The future of Russian gas exports to the European market

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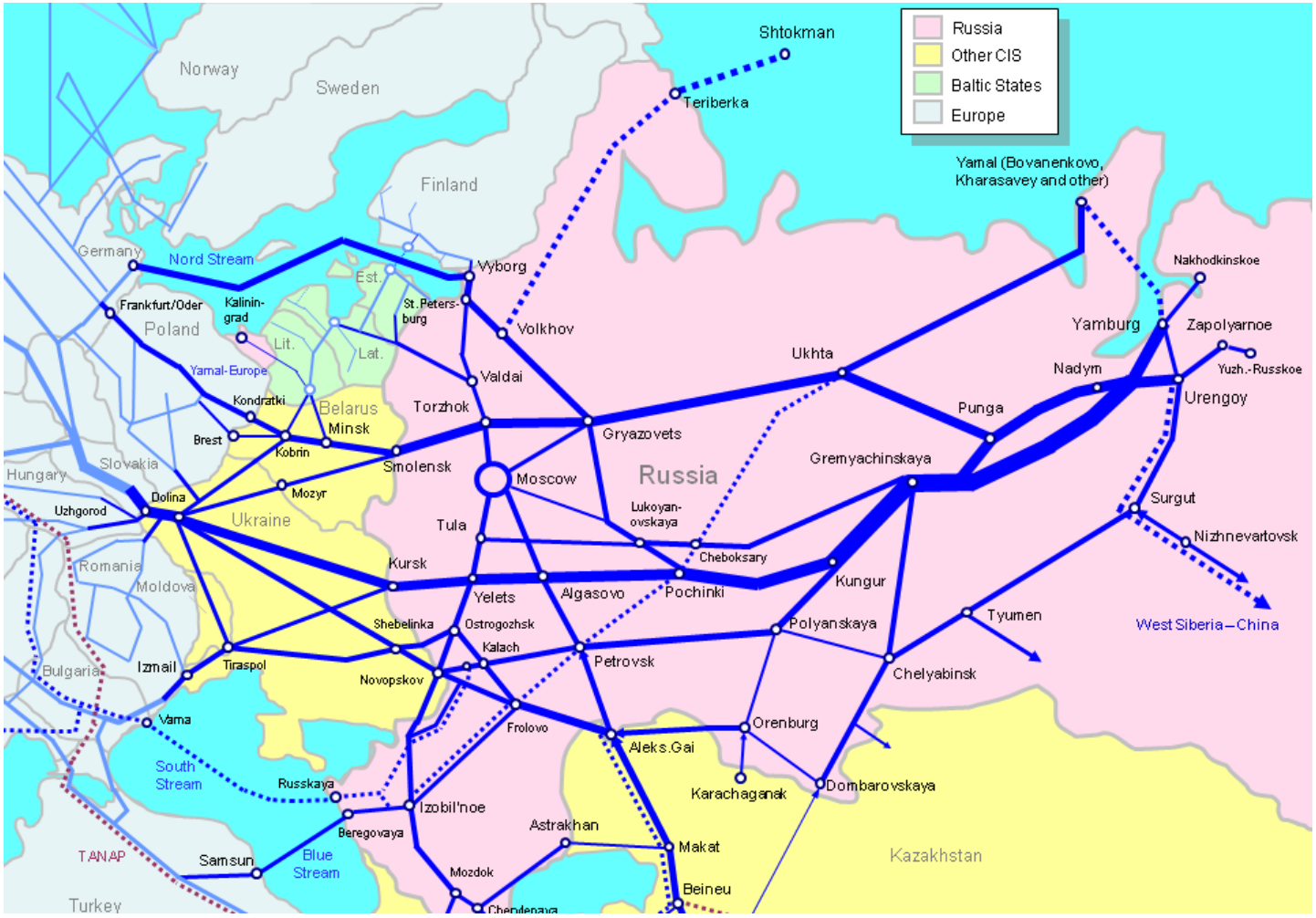
Introduction

- Energy security crucial for energy markets
  - Oil: Geopolitics
  - Electricity: Infrastructure
  - Natural gas: Geopolitics and infrastructure
- European gas market: Two major players
  - European Union: Security of supply
  - Russia: Security of demand
  - Russia and the EU highly dependent on each other
  - Both players would like to diversify
- The guy in the middle..
  - Ukraine: Major transit country between Russia and the EU

