

RUSSIAN-CHINESE ENERGY COOPERATION OUTLOOK

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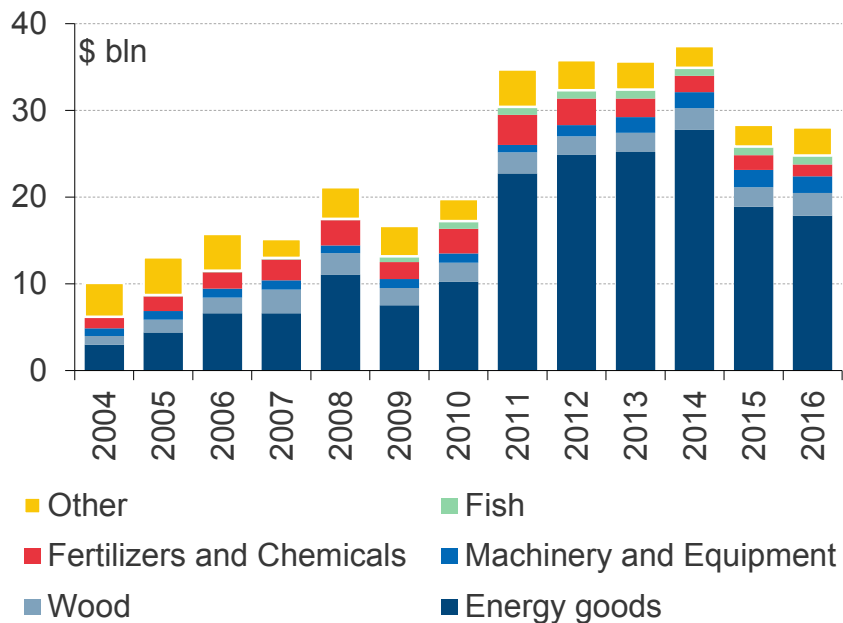
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Energy Is a Key Driver of Russian-Chinese Economic Cooperation

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Export from Russia to China



Source: UN Comtrade

Major energy deals and loans between Russian and Chinese companies

Year	Agreement	USD*
2005	China National Petroleum company (CNPC) loan to Rosneft	6 bn
2006	CNPC (49%) and Rosneft establish Vostok Energy LTD	-
2006	Sinopec buys 49% of Rosneft's Udmurtneft	3.5 bn
2007	Sinopec buys 25% of Rosneft's Sakhalin-3 project	-
2009	China Development Bank loan to Rosneft and Transneft, enabling the Russia-China oil pipeline (ESPO spur)	25 bn
2013	CNPC-Rosneft 25-year oil supply deal, doubles oil exports	270 bn
2013	Sinopec-Rosneft 10-year supply deal	85 bn
2013	CNPC buys 20% of Novatek's Yamal LNG Project	5.4 bn
2014	CNPC-Gazprom gas deal "Power of Siberia" 38 bcm/y	400 bn
2015	China's Silk Road Fund buys 9.9% of Yamal LNG Project and provides USD 790 million loan for the project	1.2 bn
2016	Chinese banks provide 15-year loan to Yamal LNG Project	12 bn

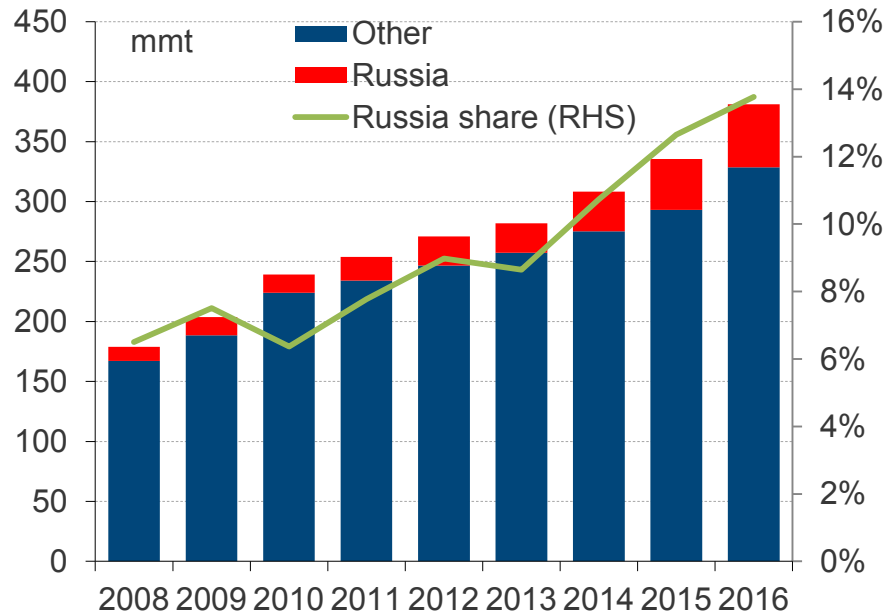
*Estimated at time of agreement (in billions), based on company sources, Vedomosti.ru and Platts.com.

