Global gas and Russia

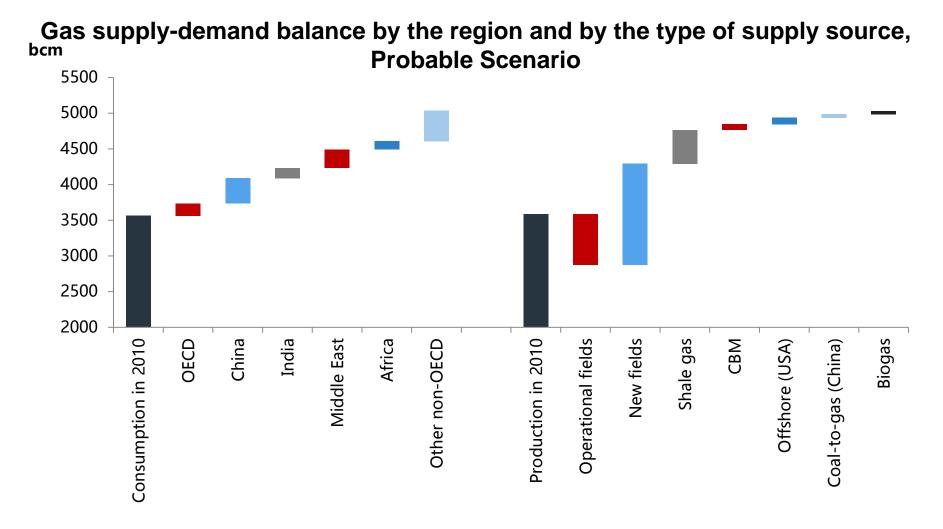
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Gas demand is expected to increase globally, supply will be mainly provided by conventional gas resources



By 2040 the share of LNG in the global gas trade will increase up to 60%

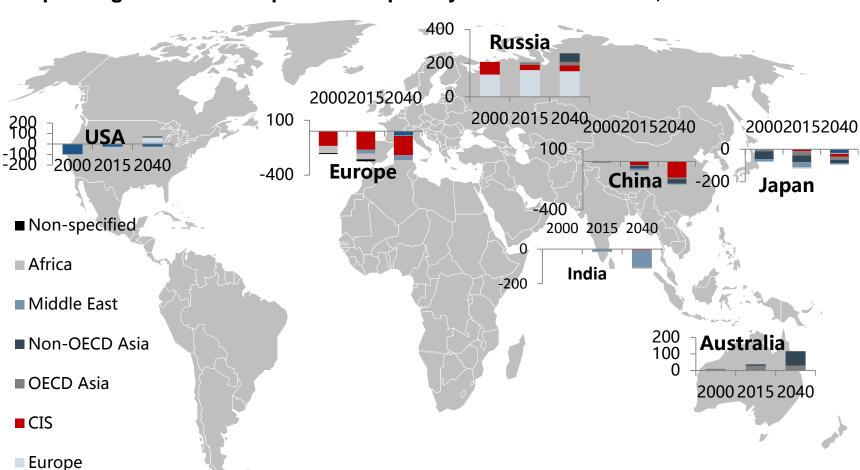
Global liquefaction capacities addition

(compared to 2015) by the region bcm bcm 900 70 % 1600 800 1400 60 % 700 1200 50 % 600 1000 40 % 500 800 400 30 % 600 300 20 % 400 200 10 % 200 100 0 0% 0 2010 2015 2020 2025 2030 2035 2040 2040 2040 2015 2020 2025 2030 2035 2040 **Probable Scenario** Crit. Fav. North America CIS OECD Asia Sc. Sc. ■ Non-OECD Asia ■ Middle East Africa Net LNG export Net pipeline gas export