Introduction

- Future of Russian gas exports to Europe..
  - Not only driven by economics
- However: Economics also important!
  - Gas demand prospects in Europe
  - Gas export potential from Russia
  - Supply competition in Europe
  - Demand options outside Europe
- Infrastructure important
  - Economics / Strategic behavior / Geopolitics → Infrastructure investments
  - Available infrastructure → Export flows

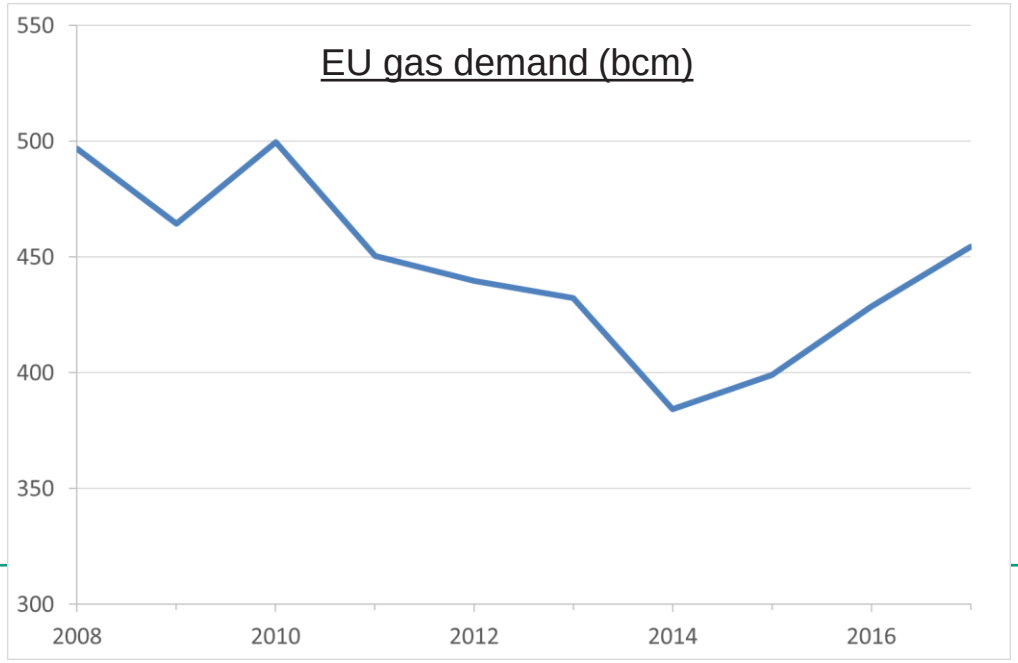
Russian pipelines to Europe



Source: East European Gas Analysis (2014)

Gas demand prospects

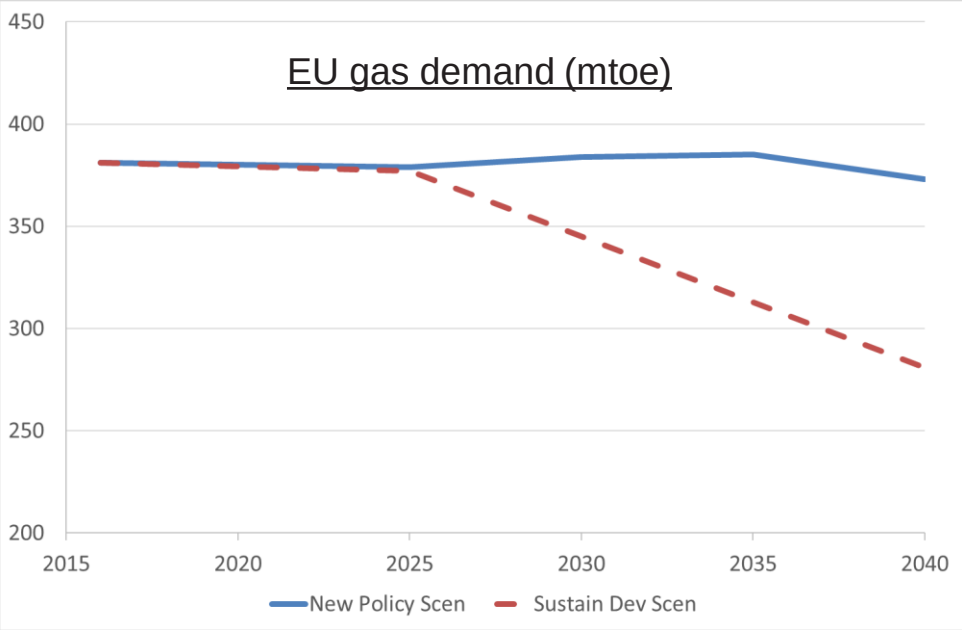
- Are we entering a golden age of gas?
  - Bridge into a renewable age?
- Gas demand in the EU has declined last decade
  - But increased last few years
  - Gas squeezed between coal and renewables



Source: BP (2017) and Eur.Comm (2017)

Gas demand prospects

- IEA (2017) expects growing gas consumption towards 2030 (NPS)
  - Except in the EU – quite flat



Source: IEA (2017)

- Is carbon pricing good or bad for gas demand?
  - It depends..

