

Growing Importance of Ukrainian Gas Transit to Europe

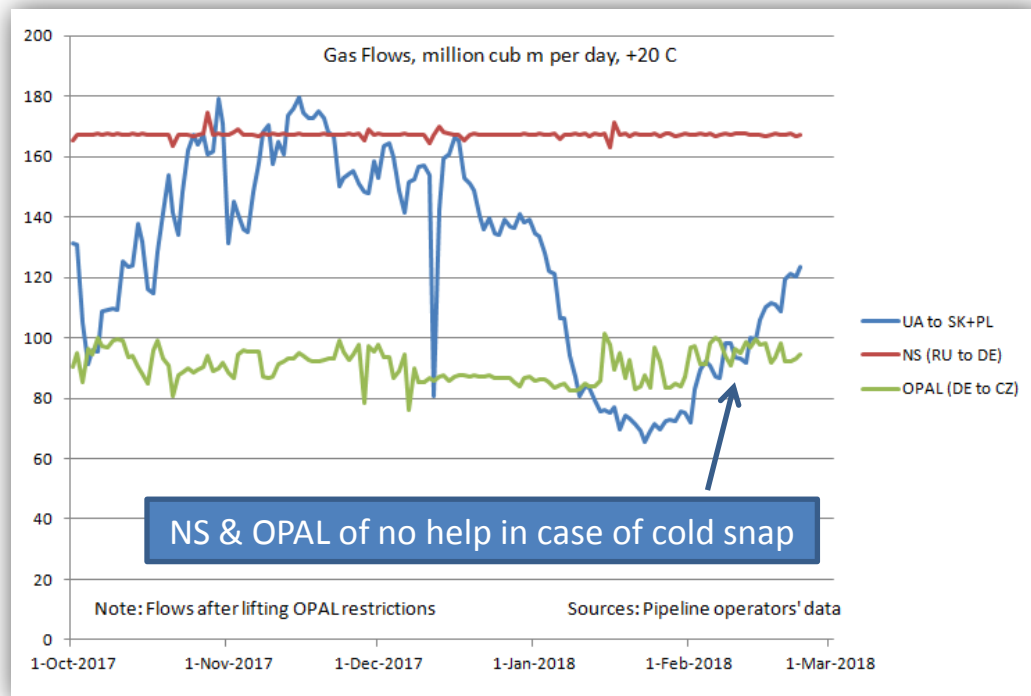
Ukrainian Energy Forum, Kyiv, February 27, 2018

Mikhail Korchemkin, East European Gas Analysis, USA



Base-Load Gas of Nord Stream Vs. Flexible Supplies Through Ukraine

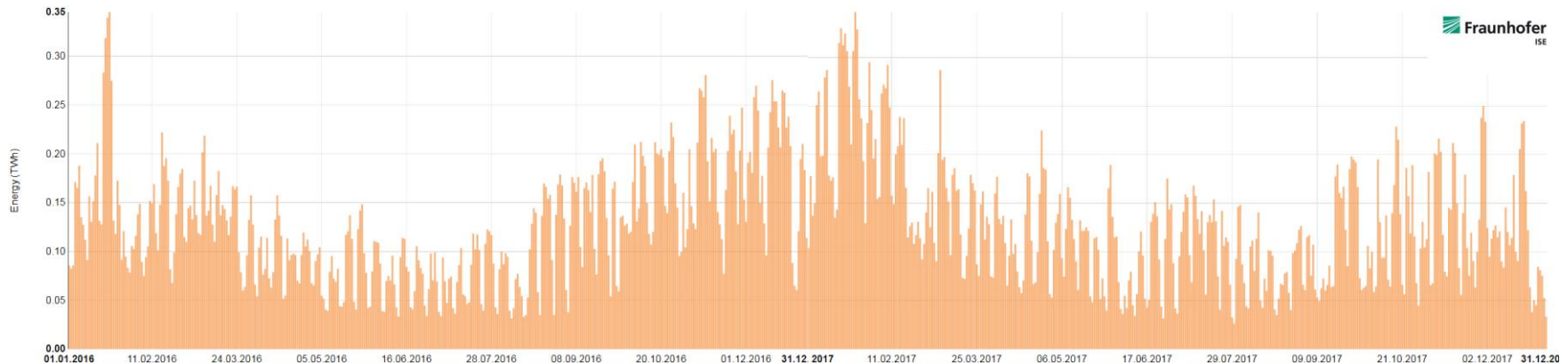
- NS and NS2 are designed to ship roughly equal daily volumes through the year ignoring even the seasonal change of demand.
- After the lifting of capacity restrictions, OPAL flow fluctuated in a narrow corridor from 76 to 101 mmcm/day.
- Gas flow from Ukraine to Slovakia and Poland varied from 66 to 180 mmcm/day in accordance with the demand.
- Does Europe need more base-load gas?
- What about peak-load supplies to Central Europe and Italy?



