Russia's Oil&Gas Development and Exports Trends

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1 Oil Industry

Global oil market context

Russian oil production and export trends up to 2023

2 Gas Industry

EU Gas market trends

Russian gas production and export trends up to 2023

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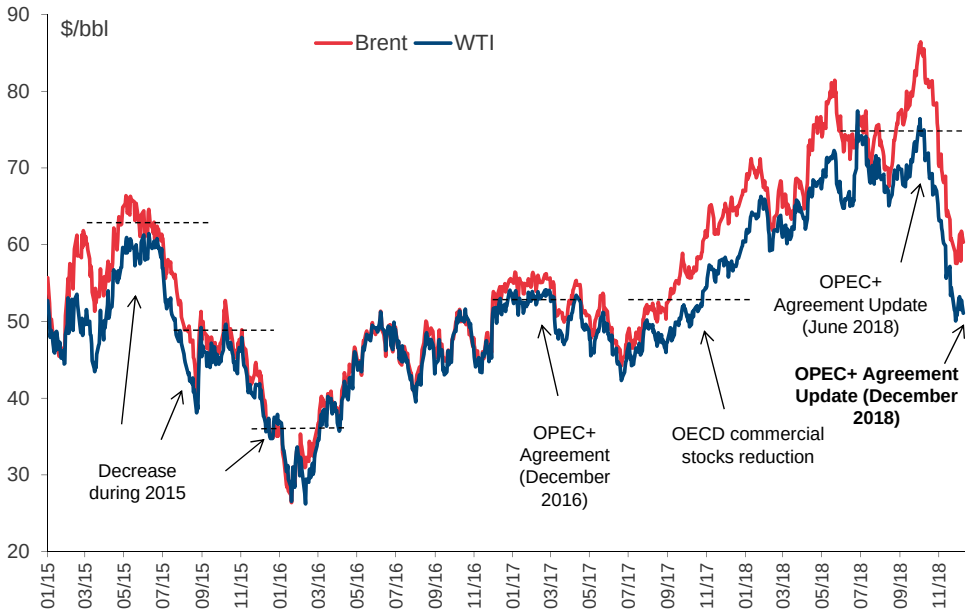
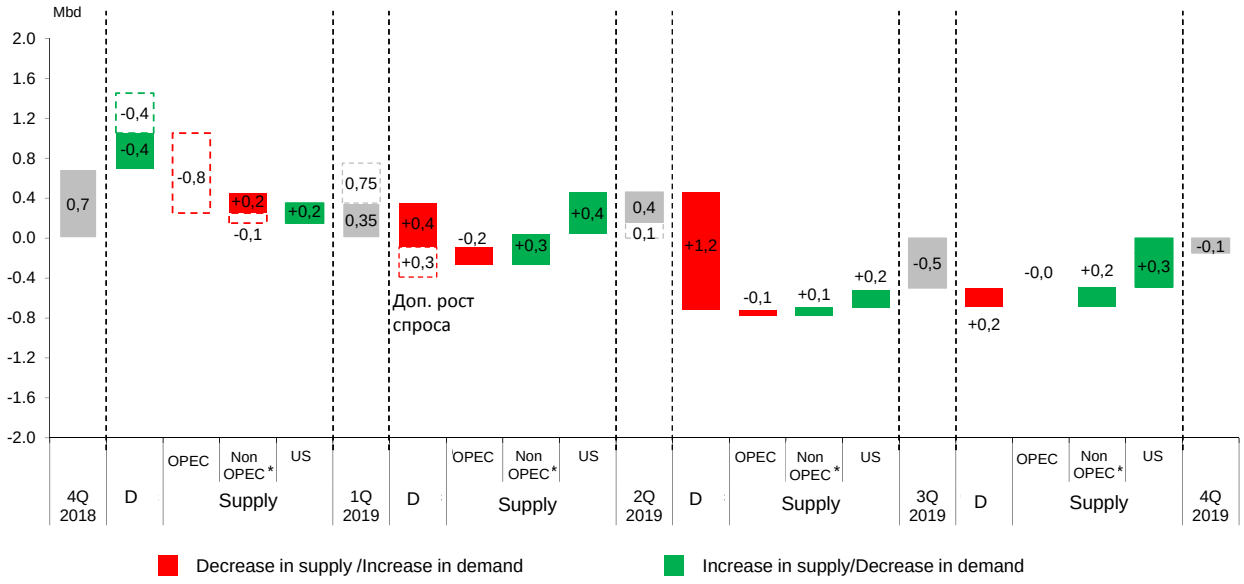
OPEC+ Agreement has a crucial role to stabilize the global oil market



- OPEC+ Agreement (December 2016) to cut collective oil production of 1,8 MMb/d supported global oil prices and reduced price volatility in 1Q2017- 1Q2018.
- The threat of US sanctions against Iranian oil exports led to OPEC+ Agreement Update in June 2018 (increase collective oil production of 1 MMb/d).
- New OPEC+ Agreement Update (December 2018) to cut collective oil production of 1,2 MMb/d has to reduce the oil market volatility in 2019

OPEC+ Agreement Update in December 2018 lead to gradually balancing the global oil market in 2019

Changes in global liquid fuels market balance



Notes:

D - Demand

** Not including US*

Source: IEF estimates bases on EIA, МЭА, ОПЕК data

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Russia's Role in the OPEC+ Agreement

1Q 2017 – 1Q 2018

- **Russia** played central role bringing about OPEC and non-OPEC output reduction deals of December 2016
- **Russia** pledged to gradually lower output by 300,000 b/d during first half of 2017 compared with October 2016 level (**largest non-OPEC reduction**)
- **Russia** with Saudi Arabia now apparently co-determining OPEC+ policy