Source: Global and Russian Energy Outlook-2016, ERI RAS-AC

Global net-export of LNG and pipeline gas

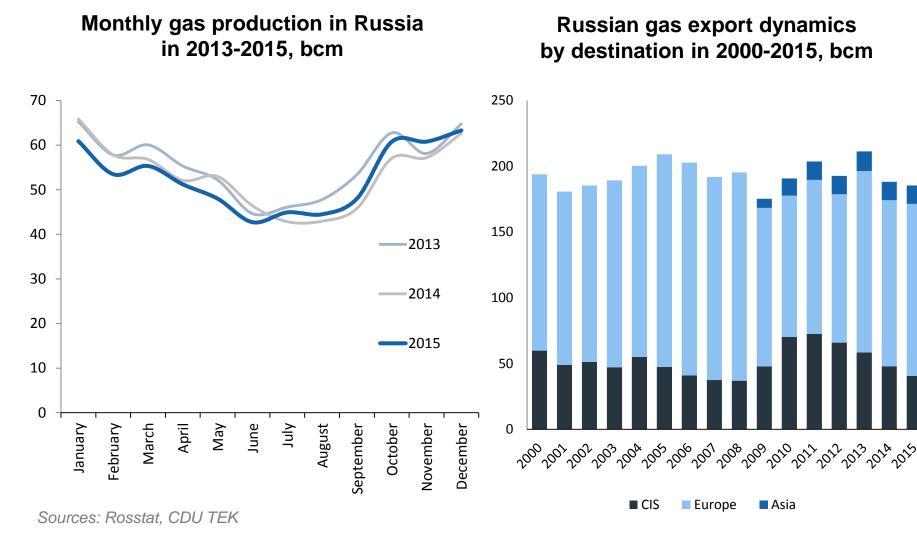
Global gas trade is moving to Asia



Pipeline gas and LNG export and import by the main countries, Probable Scenario

Source: Global and Russian Energy Outlook-2016, ERI RAS-AC

Status quo: Russian gas production and exports are stagnating



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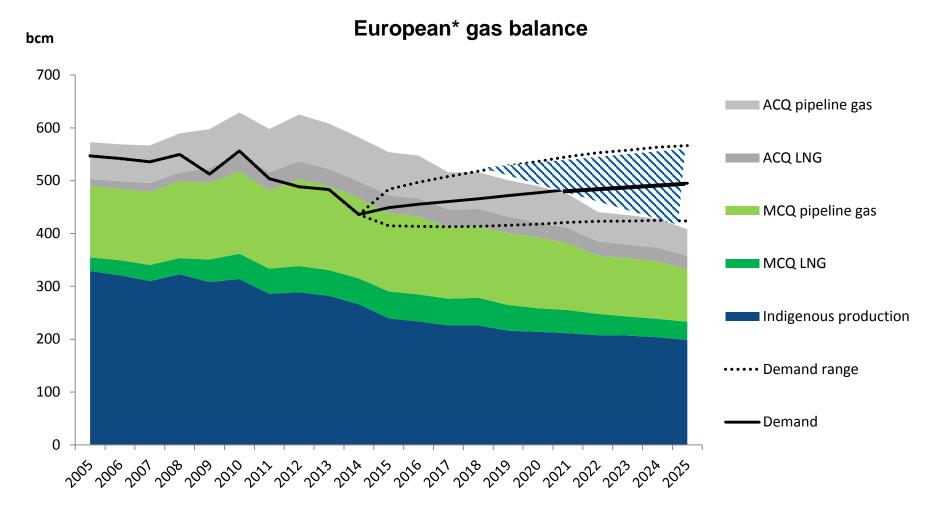
Increasing gas bubble in the domestic market

Company	Production in 2015, bcm	Unutilized potential and capacities additions under development by 2020, bcm
Gazprom	406	~155
Novatek	52	~48
Rosneft	42	~48
VIOCs (APG)	46	~15
TOTAL	635,5	266

Rosneft and Novatek have extremely ambitious plans on gas production expansion, obligatory utilization of the associated petroleum gas (APG) and its priority pipeline access stimulate VIOCs gas output growth

