CAN SHALE GAS KILL GAZPROM?

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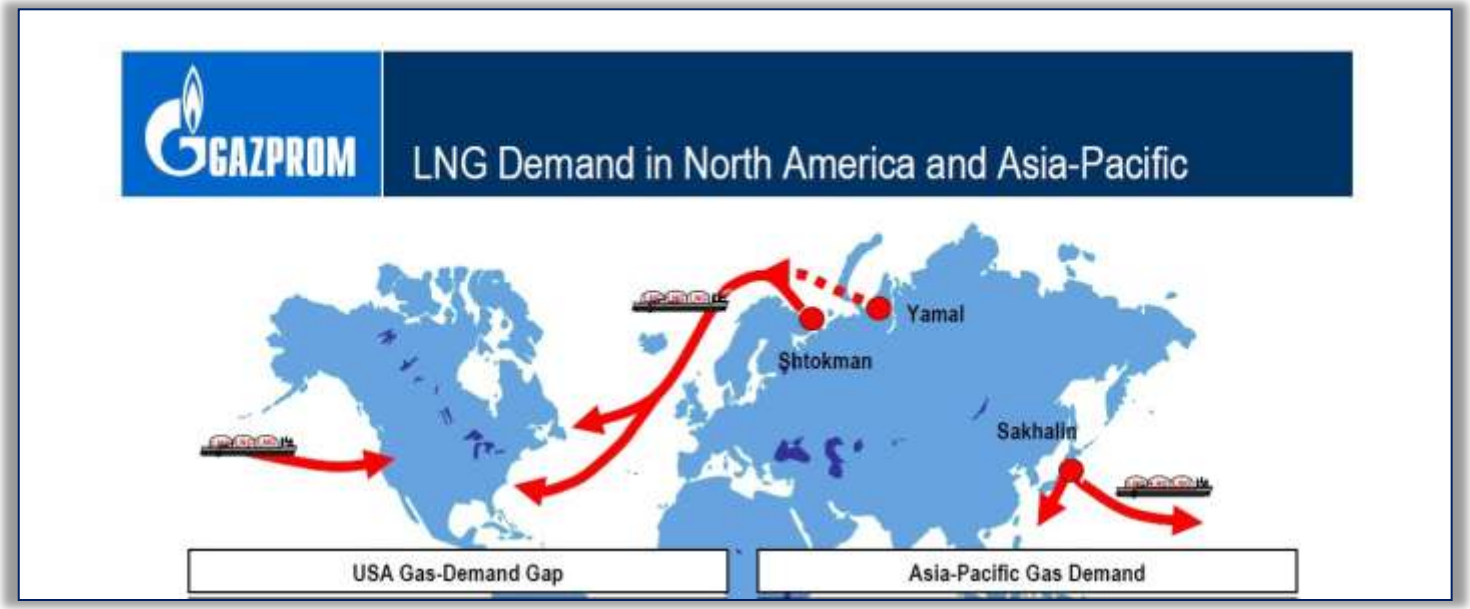
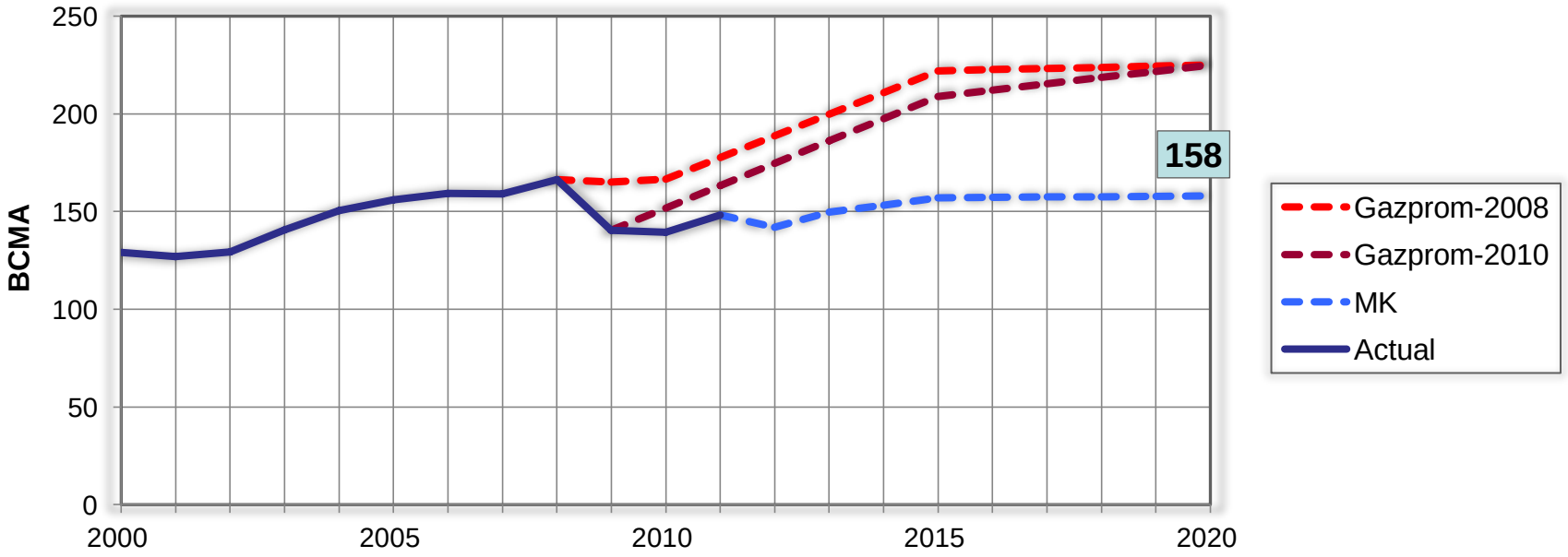
Unconventional Gas Market Scenarios
21-22 May 2012, Berlin