- In 2016 energy goods (petroleum and petroleum products, coal and electricity) provide about 60% of total export from Russia to China
- More than 80% of the Chinese FDI flows in Russia directed to Russian Energy Sector

Russian Oil and Petroleum Products in the Chinese Market

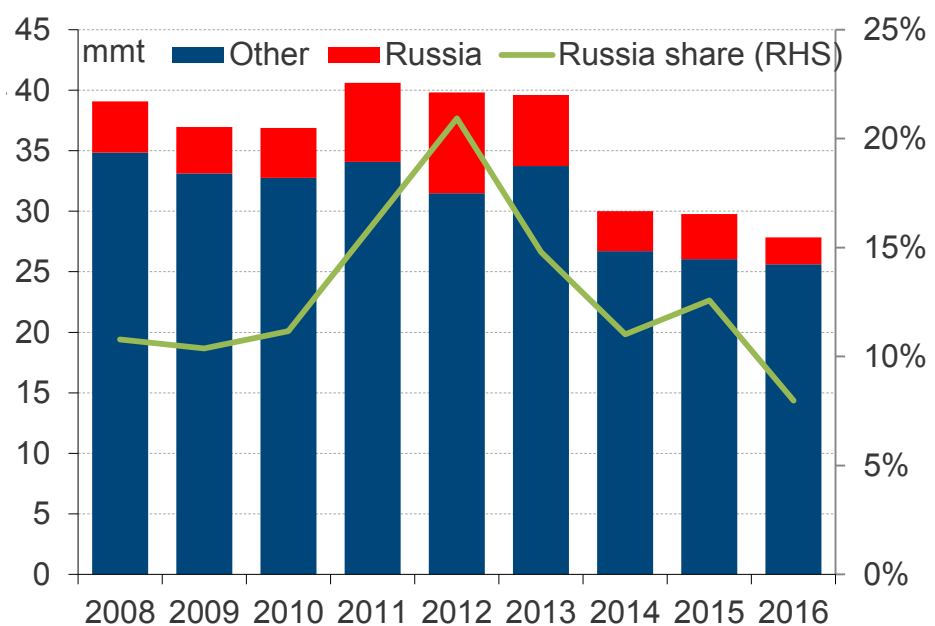
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China Crude Oil Import