Gas Becomes a Backup Fuel for Renewable Energy

- With the growing share of renewable energy, the demand for base-load gas for power generation is going down.
- Official reports of Gazprom emphasize the role of gas as a backup fuel for renewables.
- Gas infrastructure should be able to respond to short term swings in supply/demand balance (e.g. low wind conditions, cold snap).
 - **Energy sector needs peak-load gas.**

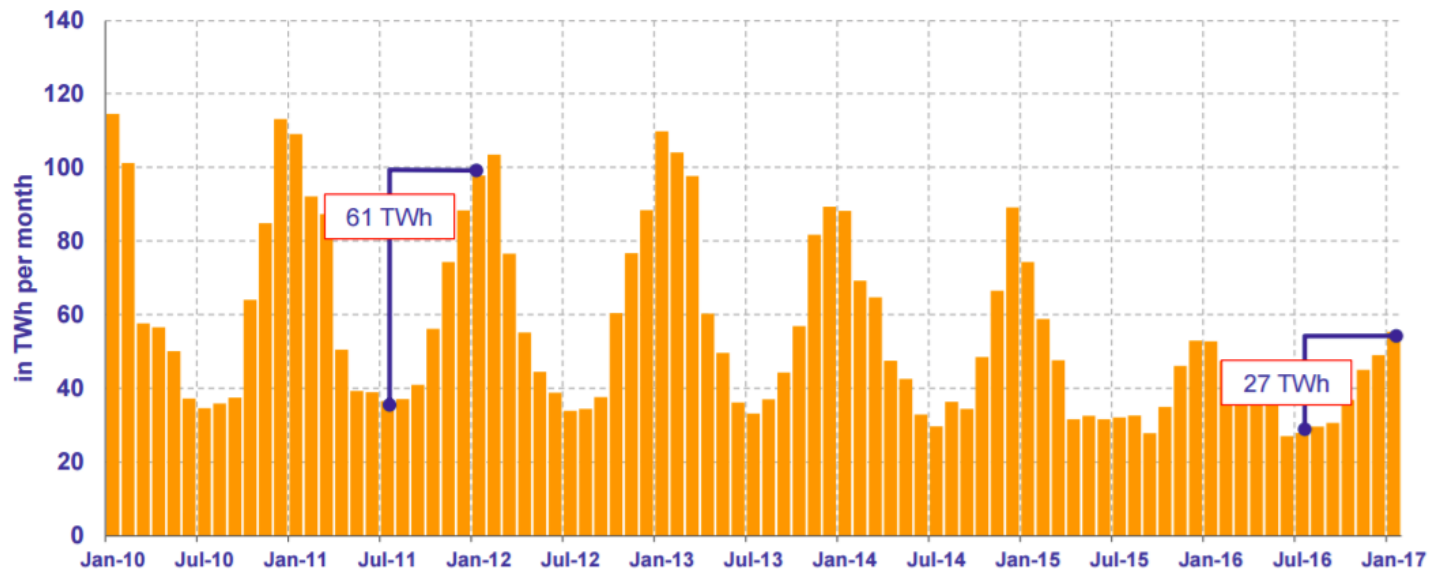
Daily electricity generation from gas power plants in Germany in 2016-2017



Groningen Reduces Supply of Peak-Load Gas

Lower production and flexibility from the Groningen field leads to a less flexible profile of the Dutch production