Gazprom: Anticipations of 2010



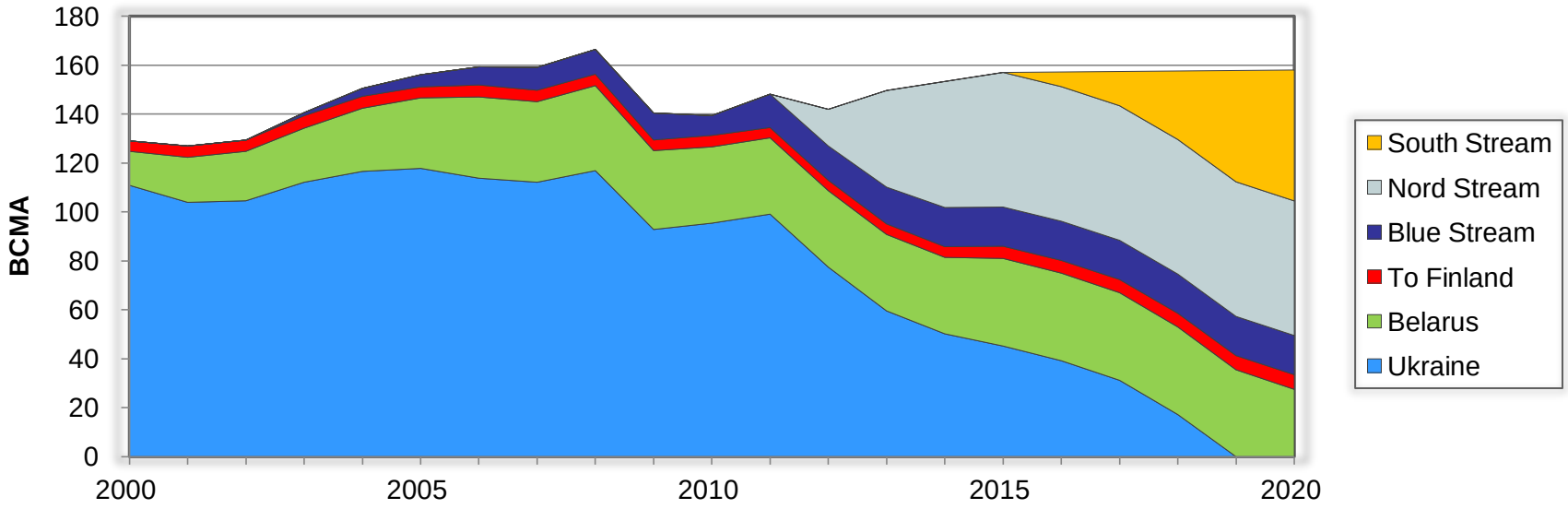
- **This is a part of Slide 24 of Gazprom Investor Day presentation of 2010.**
  - **At that time Gazprom was aiming to take 10% of the US gas market by 2015.**
  - **Gazprom planned to export LNG from Sakhalin and Shtokman to North America.**
  - **In April 2010, Gazprom signed an agreement to supply LNG to Lake Charles, La.**
  - **"The so called shale gas revolution is one and the same thing as American Hollywood", - Alexey Miller's interview with Süddeutsche Zeitung, Jan-26, 2012.**
- **"Shale gas <..> can dramatically restructure the hydrocarbons market", - Vladimir Putin, April 11, 2012.**

European Exports of Gazprom



- **Gazprom still foresees its 2020 exports to Europe at about 225 bcm.**
- **Gazprom reports the minimum guaranteed contracted volume for the period from 2020 to 2025 at 158 bcma (it could be too optimistic).**
- **After the crisis of 2008, the target for 2015 was lowered by 13 bcm, while the one for 2020 remained intact.**
- **Gazprom anticipates faster growth of exports than in 2002-2006.**
  - **Gazprom may need high plans to justify its pipeline construction program.**