Source: General Administration of Customs of People's Republic of China

China Petroleum Product Import



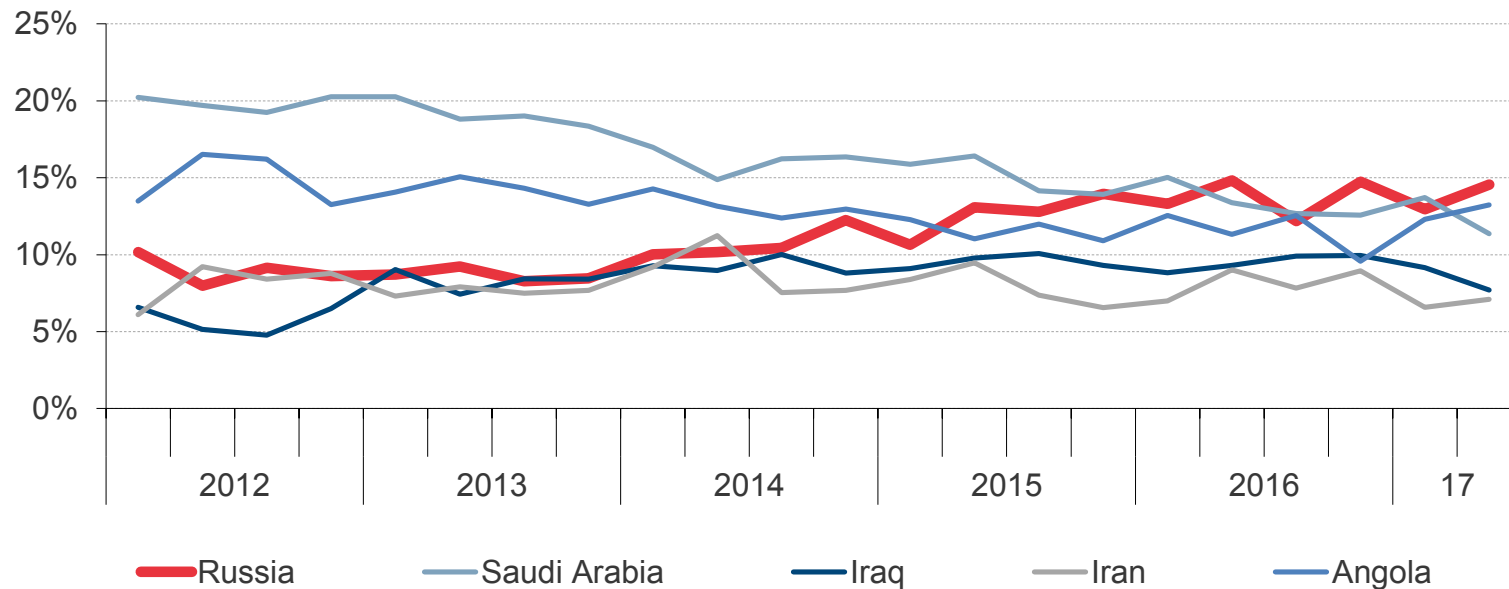
Source: UN Comtrade

- In 2016, Russian crude oil export for China equals 52.5 mmt (+24% y/y), Russian petroleum product export for China equals 2.2 mmt (-41% y/y)
- The reduction in the Russian petroleum products import is due to the fact that China is becoming a net exporter of petroleum products

Russia Is a Key Crude Oil Exporter for China

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Shares of the key oil-exporting countries in crude imports by China



Source: General Administration of Customs of People's Republic of China

- In 2016, Russia became the biggest crude oil exporter to China, exceeding Saudi Arabia
- In the 2Q 2017, Russia's share in the China oil imports was 14,6%
- The growth of Russian oil supply to China started in 2013, when the major long-term contracts were signed between Rosneft and CNPC

ESPO Is a Key Route to Deliver Russian Oil to the Chinese Market

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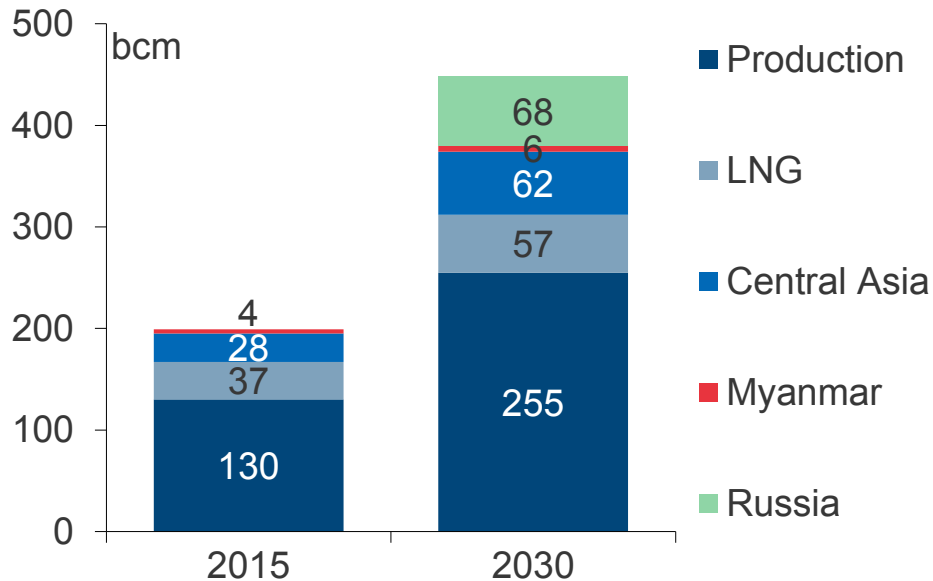


- Rosneft and CNPC agreed in May 2013 to more than double oil exports to China and increase the capacity of ESPO's Line 1 to 58 mt by 2015 and 80 mt by 2020.
- Planned expansion of ESPO's Line 2 to Kozmino to 50 mt and a doubling of the Daqing spur to 30 mt by 2020 were also agreed.
- Rosneft will have to develop new oil projects to be able to supply the expanded pipeline and fulfill its obligations to its Chinese partners.

