

Russian Exports to Asia and LNG

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Russia has clear motivation to turn to Asia

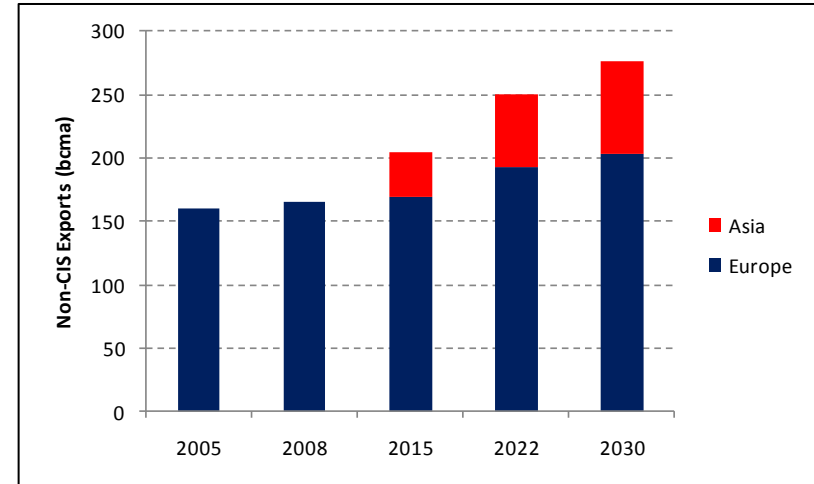
- **Growth in Asian gas demand, especially in China**
- **Significant gas resources in East Siberia and Far East of Russia**
- **Uncertainty over future of export sales to Europe and FSU**
- **Gazprom's declining share of Russian domestic market**
- **Need for increased tax revenues from export sales**
- **Geo-political demonstration to western powers that Russia has alternative markets**
- **Key questions:**
 - **Can Gazprom fulfil its role as the major gas exporter to the East?**
 - **Will Rosneft and/or Novatek take an increasingly important role**
 - **Has Russian gas to China set a benchmark for gas prices in Asia?**
 - **Will Russian LNG be developed as a major new source of gas supply in the East**

Russia has large gas resources in its eastern regions and has turned towards Asia for export growth