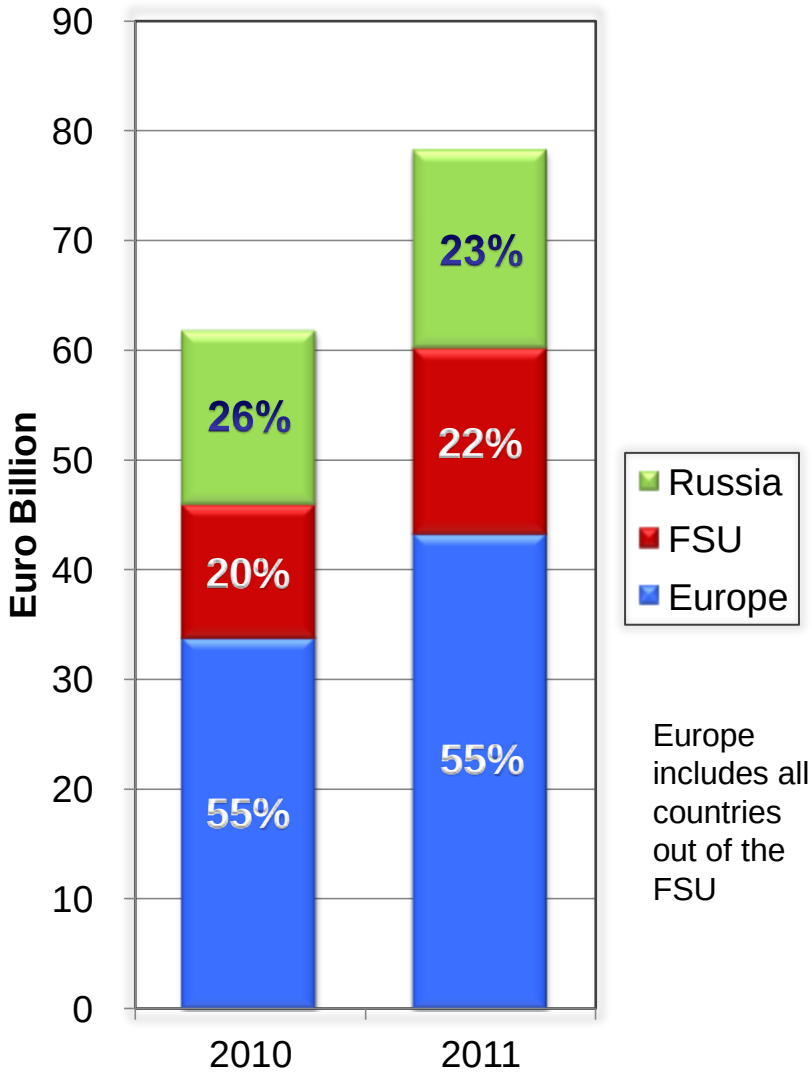
European Exports Breakdown



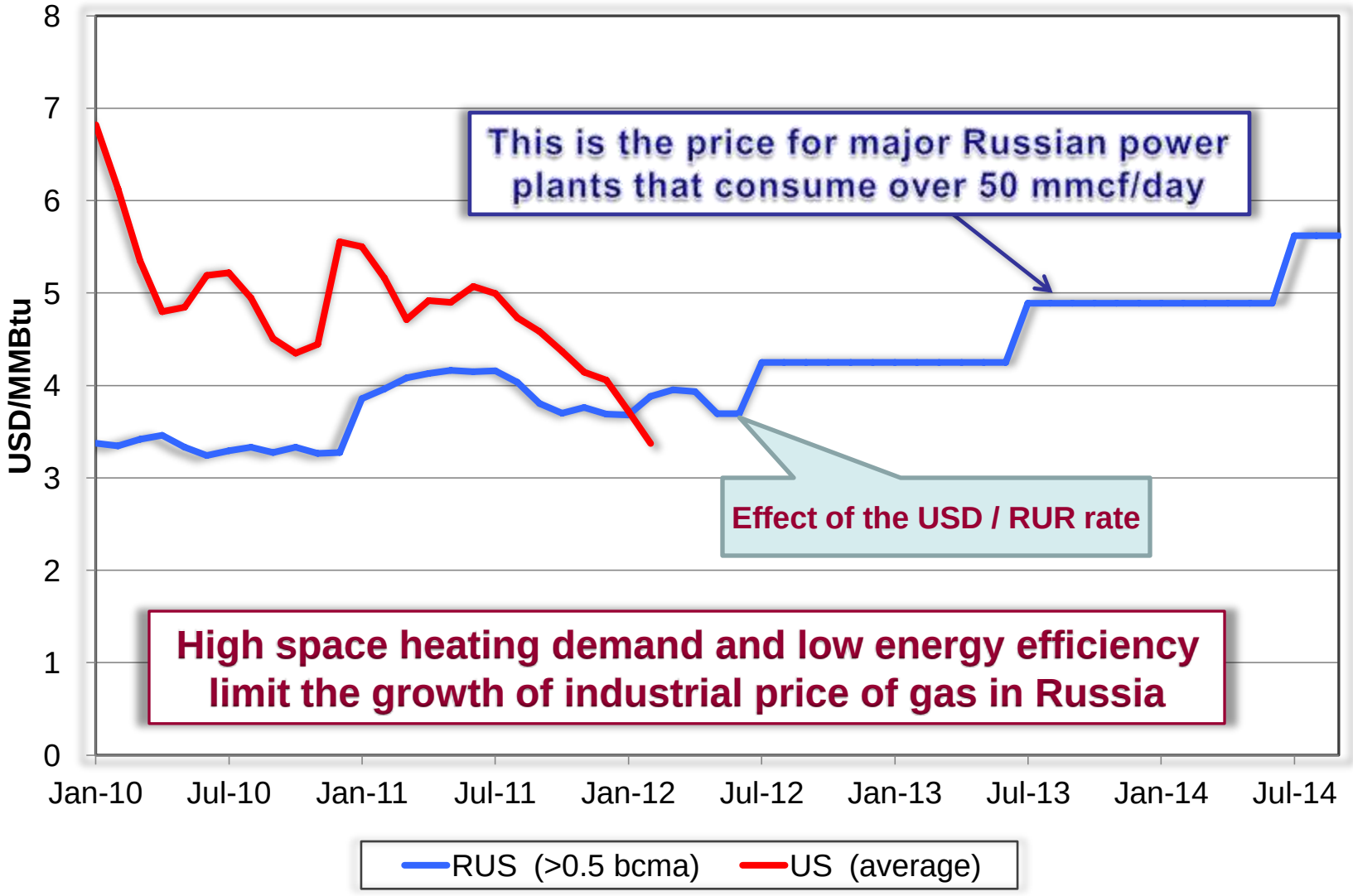
- **By about 2022, the combined European export capacity is to reach 318 bcma or twice the guaranteed contracted volume.**
- **Gazprom needs to fill up North Stream and South Stream pipelines.**
- **Ukrainian transit is to disappear in 2019.**
- **From about 2020, transit of Russian gas through Belarus and Poland is likely to decline steadily.**
  - **The Yamal-Europe pipeline flow is already lower than in Q1-2011.**

