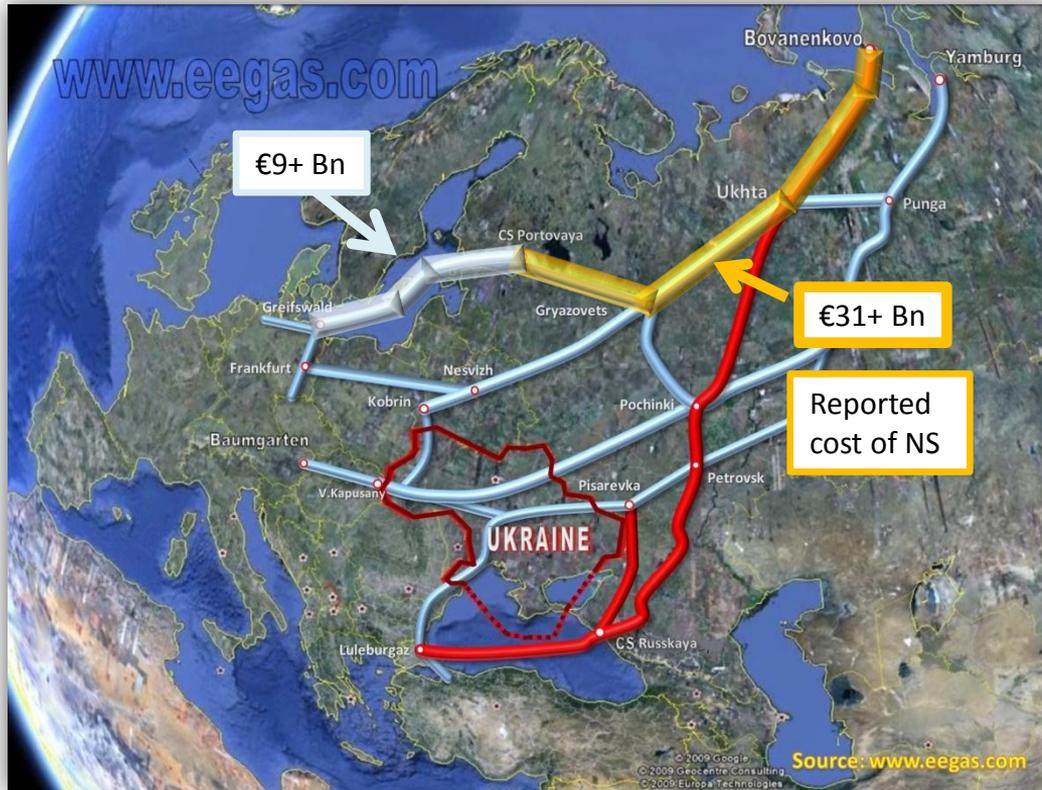
- According to Article 36(1) of Directive 2009/73/EC, "Major new gas infrastructure, i.e. interconnectors, LNG and storage facilities, may, upon request, be exempted, for a defined period of time, from the provisions of Articles 9, 32, 33 and 34 and Article 41(6), (8) and (10) under the following conditions:
- (e) the exemption **must not be detrimental** to competition or the effective functioning of the internal market in natural gas, or the efficient functioning of the regulated system to which the infrastructure is connected."

NS2 & EUGAL are detrimental to both competition and the effective functioning of Slovakian gas pipelines.



Gazprom and Eustream have ship-or-pay contract to 2029

Full Cost of Nord Stream 2 in Russia



- Shareholders of Gazprom need to pay €40+ Billion.
 - There are no new contracts (no new revenue) for NS2.
 - It is about diverting same volumes to another route.
- Most of the €31+ Bn will be allocated to the cost of domestic supplies.
 - It justifies an **increase of price** for Russian consumers.
- Reduced budget revenue.
- No money for pipelines to coal burning regions.
- Destroys nature reserve.

NS2 – Pros and Cons for the EU

Pros

- Additional pipeline increases technical security of supply (*if Russian pipelines to Ukraine are not decommissioned as promised*).
- German operators will be paid irrespectively of gas flow (*good for Germany only*).

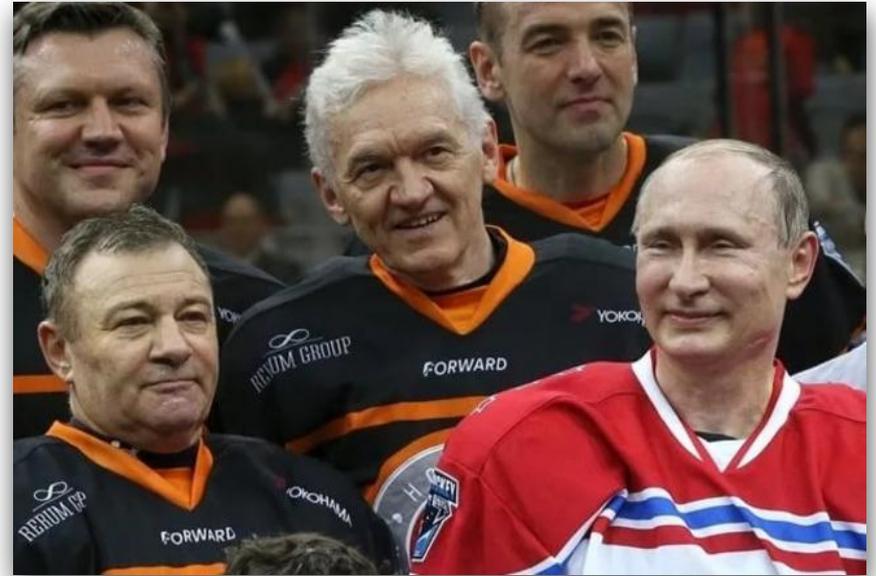
Cons

- Makes Russian gas supply to the EU dangerously dependent on bilateral relations of Moscow and Berlin.
- Reduces flexibility of supply and creates shortage of "winter gas" in Central Europe and Northern Italy.
- Increases cost of gas for European consumers by adding storage cost.
 - Promotes the use of coal for power generation in Central Europe and Northern Italy.
- Concentrates energy imports in a single corridor despite the official policy of diversification.
- Kills gas transit business of Slovakia despite the Directive 2009/73/EC.

And the Winners Are...

- Messrs. Rotenberg and Timchenko – the main contractors of Gazprom.
 - Pipeline construction cost per 1 km in the plains of Southern Russia is three times higher than the cost of similar Czech and German projects.

Thank you



Looking forward to spend over €31 Bn