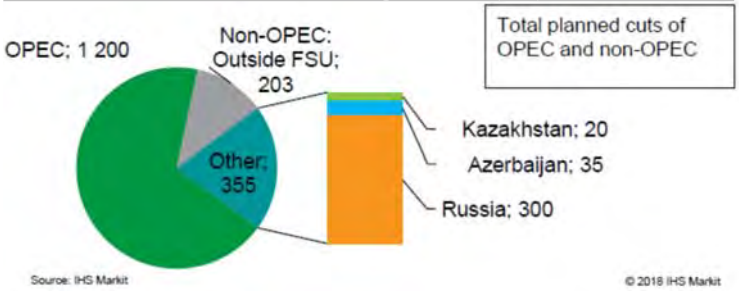
OPEC+ Agreement Update (June 2018)

- **Russia** and Saudi Arabia ensured the implementation of 'Vienna Alliance' members' decision to increase the collective oil production of 1MMbd in coming months
- **Russia** exceeds October 2016 baseline for production cuts for first time in October 2018, setting new oil output record of 11,6 MMb/d (**activating most spare capacity built up during period of output cuts**)

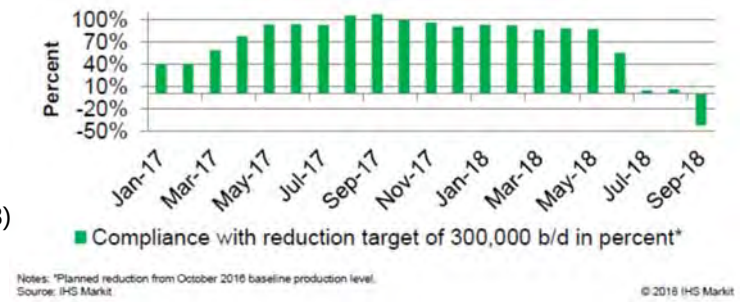
OPEC+ Agreement Update (December 2018)

- **Russia** played central role to reach new Update for OPEC+ Agreement (restart of collective oil output cuts of 1,2 MMb/d from January 2019)

Russia's share in the collective oil production cuts planned in 2017 within OPEC+ Agreement (tbd)



Level of Russian compliance with initial OPEC+ Agreement production cut target, 2017-18



Source: IHS Markit

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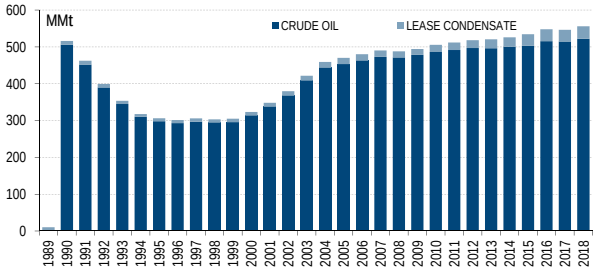
Russian oil production back to growth in 2018

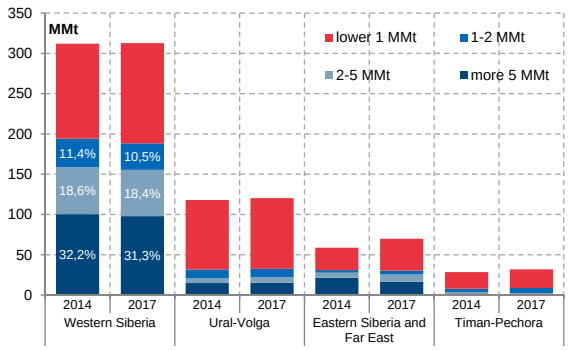
- **Russian oil production cuts within OPEC+Agreement led to oil production decrease in 2017 up to 546,2 MMt** (-0,3% y-o-y), for the first time in last 10 years
- **But Russian oil production back to growth in 2018 and ensured new annual oil output record of 556 MMt (11,35 MMb/d)** due to the activation of most spare capacity built up during period of output cuts

Russia' crude oil production, 1989-2018



- **After 10 years of decline the Western Siberia' oil output back to growth in 2018** due to increase oil production in Yamalo-Nenets AO
- Greenfield expansion have supported the raise of oil output in the Eastern Siberia (Suzun and Vankor) and on Caspian onshore (Filanovsky' field)

Russia' crude oil production by key oil&gas regions, 2014-17

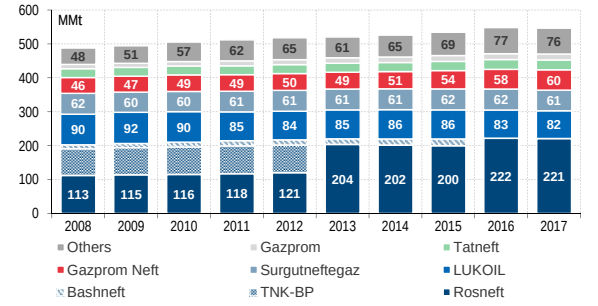


Sources: Rosstat, Russian Ministry of Energy, FIEF

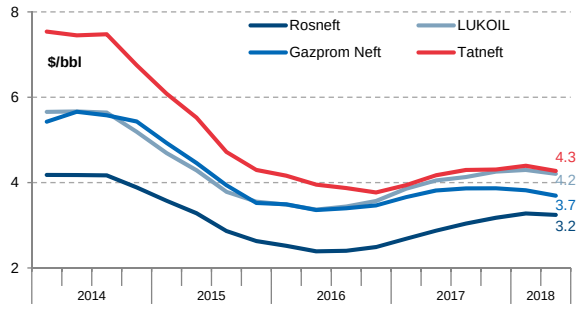
Gazprom Neft is the main driver of oil production' increase