Gas Sales Revenue of Gazprom

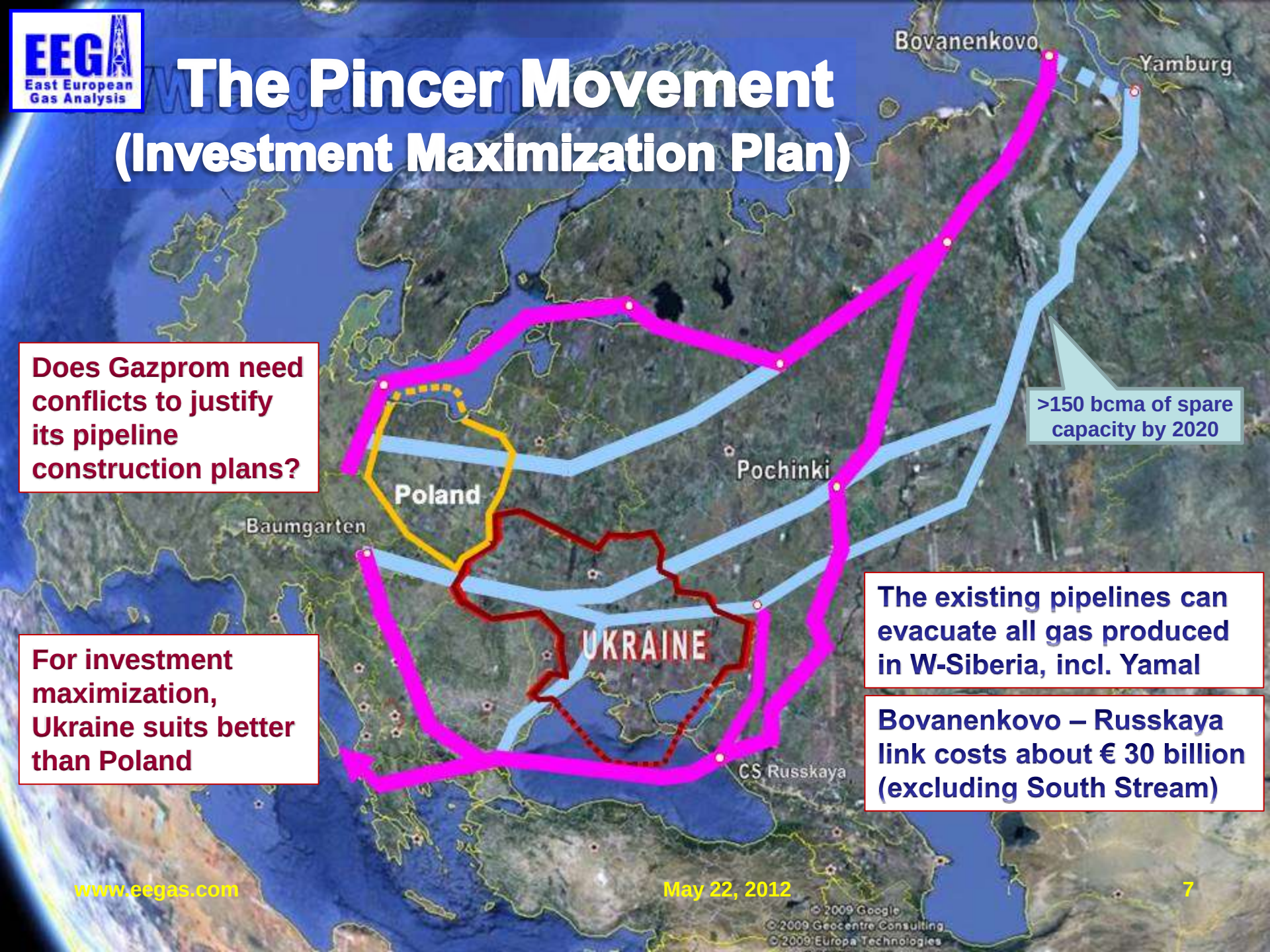
- **European sales are likely to go down.**
  - **Gazprom gave price discount to several European clients.**
  - **Low or no growth of sales volumes.**
- **FSU price (net of customs duties) is 15% below the European price.**
  - **No cost of international transit.**
- **Russian sales revenue growth is limited.**
  - **Wholesale price of gas for industrial consumers in Russia is to achieve netback parity with European export sales by 2015 (according to the law).**
  - **This is unrealistic.**



End-Use Price of Gas for Power Generation



The Pincer Movement
(Investment Maximization Plan)



Does Gazprom need conflicts to justify its pipeline construction plans?