Gas demand prospects

- CO2-price window for gas in EU power sector (IEA, 2017):
  - 2025: Between $25 and $30-40 per ton CO2
  - After 2030: Window is closed
- Important question: How will the EU reach its Paris target?
  - Gas producers should vote for CO2-pricing alone
- Supplemental policies hurt gas
  - Böhringer and Rosendahl (JRE, 2010): Green serves the dirtiest
  - Explanation: Lower CO2-prices

Gas export potential from Russia

- Russia is the main supplier of gas to Europe
  - More than 40% of gas imports to the EU

Source: BP and Gazprom

Gas export potential from Russia

- Russia has extensive production, consumption and reserves of gas
- Russia has potential to significantly increase its export to the EU – but do they want to?
  - Turn to more expensive resources
  - Risk lower gas prices in the EU
  - Less gas available for the future and for other destinations

Gas export potential from Russia

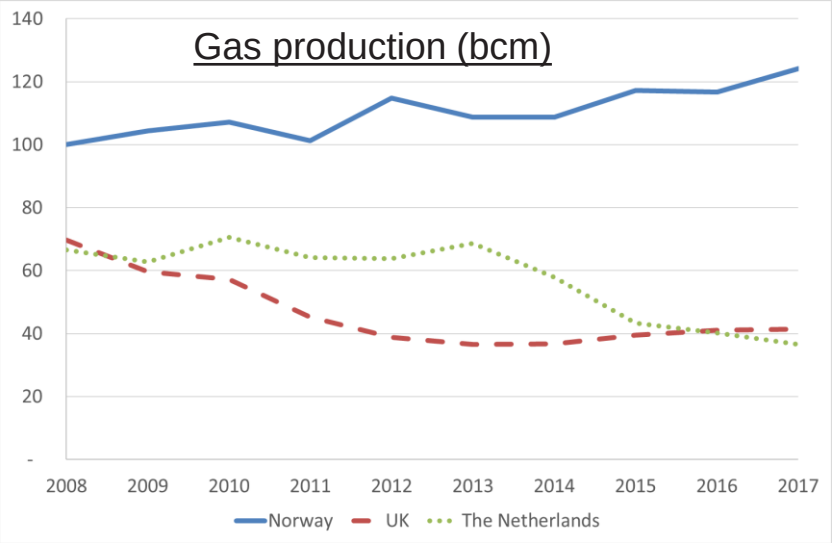
- Russian gas sector is highly regulated
  - Dominated by Gazprom – exclusive right to export gas (by pipeline)
  - Low regulated prices for domestic customers
- What if domestic gas prices were raised?
  - Proposed by Russian government for many years
- Aune, Golombek, Moe, Rosendahl and Tissier (EJ, 2015)
  - LIBEMOD model for the European + Russian energy market
  - Finding: Higher Russian gas prices could have substantial impacts on Russian gas demand
  - Further: Russian gas exports to the EU could increase substantially
  - Condition: Available pipeline capacity

Supply competition in Europe

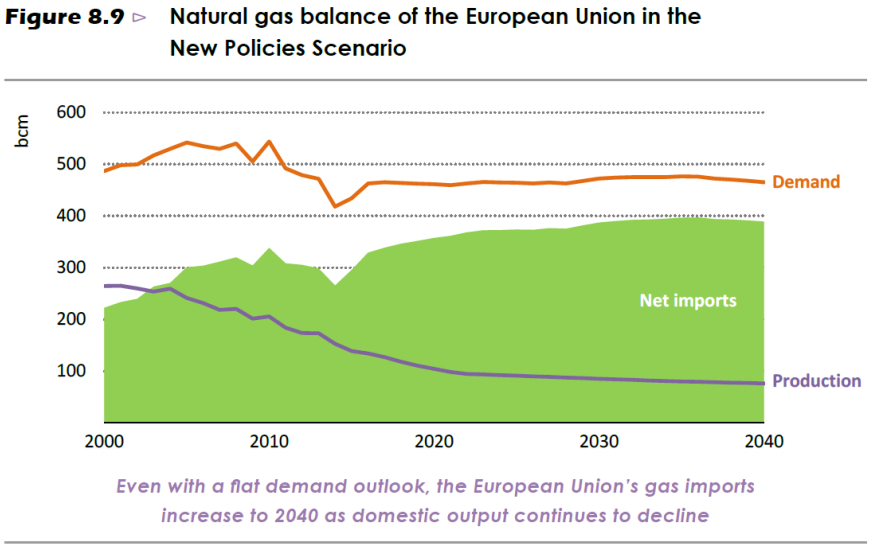
- Shale gas: Game changer in the US
  - Also in Europe?
- Shale gas has not been a success in Europe so far
- US shale gas has affected (and will affect!) European gas market
  - Already some LNG imports from the US to Europe
  - US may become the biggest LNG exporter in the world in few years
  - LNG ships have been redirected to non-US destinations
  - US coal has been shipped to Europe