- **Gazprom Neft is the main driver of Russian oil production' increase** (+9 MMt in 2015-17)
- **Rosneft continue to develop Vankor oil cluster**: oil output at the Suzun field raised by 4 times up to 4,14 MMt, at the Tagul field – by 9 times up to 0,34 MMt
- Sakhalin PSAs had increased oil output in 2017 as well as independent Russian producers including JV with Japanese investors (INPEX, ITOCHU, JOGMEC)
- **Nevertheless, oil production by Rosneft, LUKOIL and Surgutneftegas decreased during this period due to OPEC+ cuts and oil output decline at the Western Siberia**

Oil output by Russian Oil&Gas Majors, 2008-17



OPEX/bbl in upstream by Russian Oil&Gas Majors, 2014-18



- **In 2017-18 OPEX by Russian majors have stabilized at the level of 3-4$/bbl**
- Russian majors have kept their costs at such a low level due to pressure on contractors who are forced to reduce prices even in the face of rising world oil prices and volumes of work performed

Sources: Rosstat, companies' data, FIEF estimations

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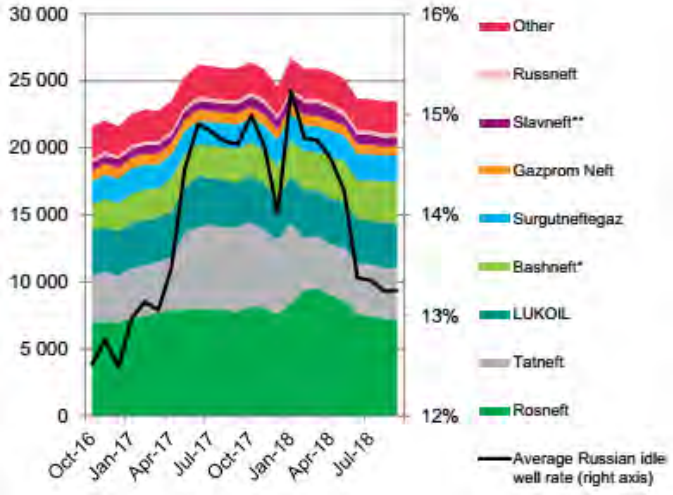
Idling of wells was the main instrument to achieve 2017 OPEC+ production cuts

- **Deactivation of (most likely marginal) wells was key method for achieving production cuts in 2017**
  - Russia's idle well count jumped by over 5,000 between October 2016 and January 2018
  - Idle well rate rose from 12,5% in October 2016 to 15,2% in January 2018
- **Sharp drop in idle well count in 2018 coincided with main period of Russian oil production growth in 2018**
  - Russia's idle well count has fallen over 3,000 since January 2018
  - Idle well rate down to 13,2% in September 2018
- **Tatneft and Rosneft have registered biggest reductions in idle well numbers in 2018, indicating new brownfield investment focus by this companies**

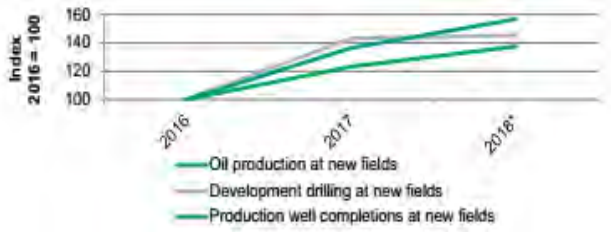
Change in Russian idle well count by company, October 2016-September 2018



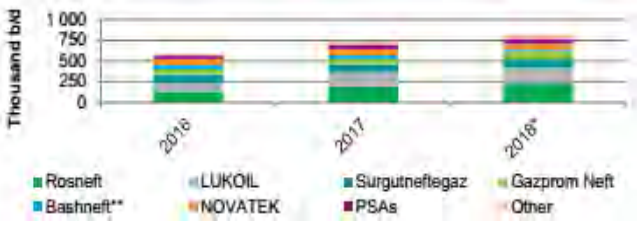
Sources: IHS Markit, FIEF

New field development activity up significantly in 2017 despite cuts

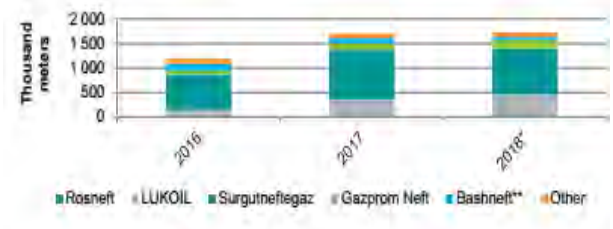
Indexes for new oil field activity in Russia, 2016-18



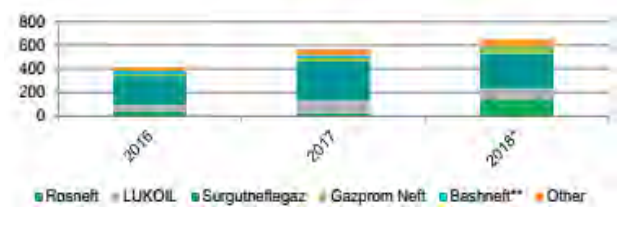
Oil production at new felds inRussia,2016-18



Development drilling at new fields in Russia, 2016-18



New well completions at new fields in Russia, 2016-18



Sources: TEK Rossii

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Tax Reform 'Big Maneuvre' is neutral for Russian upstream