>150 bcma of spare capacity by 2020

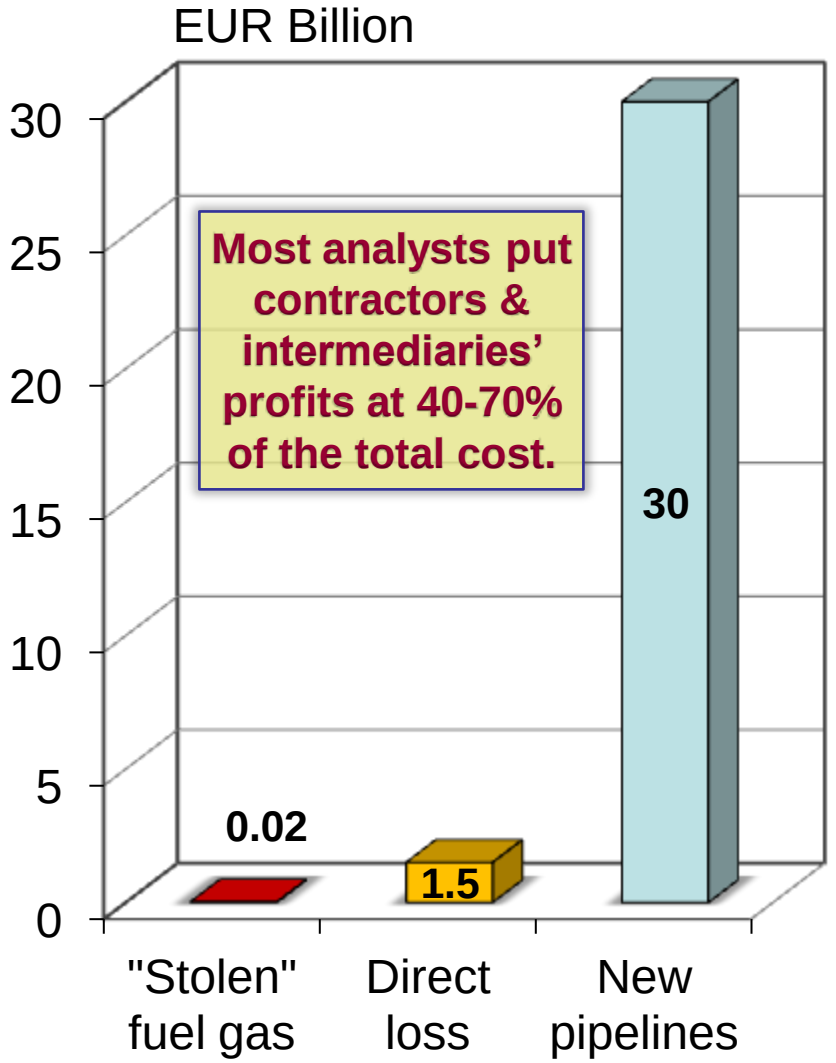
The existing pipelines can evacuate all gas produced in W-Siberia, incl. Yamal