Russia Is Ready to Play a Key Role in the Chinese Gas Market

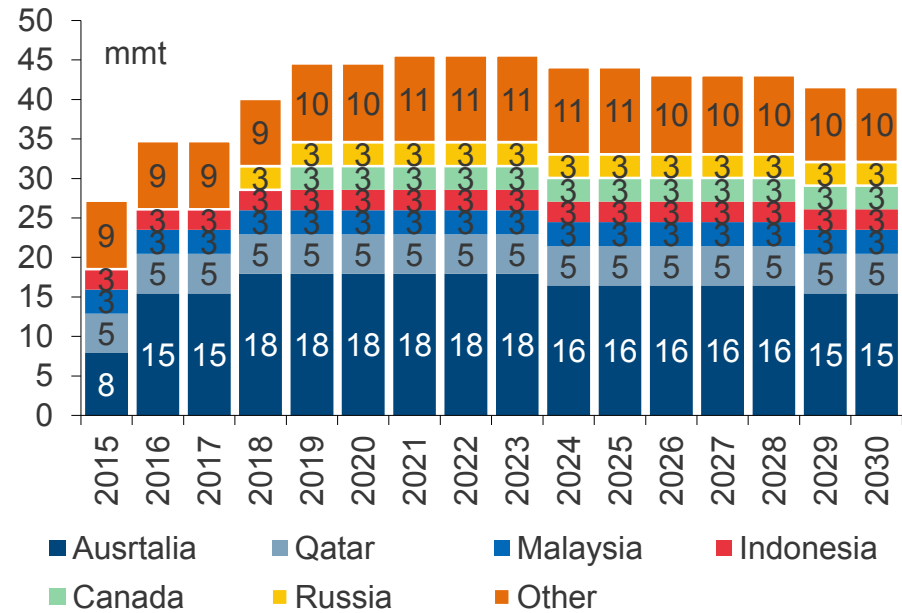
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Forecast of the structure of natural gas supplies to the Chinese market by 2030