Russia has significant gas resources in the East

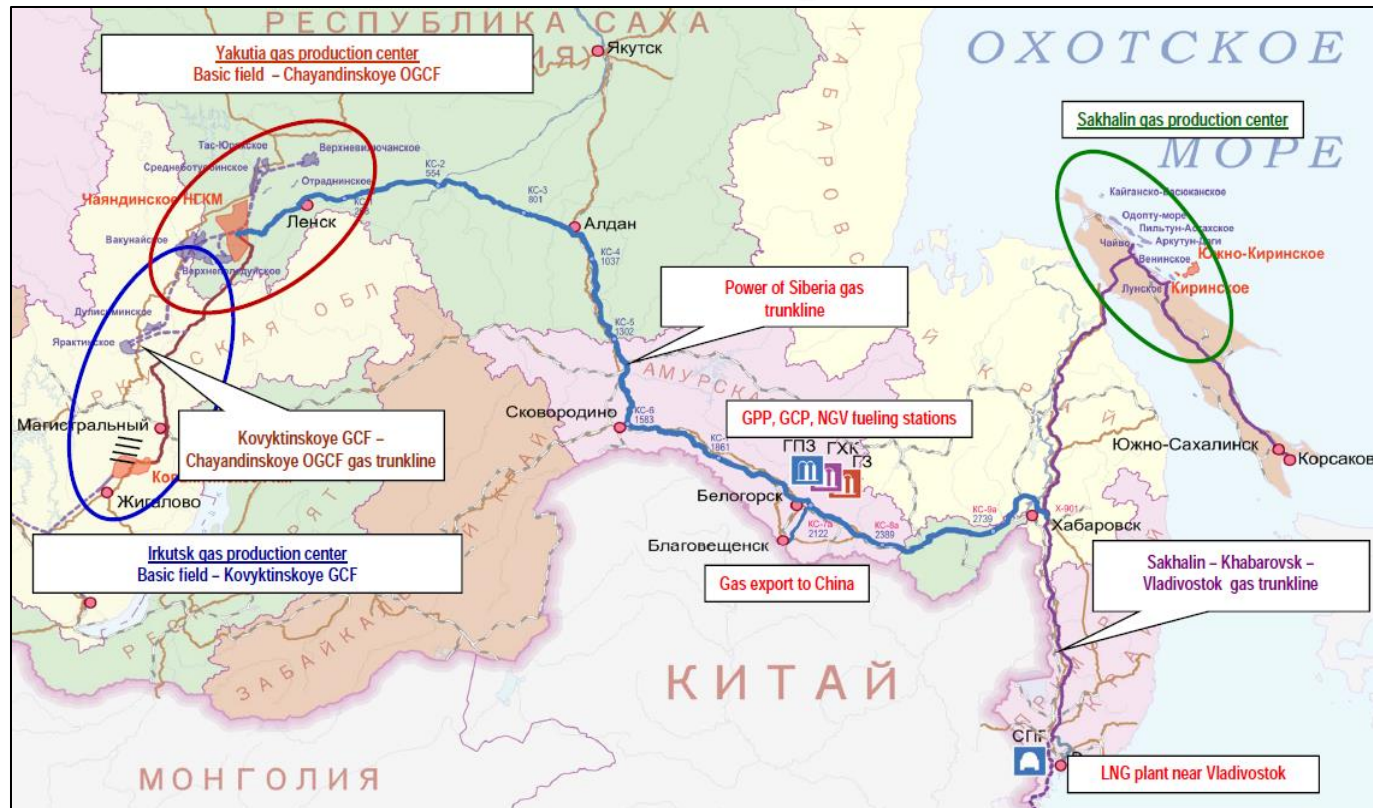
	ABC1 Reserves	C2 Reserves	Resources	Total
	<i>bcm</i>	<i>bcm</i>	<i>bcm</i>	<i>bcm</i>
Siberian Federal District	2600	3600	31700	37900
Far East Federal District Onshore	1400	1100	12000	14500
Sakhalin	900	300	5400	6600
East Siberian and Laptev Seas			5600	5600
Chukchi and Bering Seas			2700	2700
Total	4900	5000	57400	67300

Exports to Asia are part of the Energy Strategy



- **Gazprom's and Russia's expectations for western markets have been undermined by competition and politics, and as a result Asia can offer useful diversification**
- **Russia's East has significant gas resources which can be monetised, and exports can also catalyse infrastructure construction and regional development**
- **Sakhalin 2 LNG has been in production since 2009, but further expansion is likely to involve piped exports as well as further LNG projects**
- **Asia has now become the new frontier in Gazprom's competition both with global producers and with its domestic rivals**