For investment maximization, Ukraine suits better than Poland

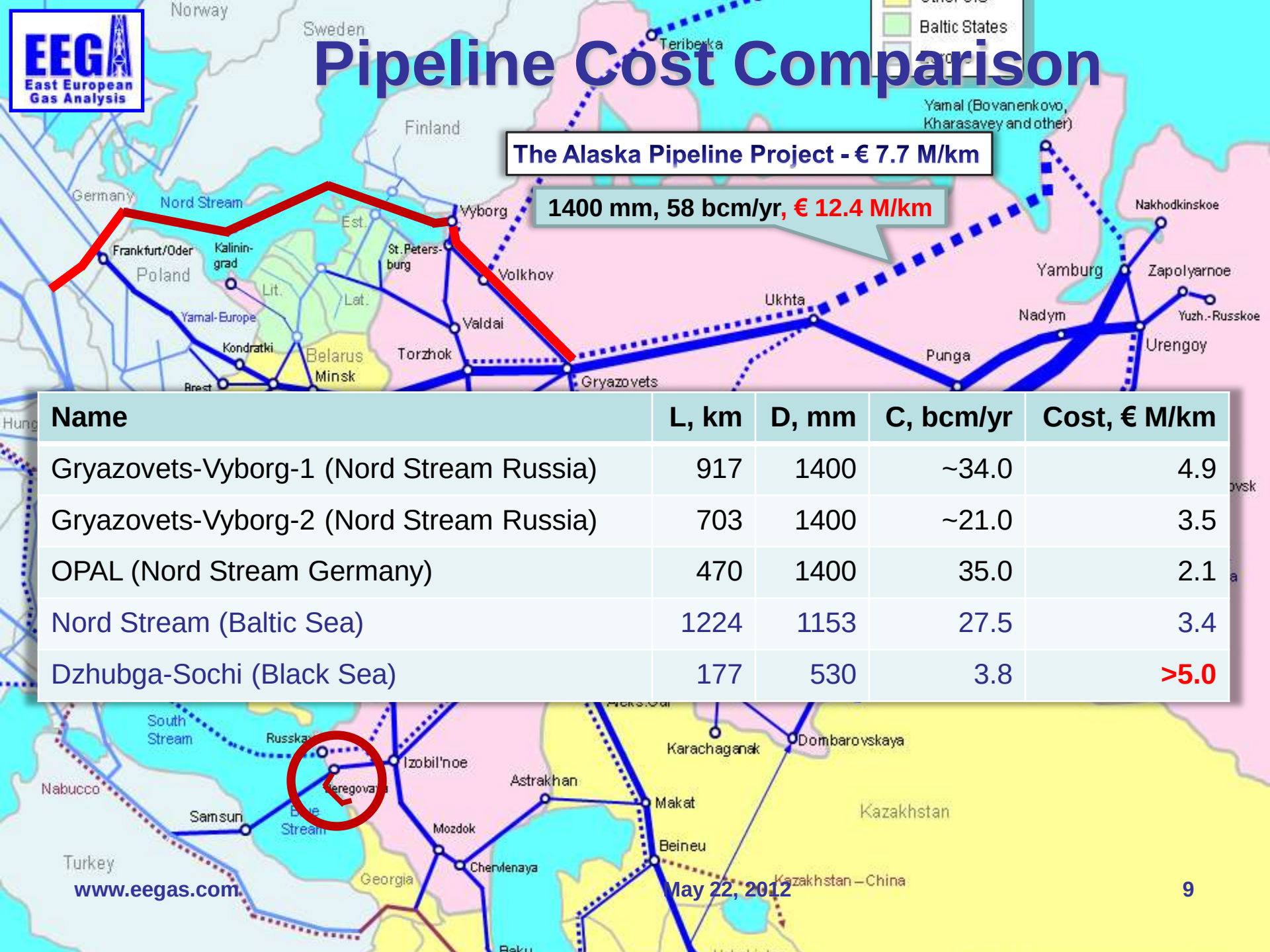
Bovanenkovo – Russkaya link costs about € 30 billion (excluding South Stream)

Russia-Ukraine "2d Gas War" – 2009

- **Without a signed contract, Gazprom and Naftogaz disagreed about the origin of the fuel gas for compressor stations.**
- **Vladimir Putin ordered to turn off the tap after Gazprom's alleged loss of 65.3 mmcm of fuel gas valued at €20 Million.**
- **This action has caused Gazprom a direct loss of €1.5 Bn.**
- **Cost of new pipelines (inside Russia only) to feed South Stream exceeds €30 Bn.**
- **Contractors and intermediaries needed this conflict.**



Pipeline Cost Comparison



Name	L, km	D, mm	C, bcm/yr	Cost, € M/km
Gryazovets-Vyborg-1 (Nord Stream Russia)	917	1400	~34.0	4.9
Gryazovets-Vyborg-2 (Nord Stream Russia)	703	1400	~21.0	3.5
OPAL (Nord Stream Germany)	470	1400	35.0	2.1
Nord Stream (Baltic Sea)	1224	1153	27.5	3.4
Dzhubga-Sochi (Black Sea)	177	530	3.8	>5.0

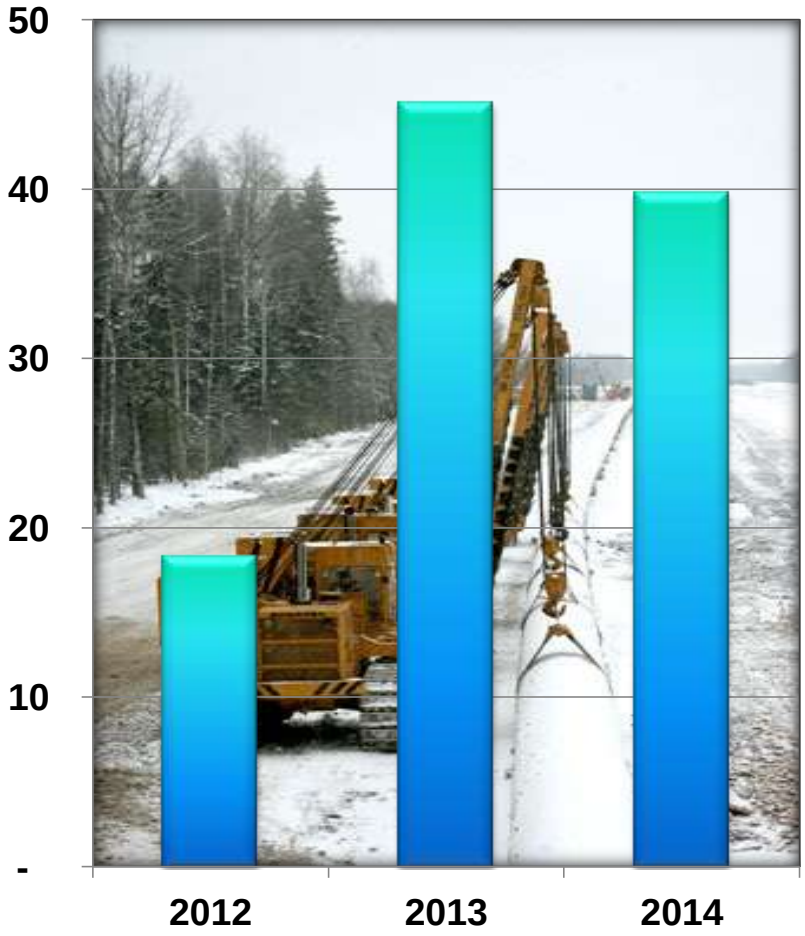
Sales Down? – Let's Build Another Pipeline!