Supply competition in Europe

- Domestic production in Europe: On the downturn



Source: BP (2017) and Eur.Comm (2017)



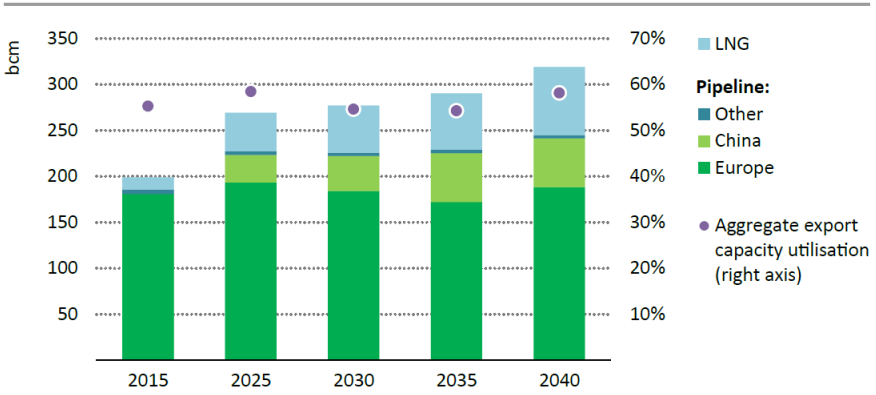
Source: IEA (2017)

- The downturn will continue
  - More imports – especially LNG
  - Russian market share in the EU gas market may not change much

Demand options outside Europe

- Asian market is growing significantly – especially China
- Power of Siberia: Gas pipeline from Eastern Siberia to China
  - Competing with gas exports to the EU?
  - New pipelines to China may come in the future
- LNG exports
  - Yamal LNG: Just started – directed to Asia (& Europe) – operated by Novatek
  - Other potential projects: Baltic LNG; Expansions of Yamal & Sakhalin LNG
- IEA (2017) projects increased Russian gas exports
  - But small changes in exports to Europe

Figure 8.8 ▷ Russian gas exports by destination and aggregate utilisation of export capacity in the New Policies Scenario



Under-utilised capacity gives Russia near-term flexibility in supplies to Europe, while new pipelines to the east and LNG provide longer term diversity of markets and revenues

What about new pipelines?

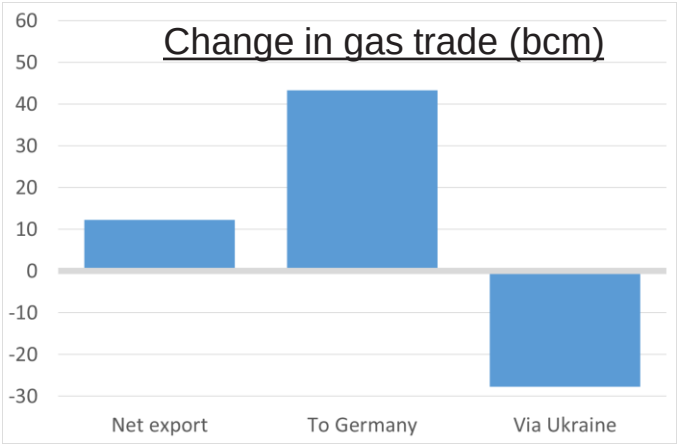
- Do they make sense..
  - From an economic point of view?
  - From a strategic point of view?
  - From a geopolitical point of view?
- How will they affect Russian gas export to Europe?
- Upcoming projects
  - Nord Stream 2 – same capacity as Nord Stream (55 bcm)
    - Startup late 2019
  - Turkish Stream – 16 bcm to Turkey + 16 bcm to Greece
    - Startup 2019 (?)
  - Power of Siberia – 38 bcm to China

What about new pipelines?