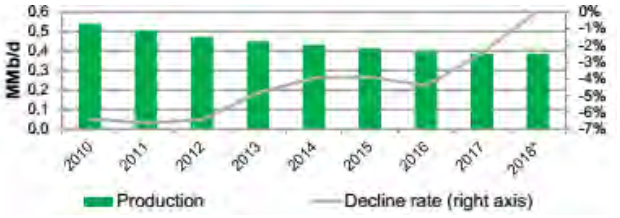
- Starting from 2019 **the export duty on oil will be multiplied by a reduction factor**
- Starting from 2023, **the export duty will be reset**
- **Lower oil export duty will lead to higher domestic oil prices (net back), and alignment of domestic oil prices and world prices (less logistics costs)**

- To compensate budget losses due to the reduction of export duties on oil, a new component is introduced into the MET (DM coefficient)- K_{MAN}, which actually repeats the formula for calculating the export duty on oil
- **As a result, the overall tax burden on oil production will not change**

Tax reform for mature oil fields: The Samotlor tax break

- Russia's current oil sector tax system, based on gross revenues of production, particularly burdensome for mature field producers
- Samotlor oil field has obtained (2017) major tax relief package in exchange of Rosneft promise to invest more heavily in this field redevelopment
  - Finance Ministry agreed to annual MET reduction for Samotlor oil field of 35 trillion rubles (around $0,6 billion) and set to last for 10 years
- **Finance Minsitry of Russia promised to revisit question of comparable tax breaks for other mature fields in three years, after evaluating impact of Samotlor experiment on federal budget**

Samotlor oil production and decline rate



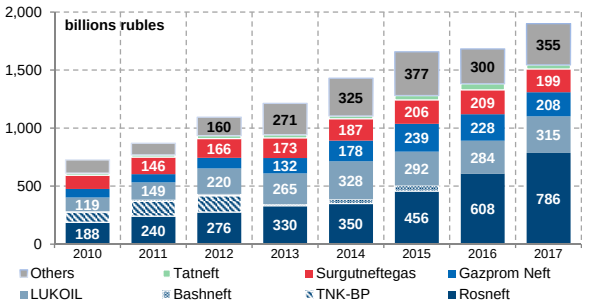
Rosneft committed to drill about 2,400 new wells and produce an incremental 50 MMt (365 MMbbd) at Samotlor field during next 10 years

Sources: Finance Ministry, IHS Markit

CAPEX in Upstream: from stagnation in 2016 to acceleration in 2017

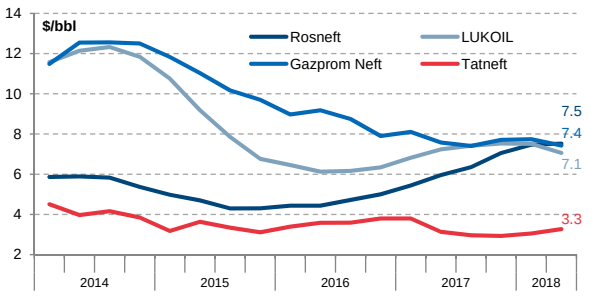
- **In 2017, investments in oil production increased by 13**% y-o-y, reaching 1.9 trillion rubles
  - Rosneft became the leader in the dynamics of capital investments (+29% y-o-y)
  - LUKOIL significantly increased investments (+11% y-o-y)
  - Other majors reduced investments in oil production

CAPEX in upstream by Russian Oil&Gas Majors, 2010-17



- The key areas of Rosneft's investments were the maintenance of production at the old fields of Western Siberia and the development of the Vankor cluster
- In 2017, LUKOIL continued to increase investments in old fields of Western Siberia (116.4 billion rubles, +28.4% y-o-y) and the Caspian sea shelf (55.9 billion rubles, + 35% y-o-y)
- Some (-9% y-o-y) decline in investment in Gazprom Neft's production projects was due to the completion of the Novoportovskoye field infrastructure

CAPEX/bbl in upstream by Russian Oil&Gas Majors, 2014-18



Sources: Rosstat, companies' data, FIEF estimations

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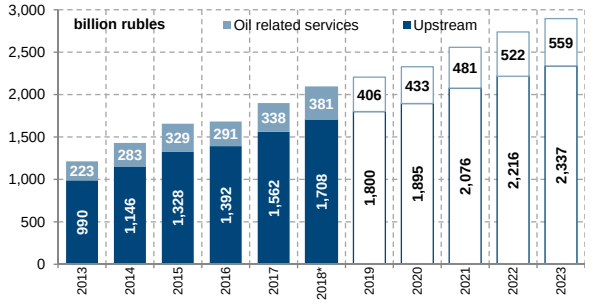
CAPEX trends up to 2023: growth will continue

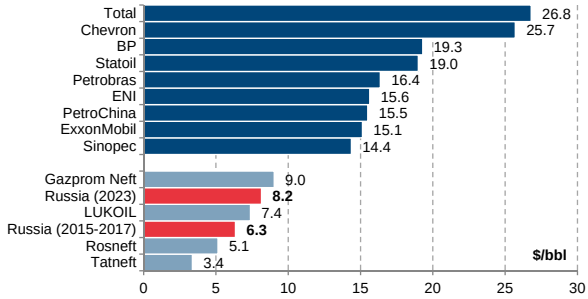
- **In 2019-23, investments in oil production will grow by 39% (+14% in real terms) due to the implementation of large-scale programs for the development of production capacities of Gazprom Neft and Rosneft**
  - Rosneft plans to increase oil and gas condensate production to 250 MMt by 2025 (+29 MMt by 2017) by introducing new fields in Eastern Siberia and increasing production at old fields in Western Siberia (Samotlor)
  - In 2018, Gazprom Neft announced the postponement to achieve oil production of 100 MMt from 2020 to 2021-22 (mainly due to the OPEC+ cuts), while production in Russia will total 75-80 MMt. The main production gains will be ensured by new projects in the Yamalo-Nenets AO (Taz, North Samburgskoe)