Production profile of the Netherlands

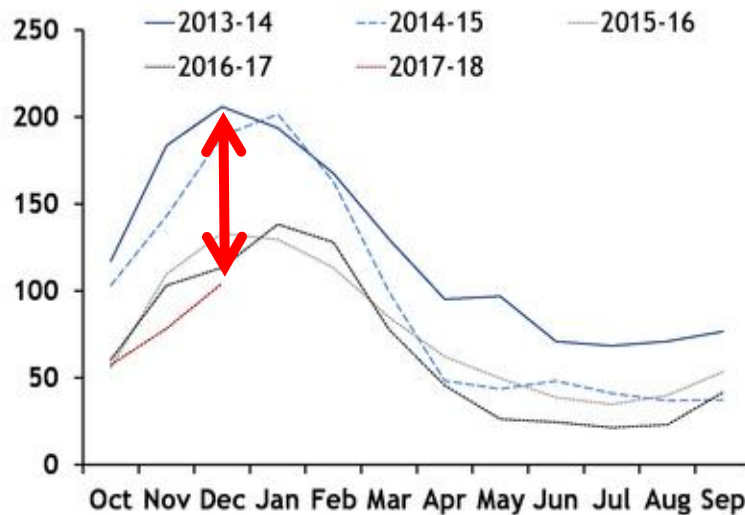


Source: IEA, TEAM CONSULT analysis

Groningen Reduces Supply of Peak-Load Gas-2

- On an average winter day, Groningen produces about 100 mmcm/day less gas than in 2013-2015.
 - Same in the cold winter of 2016-17.
- Groningen ability to respond to short term peaks of gas demand is shrinking.
- **Northwestern Europe needs peak-load gas from other sources.**

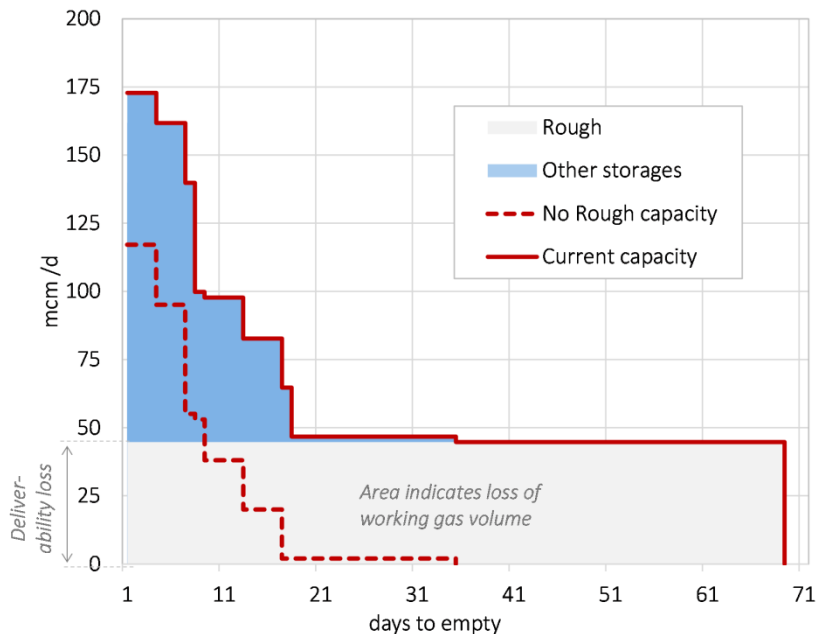
Groningen output for sale, mmcm/d



Source: Argus, 9 Feb 2018

Closure of Rough Gas Storage in the UK

UK gas storage deliverability profile (assuming all capacity starts full)