Source: JPMorgan, Bloomberg, IEA

Contracted LNG shipments to China

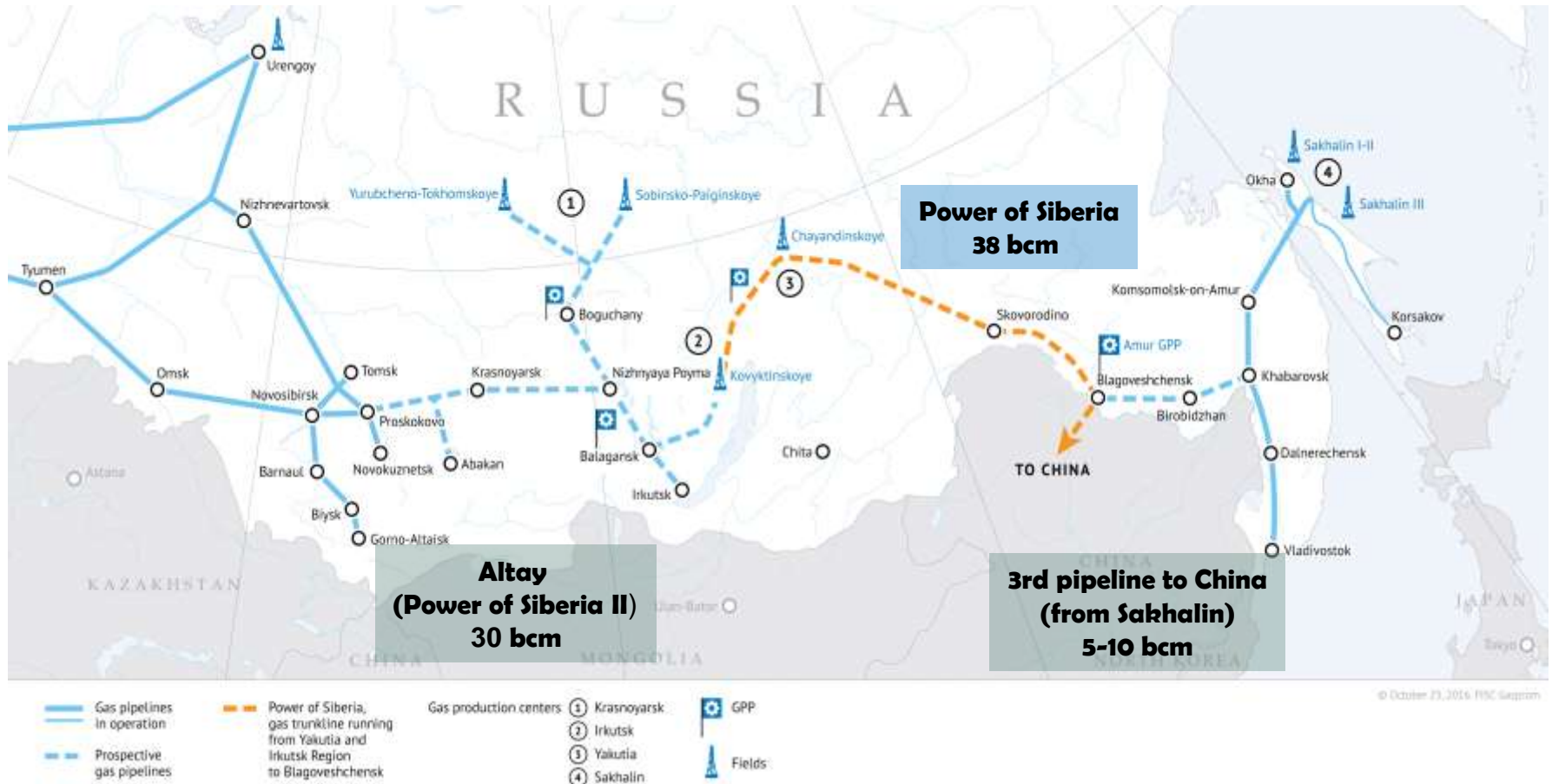


Source: Bloomberg

- By 2030 the Russian pipeline gas supply to China after the launch of the Siberian and Altai gas pipelines is about 68 bcm
- The IEA (2016) forecasts a similar growth of the Russian pipeline gas supply to China, estimating that it will reach 80 bcm by 2040, thereby accounting for 30% of total Russian gas exports
- Current contracted LNG shipments from Russia in China are 3 mtpa from 2018 (Yamal LNG)

Russian Gas Pipeline's Projects to China

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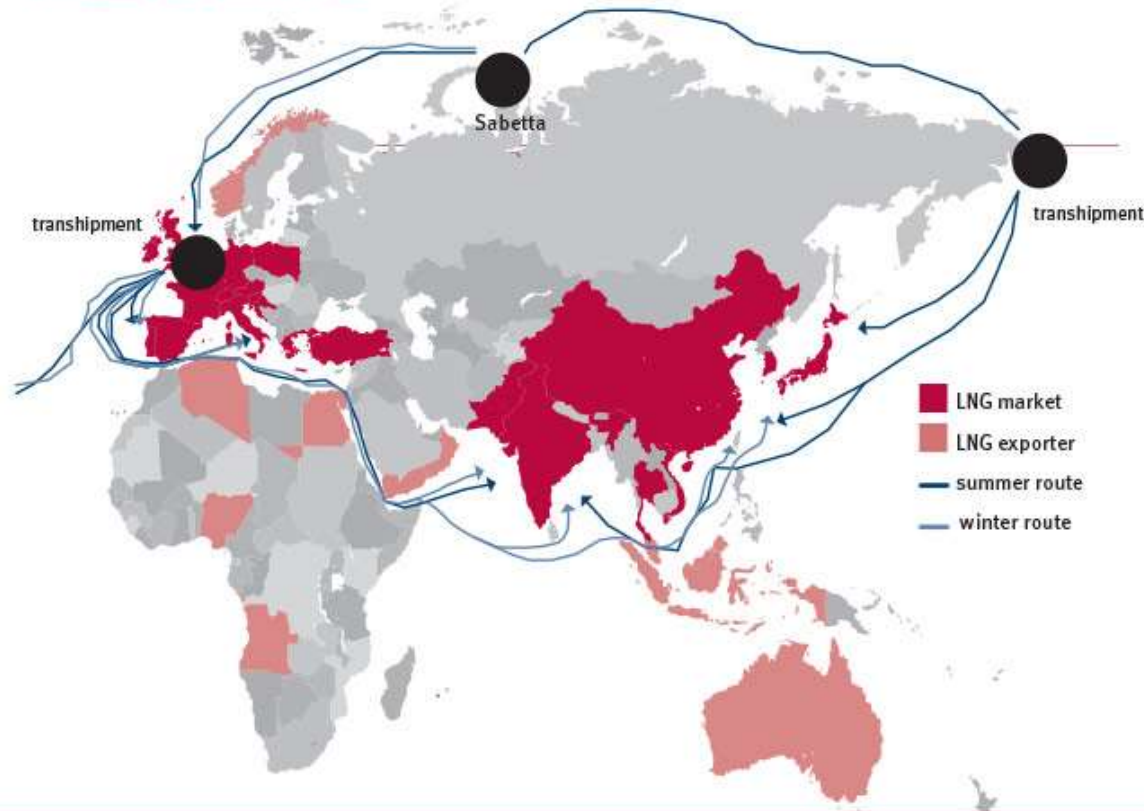