- **Capex/bbl for Russian majors remains significantly lower than that of the largest international oil companies**, as in the portfolio of Russian majors' projects are still dominated by traditional oil fields (Western Siberia, Eastern Siberia) with relatively low exploitation costs

CAPEX in upstream (facts and forecast), 2013-23



Average CAPEX/bbl in upstream by companies, 2015-17



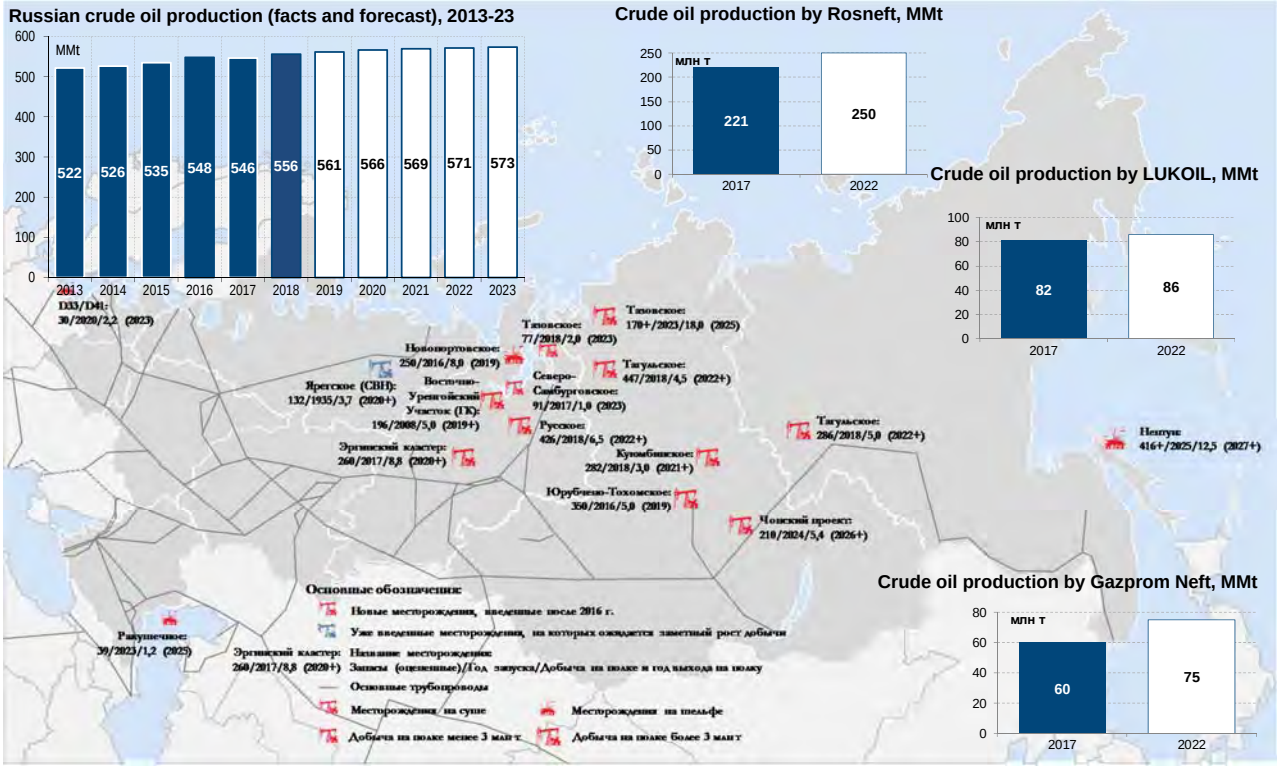
Sources: Rosstat, companies' data, FIEF estimations

Russian oil production outlook up to 2023

Russian crude oil production (facts and forecast), 2013-23

Crude oil production by Rosneft, MMt

Crude oil production by LUKOIL, MMt



Crude oil production by Gazprom Neft, MMt

Sources: Rosstat, companies' data, FIEF estimations

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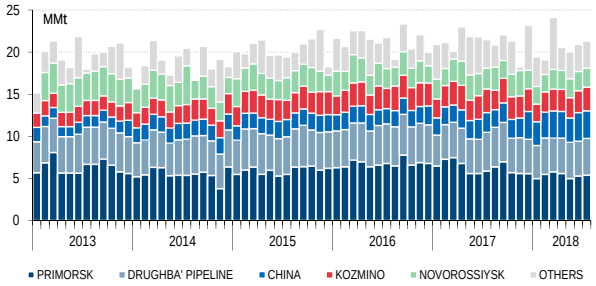
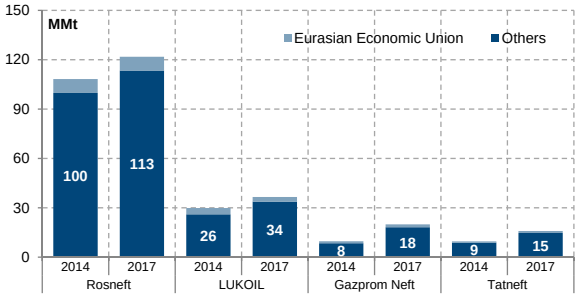
Crude oil exports: growth will continue