- **Gazprom announces a new pipeline expansion project after nearly every drop of export sales.**
  - **Responding to the crisis of 2008, Gazprom has increased the design capacity of the South Stream pipeline.**
  - **The decline of European sales in Q1-2012 was followed by the announcement of possible increase of the Nord Stream capacity.**
- **To fill up additional export capacity, Gazprom would need to build new feeding pipelines inside Russia.**
  - **Apparently, Gazprom executives are concerned about the future profits of contractors.**

(before we run out of money)

Pipeline Construction Has Just Started

Gazprom Investment Plan, € Bn

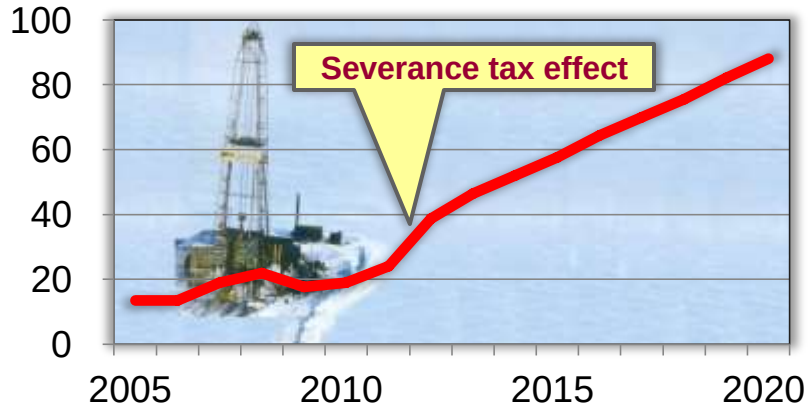


- **The real full-scale pipeline construction starts in 2013.**
  - **In 2013, the investment is to reach about 50% of the annual revenue.**
- **Most of the investment will go to the construction of new pipelines delivering gas from the Yamal Peninsula to the Black Sea.**
- **Gazprom evaluates the chances for high gas demand in Russia at 2% and in Europe at 19%.**
  - **It would be difficult to prolong the expiring European contracts on the old terms (oil indexation, high take-or-pay share).**
- **Gazprom always chooses the most expensive option.**
  - **New pipelines instead of storage facilities.**
  - **Maximization of profits of contractors and intermediaries instead of shareholders' profits.**

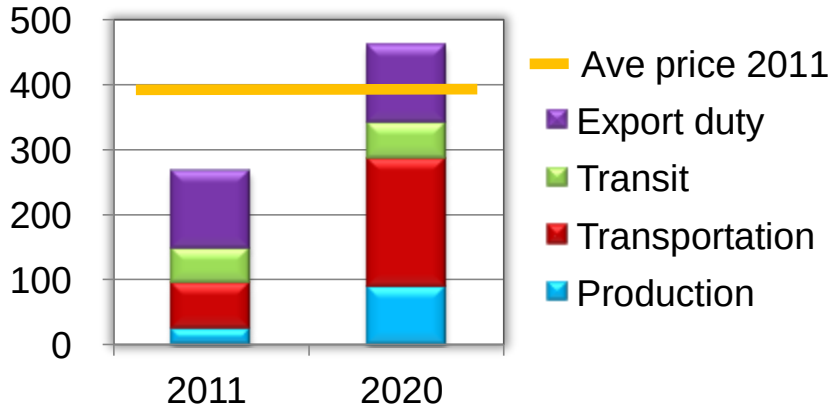
Investment Program Can Kill Gazprom

- **Export of gas produced in Russia is the most profitable operation of Gazprom.**
  - **Gazprom reduces shareholders' profits by adding foreign gas to its export portfolio.**
- **Current profit margin allows a substantial price reduction.**
- **A sharp growth of transportation costs is expected.**
  - **Gazprom builds an extremely expensive new pipeline system to evacuate the Yamal gas.**
  - **The new expensive lines will be fully loaded while the existing ones will have a lot of spare capacity.**
- **Gazprom needs a high price in 2020.**
- **At $13-14/MMBtu, shale gas can beat Russian gas in Europe.**