- Russia signed its first contract to ship gas to China (38 bcm a year) from untapped East Siberian fields under a \$400 billion deal in 2014

Yamal LNG Project

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YAMAL LNG EXPORT ROUTES



16.5m
tonnes Yamal
annual production
capacity
2018-2019

15-20
LNG carrier loads
Yamal will require
per month
2018-2019

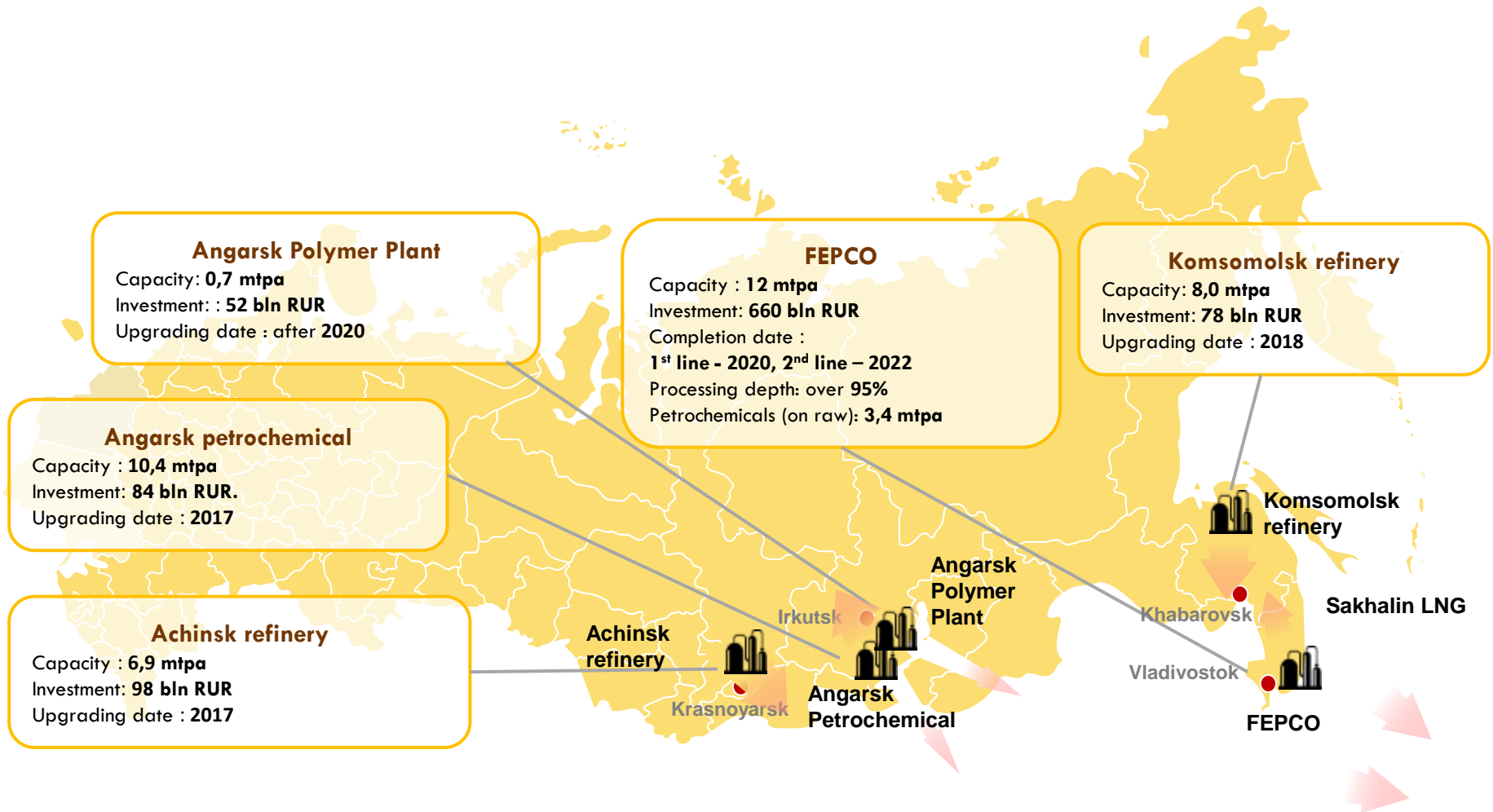
40.2m
cu m monthly
gas exports
from Yamal
in 2018-2019