- **In 2018, crude oil exports from Russia stagnated after the rally 2014-2016 and amounted to 256.9 MMt (+0.2% y-o-y)**
  - North-Western Europe (via Primorsk) is the main export market for Russian crude oil (76.7 MMt)
  - The Druzhba oil pipeline delivered more than 51 MMt of Russian crude oil to Central & Eastern Europe
  - Supplies to the Mediterranean (31 MMt) and Asia-Pacific countries via Kozmino (32 MMt) stagnated at the level of 2017
  - **Pipeline' oil deliveries to China was the only one growing for Russian crude oil exports in 2017-2018**
- **In 2014-17, the largest Russian Oil&Gas Majors seriously increased crude oil exports due to the refinery production' optimization**
- **In 2017 "Rosneft", "LUKOIL", "Gazprom" and "Tatneft" has put for export 194 MMt (77% of total Russian exports)**

Crude oil exports from Russia, 2014-18



Crude oil exports by companies, 2014-17

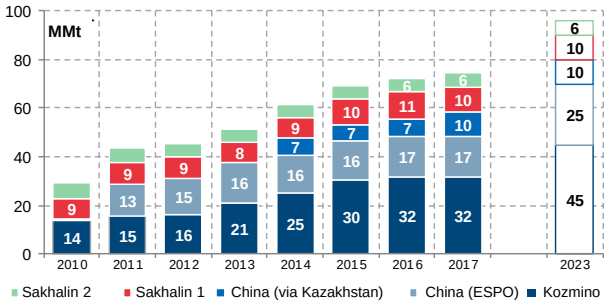


Sources: Rosstat, companies' data, FIEF estimations

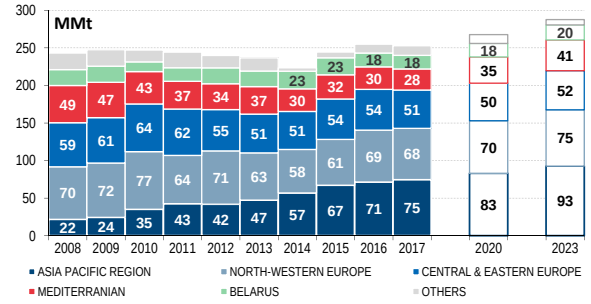
Russian crude oil exports outlook up to 2023: jump to Asia-Pacific

- **In 2017, 75.2 MMt (+4.2% y-o-y) were sent from Russia to Asia-Pacific, mainly to China (59.7 MMt), Japan (8.1 MMt) and South Korea (7.0 MMt)**
- **We expect the Russian crude oil exports to Asia-Pacific will grow up to 93 MMt by 2023 (+24% to 2017)**
- **ESPO is the main supply channel for Russian crude oil deliveries to Asia-Pacific**: in 2017, 48.2 MMt were pumped through the oil pipeline, including to China - 17 MMt
- **In 2017, Russia became the largest oil exporter to China, ahead of Saudi Arabia (52.2 MMt).** In the coming years, Russian oil supplies to the Chinese market will continue to grow due to the increase in oil production in Eastern Siberia and the expansion of ESPO. By 2020, the capacity of the pipeline on the Taishet-Skovorodino section will grow from 70 MMt to 80 MMt, on the Skovorodino-Kozmino section - from 44 MMt to 50 MMt
- Japan and South Korea depend heavily (over 85% of all imports) on oil deliveries from the Middle East. The US-China tensions in the South China sea will force these countries to diversify oil supplies more actively, increasing imports from Russia and the US. **By 2022-23, oil supplies from Russia to Japan could reach 10 MMt, from Russia to South Korea – 10-11 MMt**

Russian crude oil exports in Asia Pacific (facts and forecast), 2010-23



Russian crude oil exports by directions (facts and forecast), 2008-23



Sources: BP, Wood Mackenzie, FIEF estimations

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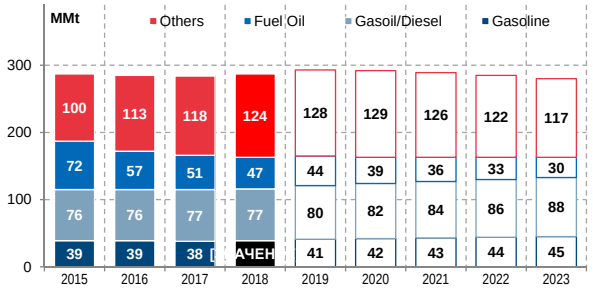
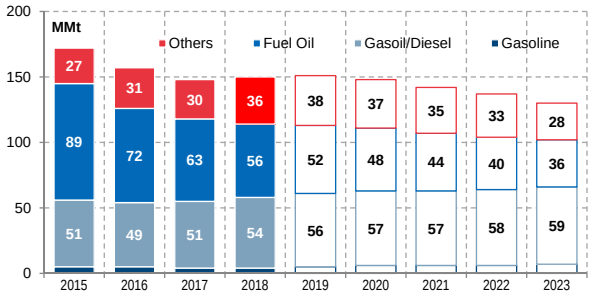
Russian petroleum products output and exports outlook up to 2023

- **In 2018, Russian refinery industry shifts to growth after three years of decline**
  - In 2018, the primary oil refining increased to 286.9 MMt (+2.5% y-o-y)
  - The return to growth was facilitated by the recovery of world oil prices (as a result, the oil refining margin increased)
- **In 2019-20, the primary oil refining will stabilize at the level of 290-293 MMt, but since 2020, it will again begin to fall**
  - The main causes are high competition with refineries from the Middle East and oversupply of petroleum products in the domestic market
- **In 2019-20, the exports of petroleum products will stabilize at the level of 150 MMt, but since 2021, the exports of petroleum products will decline following the fall of refinery production**
  - We expect the most significant decrease in the supply of fuel oil up to 36 MMt to 2023, while the exports of diesel and gasoline will grow slightly