- Aune, Golombek, Moe, Rosendahl and Tissier (EEEP, 2017)
  - Analyzed impacts of new pipelines on Russian gas exports
  - Used the energy market model LIBEMOD – simulated for the year 2030
    - Detailed representation of supply, demand and (bilateral) trade for different energy goods in each EU country + 3 Russian regions
    - Endogenous investments in pipelines between EU countries + LNG imports
    - Competitive markets within the EU – markup on Russian gas exports
  - Reference scenario for 2030 partly builds on IEA projections (New Pol Scen)
    - But: Without new pipelines
    - Small changes in EU gas consumption – some growth in Russia (vis-à-vis today)
    - Small changes in Russian gas export to the EU

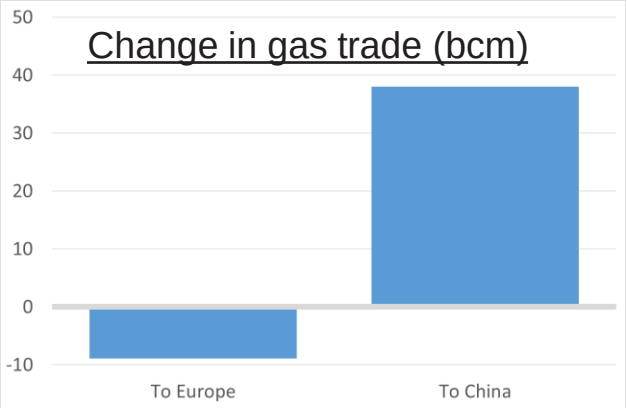
What about new pipelines?

- Aune, Golombek, Moe, Rosendahl and Tissier (EEEP, 2017)
  - Effects of Nord Stream 2:
    - Modest increase in Russian gas export
    - Redirection of Russian gas export
    - Overall small impacts on European gas market
    - From an economic point of view: Not profitable
  - Effects of Turkish Stream:
    - Only the string to Turkey is used – Russian gas export to the EU hardly affected
    - From an economic point of view: The string to Greece is not profitable



What about new pipelines?

- Aune, Golombek, Moe, Rosendahl and Tissier (EEEP, 2017)
  - Effects of Power of Siberia:
    - Modest reduction in Russian gas export to the EU
    - Overall small impacts on European gas market
  - Effects of all three pipelines combined:
    - Almost no change in Russian gas export to the EU
  - How robust are these results?
  - What about strategic issues?



What about new pipelines?

- Aune, Golombek, Moe, Rosendahl and Tissier (EEEP, 2017)
  - What if Russian gas prices are somewhat increased?
    - Nord Stream 2 significantly increases Russian gas export to the EU
    - Turkish Stream increases Russian gas export to the EU – capacity fully utilized
    - Notable impacts on European gas market
  - What if Russian gas transit via Ukraine is blocked?
    - Without new pipelines: Big drop in Russian gas export to the EU (~ halved)
    - Increased gas supply from other sources *and* lower gas consumption in the EU
    - Similar effects of Nord Stream 2 and Turkish Stream as with higher Russian gas prices

Conclusions

- Don’t expect a golden age for gas in the EU
  - Small changes in demand; own production falling; more LNG imports
- Russia has other options than Europe, but not as profitable
  - Pipeline to China and LNG projects increase security of demand
- New pipelines from Russia to the EU may not make sense from a pure economic point of view
  - But may make sense from a strategic or geopolitical point of view
    - Reduce dependence on Ukraine
    - Diminish the profitability of competing projects/suppliers
  - New pipelines may benefit EU countries
    - Less exposed to supply disruptions

More info

- LIBEMOD model:
  - www.frisch.uio.no/ressurser/LIBEMOD/
- References:
  - Böhringer, C. and K.E. Rosendahl (2010): Green Serves the Dirtiest. On the Interaction between Black and Green Quotas, *Journal of Regulatory Economics* 37, 316–325.
  - Aune, F.R., R Golombek, A. Moe, K.E. Rosendahl and H. Hallre Le Tissier (2015): Liberalizing Russian gas markets – an economic analysis, *The Energy Journal* 36 (SI1), 63-97.
  - Aune, F.R., R Golombek, A. Moe, K.E. Rosendahl and H. Hallre Le Tissier (2017): The future of Russian gas exports, *Economics of Energy & Environmental Policy* 6 (2), 111-135.

THANK YOU FOR YOUR ATTENTION!