Production cost, $/mcm

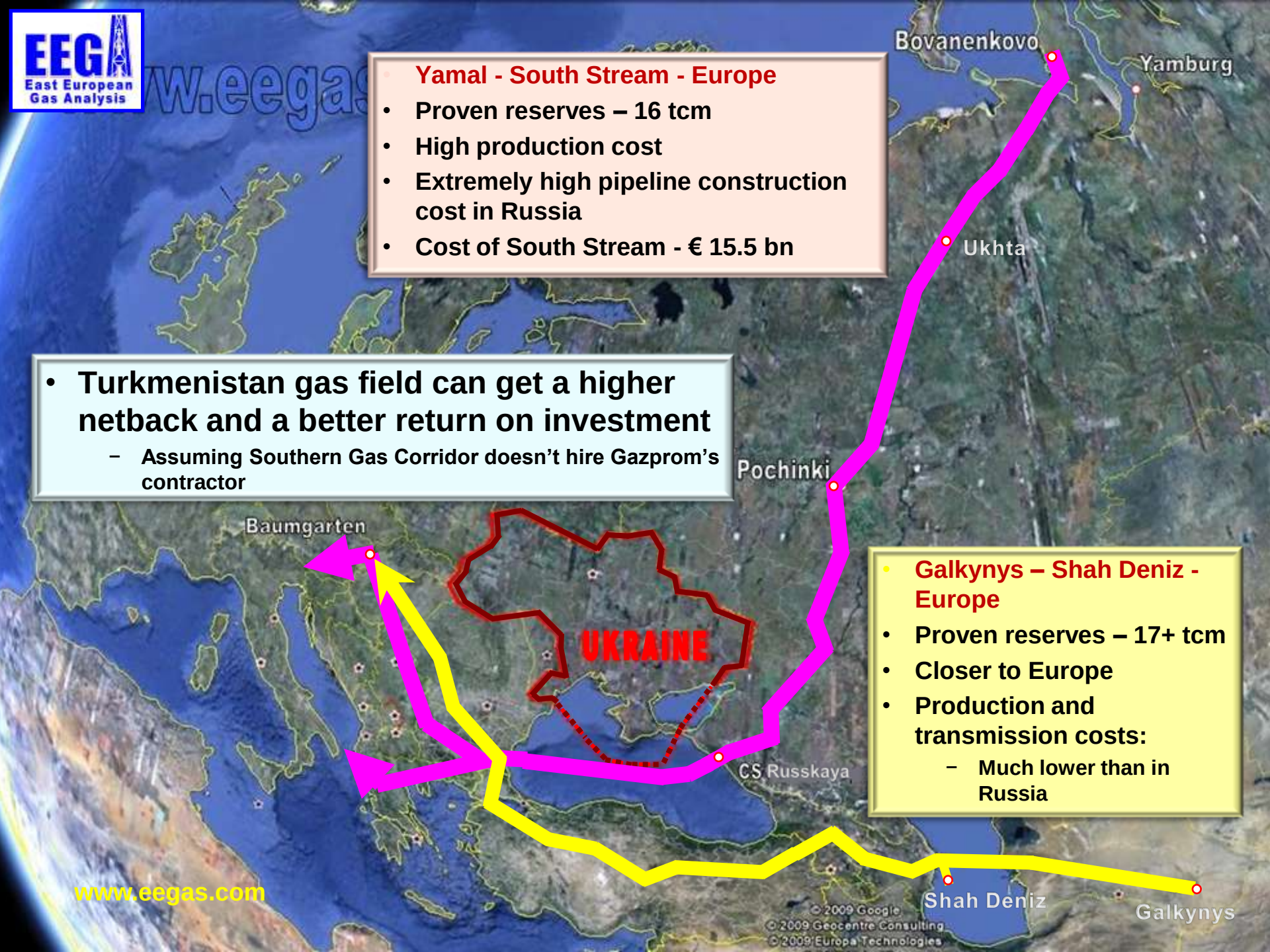


Cost of Exports, $/mcm



Other Factors – Caspian Gas

- Gas reserves of the Caspian region are of the same size as the Yamal reserves.
- Gas production cost in Azerbaijan and Turkmenistan is much lower than in Yamal.
- Gas fields of Turkmenistan and Azerbaijan are closer to Europe than Yamal.
  - Pipeline construction cost in Russia is much higher than in the Caucasus and Turkey.
- Caspian gas will inevitably come to Europe by the shortest route.
- An agreement between Azerbaijan, Turkmenistan and the EU would be a major breakthrough.


EEGA
East European Gas Analysis
Yamal - South Stream - Europe
• Proven reserves – 16 tcm
• High production cost
• Extremely high pipeline construction cost in Russia
• Cost of South Stream - € 15.5 bn
Bovanenkovo
Yamburg
Ukhta
Pochinki
• Turkmenistan gas field can get a higher netback and a better return on investment
– Assuming Southern Gas Corridor doesn't hire Gazprom's contractor
Baumgarten
UKRAINE
CS Russkaya
Galkynys – Shah Deniz - Europe
• Proven reserves – 17+ tcm
• Closer to Europe
• Production and transmission costs:
– Much lower than in Russia
Shah Deniz
Galkynys
www.eegas.com
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Competitive Capacity of Gazprom

- **Gazprom is doing a great job supplying gas from West Siberia to consumers in Russia, FSU and Europe.**
  - **Gazprom is capable to supply over 2 bcm per day.**
- **In the past decade, Gazprom succeeded in reducing the number of pipeline failures by 50% (adequate rehabilitation).**
- **Gazprom has a huge cost reduction potential.**
- **Unfortunately, this potential is ignored by the current executive board of the company.**

EEGA
East European Gas Analysis

THANK YOU
DANKE