Russian petroleum products output (facts and forexcast), 2015-23



Russian petroleum products exports (facts and forecast), 2015-23



Sources: Rosstat, FIEF estimations

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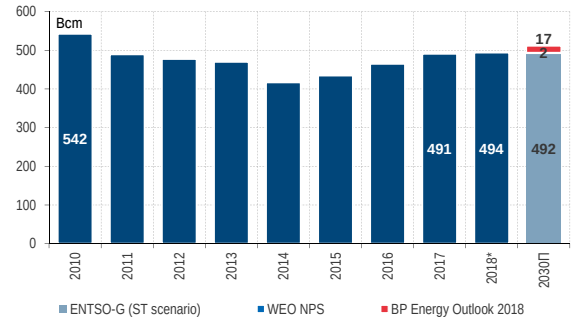
EU gas demand outlook: the recovery will continue up to 2023

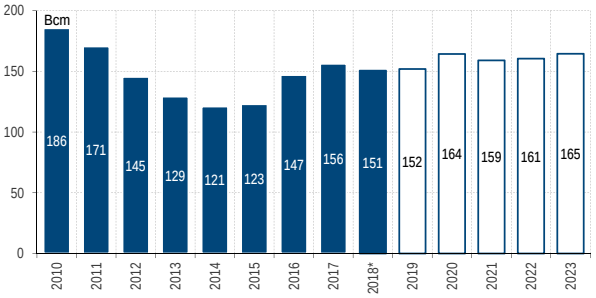
- **According to preliminary estimates, in 2018, the growth of gas demand in the EU continued and amounted to 494 bcm (+0.6% y-o-y)**
  - In the next 5 years, power sector will remain the main driver of gas demand in the EU
  - In the longer term, the gas demand in the European transport sector also will slightly increase
- However, **in the long term the total EU gas demand will not increase significantly** due to the continued raise of renewable energy use, as well as energy efficiency improvements

EU gas demand (facts and forecast), 2007-30



- **In June 2018, the EU approved legally binding targets for the development of RES up to 2035**
  - The main goal is to achieve the share of RES in the EU final energy consumption at the level of 32% by 2030
  - According to the European Commission, in 2016 the share of RES in the EU final energy consumption was 17.04%
  - This decision may have a negative impact on the long-term prospects of gas demand in the EU

EU power industry gas demand (facts and forecast), 2010-23



Source: European Commission

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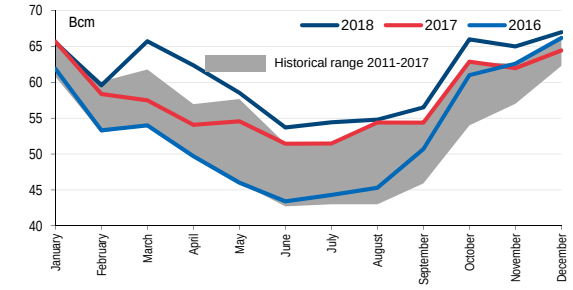
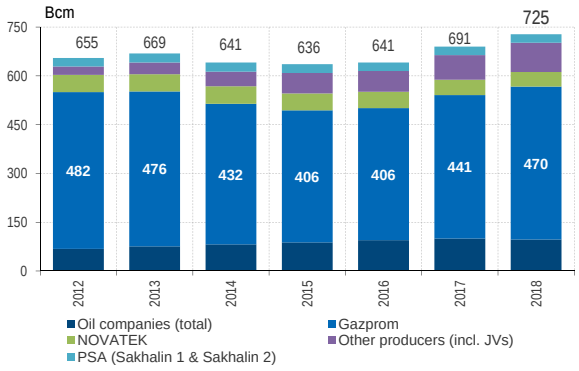
Gazprom is the leader in Russian gas production growth in 2018

- **In 2018, Russian gas production reached a new all-time record of more than 725.2 Bcm (+34 Bcm or +4.9% y-o-y)**
  - The main increase in production was provided by Gazprom (+30 Bcm or +6,5% y-o-y)
  - Independent gas producers and oil companies maintained the gas production at 2017' level
- **In 2018, according to our estimates, domestic gas demand** (including the needs of the gas transportation system and gas injection into UGS) **increased by 4.0% y-o-y**
- **In 2018, Gazprom's gas supplies to the domestic market also increased significantly**, mainly due to a reduction in gas supplies from independent gas producers
  - After the launch of Yamal LNG project, NOVATEK reoriented the significant part of gas deliveries from the domestic market to LNG exports
  - Rosneft faced difficulties in increasing production and was forced to conclude an agreement with Gazprom for the purchase of gas of 5 Bcm
- We expect that **Russian domestic gas demand will remain stable in the range of 470-480 Bcm** in the forecast perspective

Russian gas production by months, 2016-18



Russian gas production by companies, 2012-18

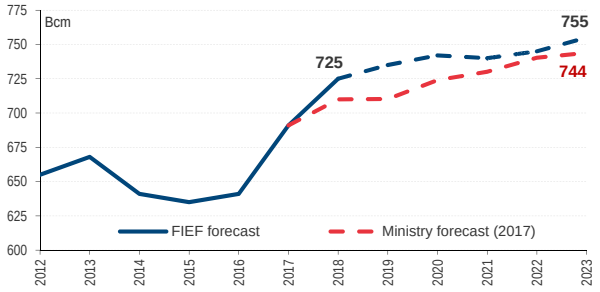


Sources: TEK Rossii, companies' data, FIEF estimations

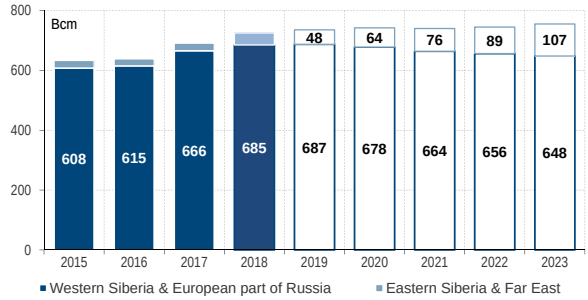
Russian gas production outlook up to 2023