Gazprom is looking for the external markets

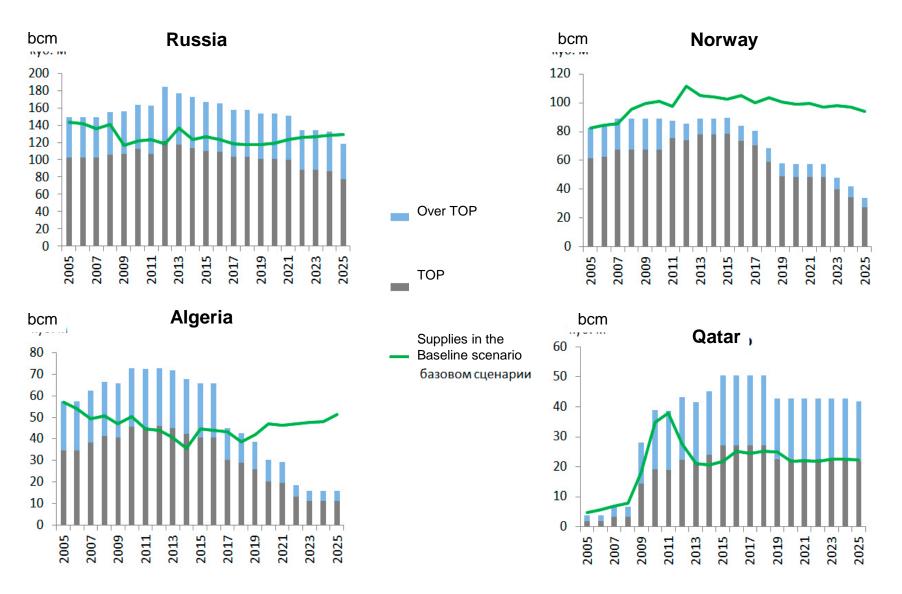
European gas market is strongly over-contracted and locked in the TOP contracts, it is very difficult to expand market share



* Europe-41 without Turkey

Source: ERI RAS

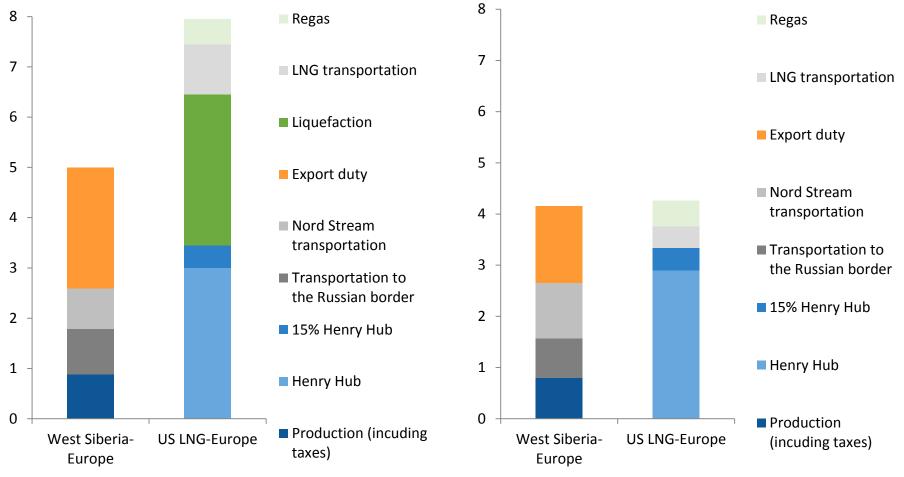
Russia has the largest contract portfolio, which guarantees at least 115 bcma of exports up to 2023



Russia is well placed to defend its market share on the European gas market if needed

Long run marginal supply costs to Europe (Russian pipeline gas and US LNG)

pe Short run marginal costs to Europe (Russian pipeline gas and US LNG)



Conclusions

- Dominant position of the Russian gas in Europe is fixed by the LTCs.
- The EU wants to diversify away from Russia, but there are few alternatives and the EU knows that (limited gas volumes are available through the Southern Corridor, frozen production in Netherlands, limited capability by Norway to increase production, stagnating production in North Africa).
- The next fight for EU gas market share will therefore be a fight between Russian gas and LNG (first of all US LNG). If Russian gas will be threatened, Russia will no longer fight for high gas prices (as in 2009), but for market share, even if this means low prices.
- Compared to most of its new competitors, Russia has a lower cost gas supply base and can thus engage on a price war if needed.
- Nevertheless Russia would prefer to avoid price war with the US and Qatar LNG in order to maintain export revenues.