Source: Yamal

- Yamal LNG will be producing 16.5 MTPA of LNG and up to 1.2 MTPA of gas condensate
- The LNG Plant will be built in three phases which are scheduled for start-up in 2017, 2018, and 2019, respectively
- Chinese companies have 30% of the project: CNPC (20%) and Silk Road Fund (9.9%)

Russian Eastern Petrochemical Clusters Are Focused on China

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High-tech Cooperation: Services and Equipment

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- Nantong COSCO Heavy Industry Co., Ltd – Shipping crane equipment for shipbuilding company “Zvezda”



- Asian Lift PTE LTD - Technical supervision services for the construction of cranes



- China Shipbuilding & Offshore International Co., Ltd and Qingdao Beihai Shipbuilding Heavy Industry Co., Ltd. – Design and construction of a transport-transfer dock with a carrying capacity of 40 thousand tons



- Suzhou Dafang Special Vehicle Co., Ltd - Purchase of equipment (conveyors)



- China Oilfield Services Limited – Drilling in the Sea of Okhotsk



- Sichuan Honghua Petroleum Equipment co., SJ Petroleum Machinery Co (Sinopec) – Drilling rigs



- Yantai Jereh Oilfield Services, Shandong Kerui Petroleum Equipment – Equipment and services of hydraulic fracturing, coiled tubing

Key Chinese-Russian Joint Oil&Gas Projects

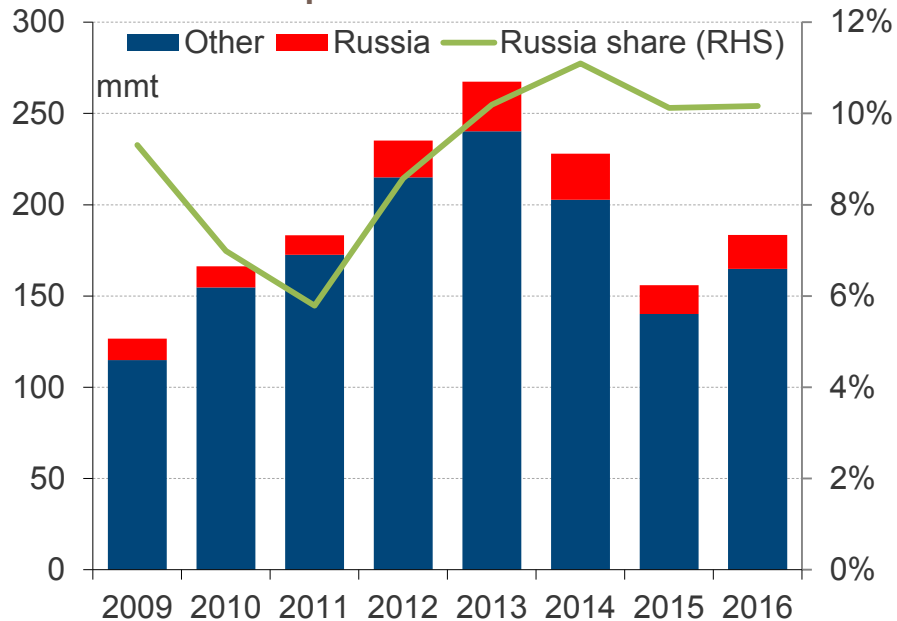
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Project	Description
Prime distillation complex in Tianjin	Partner is CNPC 16 mmtpa capacity, over 95% conversion depth The project also provides for establishing a retail network comprising 300 retail sites
Udmurtneft	2006 - Sinopec has a 47.6% of shares in the company oil production (around 6.5 mtpa)
Verkhnechonsk field	In June 2017 Rosneft and Beijing Gas closed the deal for sale of 20% shares in Verkhnechonskneftegaz (\$1,1 bln)
ChemChina	Joint venture to build a plant and produce polymer coatings and paints with annual capacity 50,000 tons
China CEFC Energy Company	In September 2017, CEFC and Rosneft signed an agreement for the long-term supply of Russian crude oil to China.