- **In 2019-2023, Russian gas production will grow slightly faster than predicted before and will reach the range 744-755 Bcm by 2023 (+2,6-4,1% to 2018)**
- In the coming years, Gazprom's production in the Western Siberia will be supported by launching the spare capacity of Nadym-Pur-Taz fields, especially Zapolyarnoye and Urengoy fields
- NOVATEK plans to develop Utrennee field which will be the resource base for the Arctic-2 LNG Project on Gydan Peninsula
- Rosneft gas production is likely to be stable in 2018, while Rospan full expansion planned for 2019
- **After 2021-2022, the main increase in gas production will be ensured by Eastern Siberia and the Far East mainly due to the commissioning of the Chayandinskoye and Kovykta fields, as well as increasing the production of APG in the oil fields**
- **Gazprom' current spare capacity (~100 Bcm) will facilitate required production growth in the near to medium term up to 2023**

Russian gas production (facts & forecast), 2008-23



Russian gas production outlook by regions, 2015-23



Sources: Ministry of Economic Development of the Russian Federation, Gazprom, companies' data, FIEF estimations

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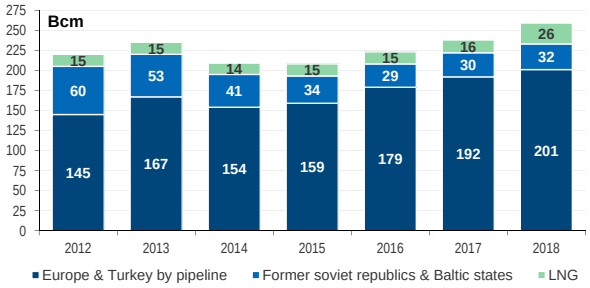
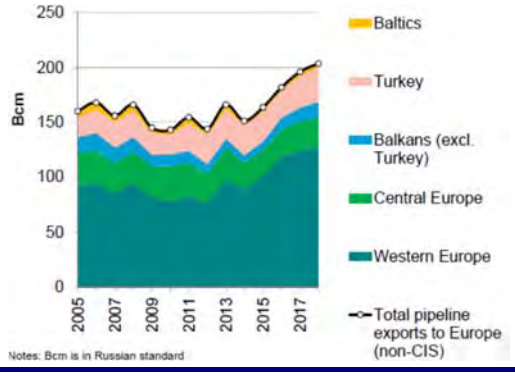
Russian gas exports : facts & forecast

- **In 2018 Russian gas export increased up to 260 Bcm (+7,7% y-o-y)**
  - Gazprom set a new record with pipeline exports to Europe reaching more than 200 Bcm (+5,6% y-o-y)
  - LNG exports (26 Bcm) are expanding fast (+62,1% y-o-y) following the launch of two trains on Yamal LNG
  - Exports to former Soviet republics (CIS) stable, with no official supply to Ukraine (although deliveries continue to separatist areas in east)
- **Pipeline exports to Europe have been rising since 2014 setting records for three consecutive years, emphasizing Russia's critical supply role with the advantage of incumbency in contractual relations, low-cost gas and flexibility of supply**
- Offshore section of Turk Stream is finished, Nord Stream 2 is being constructed; but transit through Ukraine will still be required, therefore solution for new transit arrangements must be found before end of 2019
- **In 2019-2021, we expect stabilization of exports volumes of Russian pipeline gas at the current level but after 2021 the pipeline gas exports will grow again due to the commissioning of Power of Siberia project oriented to China**

Russian gas exports, 2012-18



Russian gas exports by pipeline to Europe (non-CIS)



Sources: Gazprom, IHS Markit, FIEF estimations

Russian gas shift to the East: both pipeline and LNG projects are progressing

- **Russia is pushing several options for gas exports to Asia-Pacific markets: total potential almost 200 Bcm/y** (95 Bcm/y by pipe to China and South Korea and over 100 Bcm/y of LNG exports) by 2035
- **Gazprom's Power of Siberia project (38 Bcm/y) is being built on budget and on time** and expected to begin deliveries in late 2019, in line with agreement. Ramp-up period will depend on Chinese market
- Active negotiation is ongoing about expansion of Power of Siberia and other routes including **Power of Siberia 2** (**Altay pipeline, 30 Bcm/y**) and additional **eastern route for Sakhalin gas from Dalnerechensk (6-8 Bcm/y)**
- **Gazprom and KOGAS have revived negotiations on a new export gas pipeline.** Russian gas could become the most competitive source of gas, depending on what pipeline route is selected; the most efficient one involves transit through North Korean territory
- **Yamal LNG has launched all three large-scale trains ahead of schedule**
- FID for Arctic LNG-2 expected in 2019
- Russia perceives a significant opportunity in global LNG market: it has a potential to develop **100 MMtpa by 2030**, capturing half of global incremental demand.
- Long-term success of Russian LNG projects in Arctic targeting Asia-Pacific markets largely depends on commercial navigation of Northern Sea Route

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