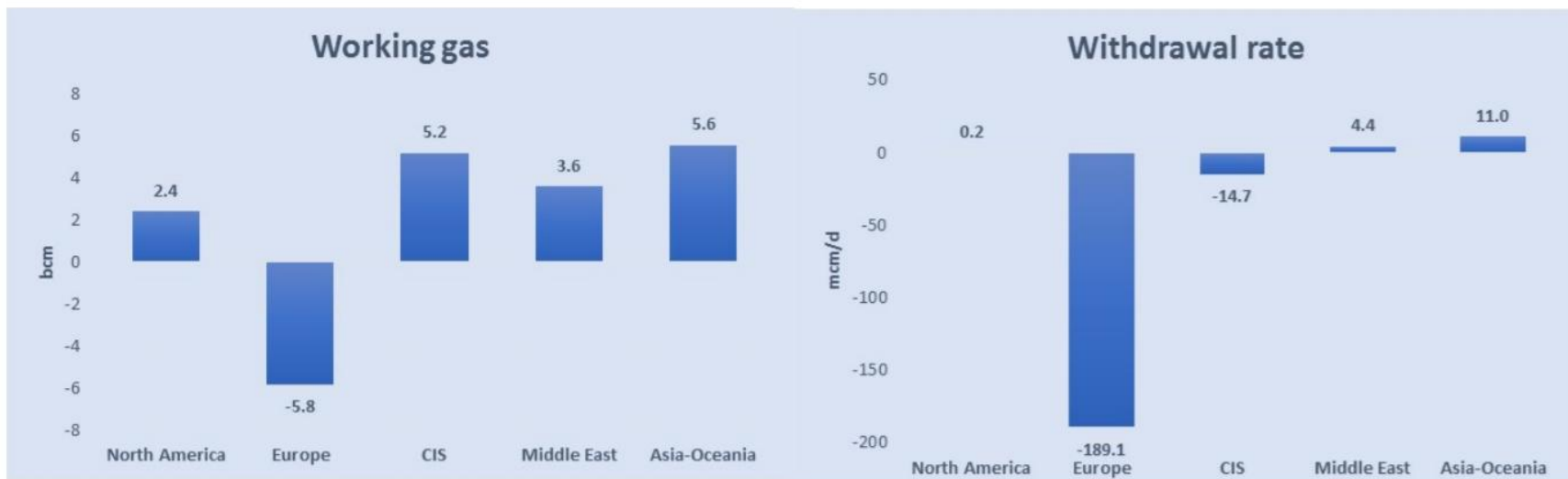


Source: Timera Energy

- Rough closure means a loss of 40-50 mmcm on an average winter day.
- The UK market needs higher daily supplies in winter and lower in summer.
- CEDIGAZ Underground Gas Storage Report 2017 estimated the drop of storage withdrawal rate in Europe at 189 mmcm/day (2016 to 2015).
- **Northwestern Europe needs peak-load gas from other sources.**

European Gas Storage 2016 vs. 2015

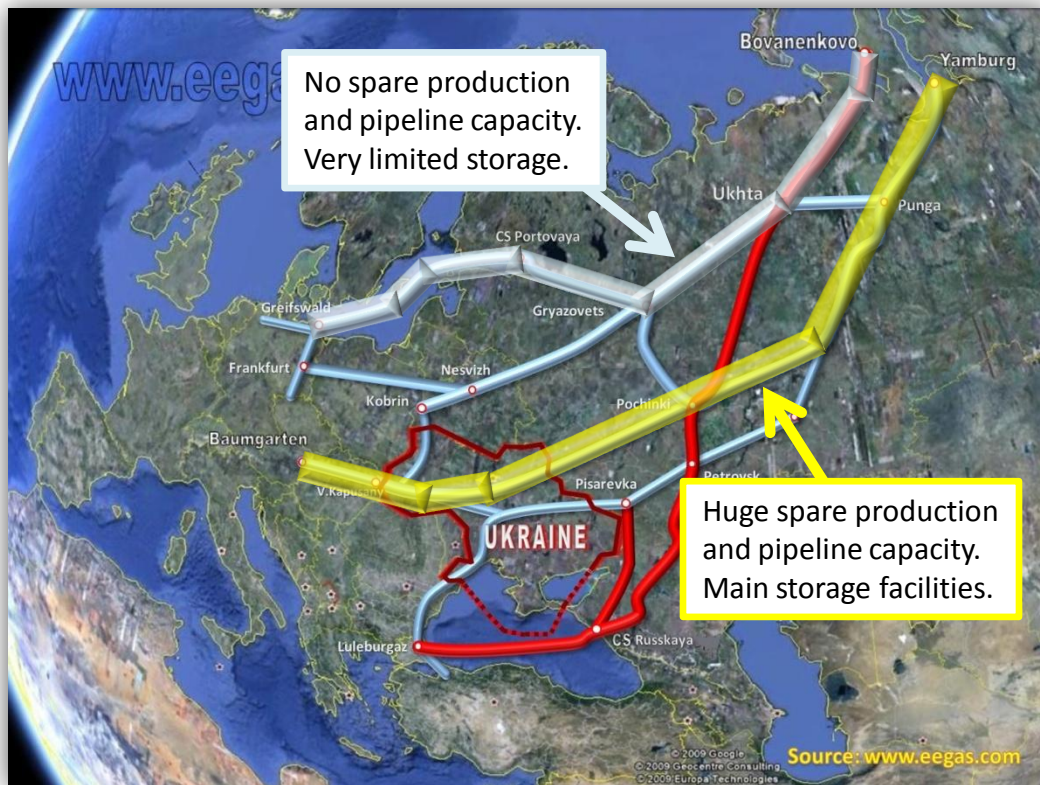
Figure 1: Major changes in working capacity and withdrawal rates (2016 vs. 2015)