Russian-Chinese Cooperation in Coal and Electricity Sector

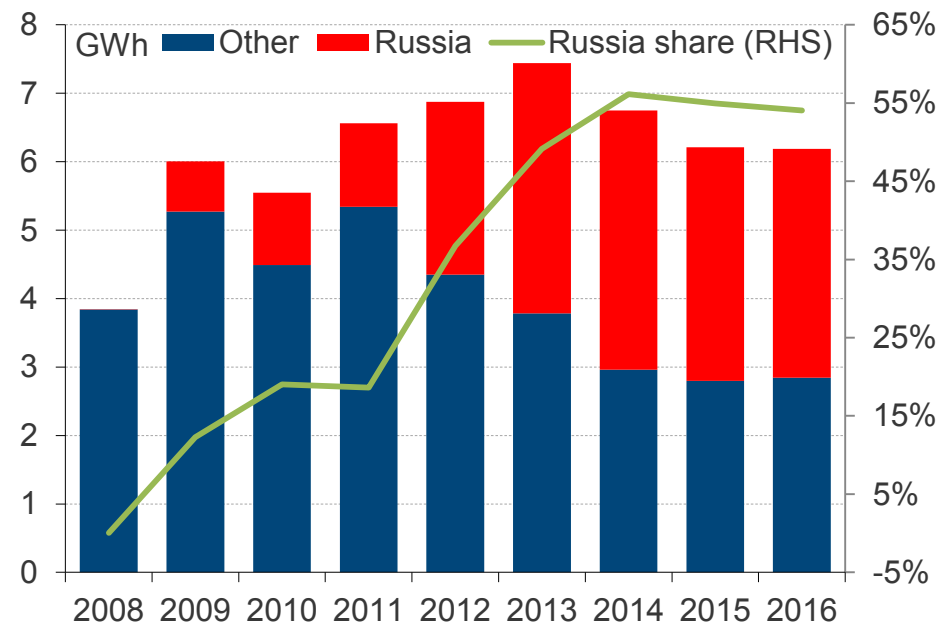
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China Coal Import



Source: UN Comtrade

China Electricity Import



Source: UN Comtrade

- In 2016, Russian coal import for China amounted to about 18.6 mmt per year or 10.2% of the total volume Chinese coal imports.
- In the past two years, Chinese coal consumption has slowed, since it carries out the transfer of Chinese coal-fired power plants to gas generation.
- The electricity import in China is a small fraction of total electricity consumption in China. However, Russia currently occupies a key place in the market of imported electricity.

Russian-Chinese Cooperation in Nuclear Energy Sector

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- The key project is Tianwan NPP. Power plant was constructed under the Chinese-Russian Agreement of 1992.

Unit	Reactor type	Net capacity	Gross capacity	Construction started	Commercial operation
Tianwan-1	VVER-1000/428 (AES-91)	990 MW	1,060 MW	October 1999	May 2007
Tianwan-2	VVER-1000/428 (AES-91)	990 MW	1,060 MW	October 2000	August 2007
Tianwan-3	VVER-1000/428M (AES-91)	1,050 MW	1,126 MW	December 2012	2018
Tianwan-4	VVER-1000/428M (AES-91)	1,050 MW	1,126 MW	September 2013	2018

- The experimental fast neutron reactor with sodium coolant (CEFR) constructed with the participation of Russian experts was commissioned in 2011. That year the fourth, which is the last stage of the gas centrifuge enrichment plant was commissioned ahead of schedule.
- At the end of July, 2014, CNNC New Energy and Rusatom Overseas signed a memorandum on construction of floating nuclear power plants (FNPP), which China will use to supply power to islands and offshore hydrocarbon deposits.

Silk Road and Eurasian Economic Union

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Silk Road Economic Belt and Maritime Silk Road in the making



Source: xinhuanet.com, and Barclays Research

- May 2016, the leaders of Russia and China signed a joint declaration “on cooperation in coordinating the development of the Eurasian Economic Union (EEU) project and the (SREB)”
- Moscow and Beijing’s declared goal in combining the two projects was to build a “common economic space” in Eurasia, including a Free Trade Agreement between the EEU and China

The Republic of Armenia joined the EAEU on 2 January 2015



The Kyrgyz Republic joined the EAEU on 12 August 2015