Source: CEDIGAZ

Mostly Rough

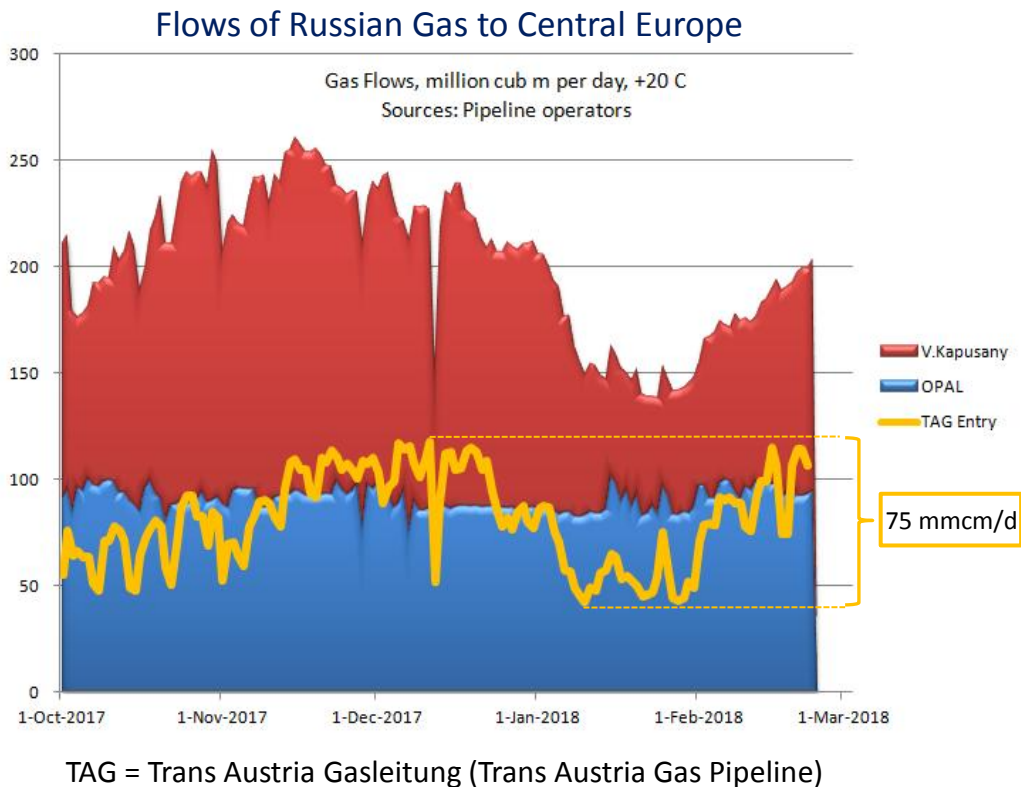
Replacing Ukrainian Transit by NS2



- The route from Bovanenkovo to NS:
 - Fully loaded production and pipeline capacity;
 - Very limited storage capacity.
- The route from West Siberia to Slovakia:
 - “Colossal” spare production and pipeline capacity (A.Miller, CEO of Gazprom);
 - Main Russian gas storage facilities;
 - Spare pipeline capacity in Ukraine and Slovakia;
 - Huge storage facilities in Western Ukraine.

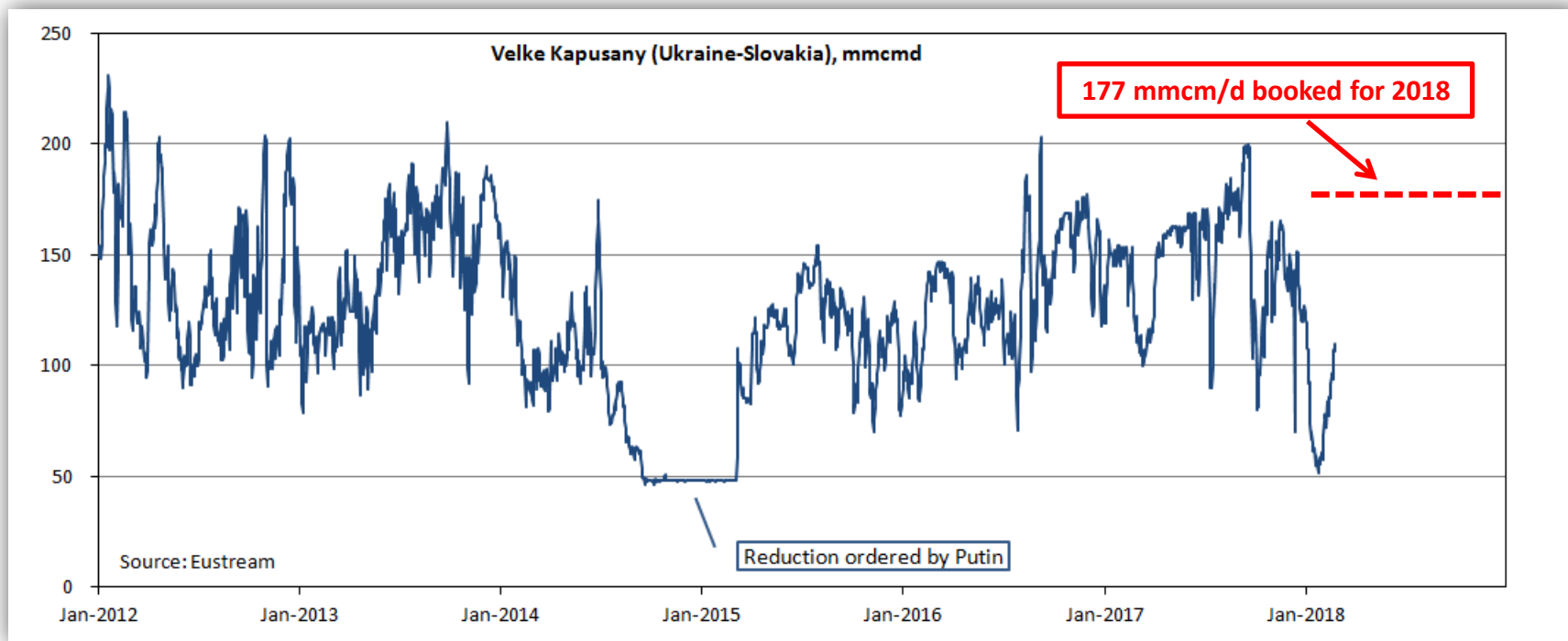
Gazprom Plans to Reduce Flexibility of Supplies

- Despite the growing demand for flexible supplies, NS2 offers equal daily volumes through the year.
 - Adding another blue “brick” in the chart?
- Gazprom plans to decommission pipelines running to Ukraine.
- NS2 and EUGAL are unable to meet winter peak demand in C. Europe and Italy because of the new peak demand in NW Europe and capacity limitations.
- Gazprom is aware of the problem and suggests winter supplies of LNG.
 - There is no pipeline capacity to deliver this gas from LNG terminals to Central Europe.
- **NS2 can create a shortage of gas on a cold winter day in Central Europe and Italy.**



Flexible Supplies Vs. Steady Daily Flows

- On equal terms of supply, cost of Ukrainian transit is lower than that of Nord Stream.
- For the shareholders of Gazprom, NS2 is a way more expensive than Ukrainian transit.



Thank you
Дякую
Спасибо