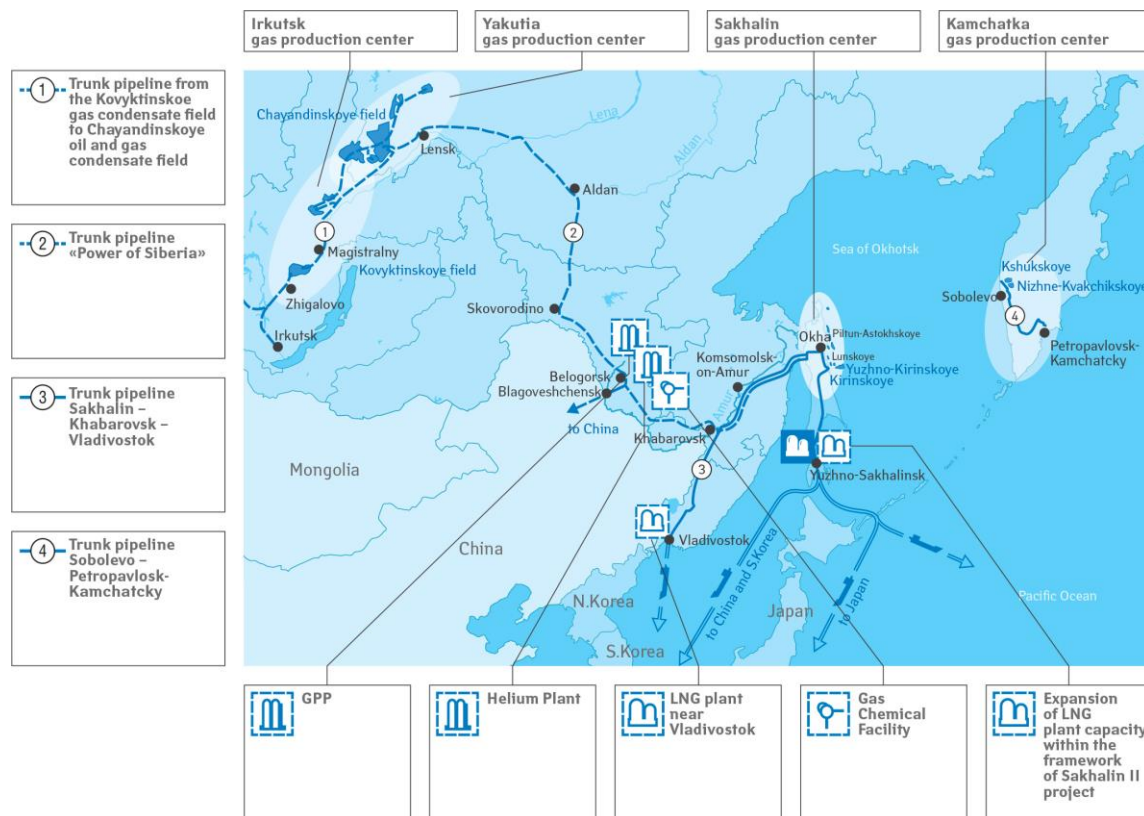
Russia's Eastern strategy is closely related to the ultimate completion of the gas pipeline to China



Source: Gazprom

- Pipeline infrastructure is the key to opening up Russia's vast eastern resource base
- Fields in Irkutsk and Yakutia are effectively stranded unless "Power of Siberia" is constructed
- Sakhalin strategy closely linked to timing of arrival of East Siberia gas in Vladivostok
- Rosneft plans on Sakhalin and in East Siberia could conflict with Gazprom

Economics of Eastern Gas Programme

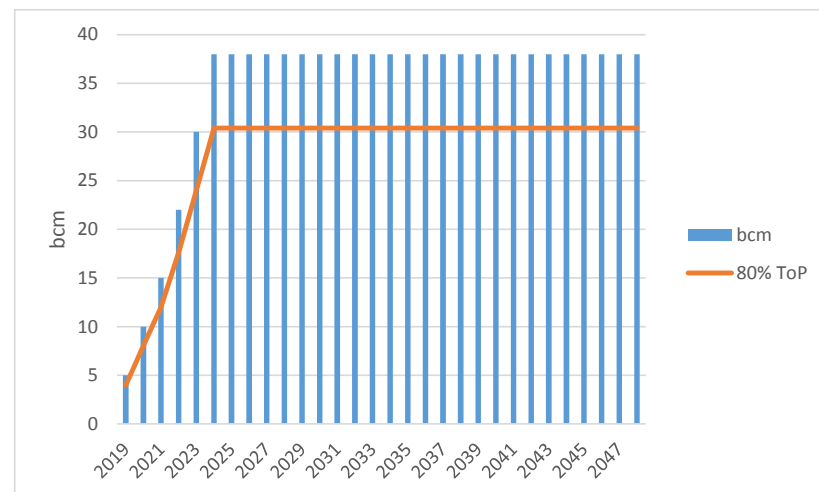


- Chayanda capex - \$13.5bn, Kovykta capex - \$15.5bn, Power of Siberia pipeline capex - \$26bn – total initial capex = c.\$55bn
- Vladivostok LNG – c.\$13.5bn for a 10mmt plant, although costs may be split with Russian state
- Other costs include Blagoveschensk processing facility (c.\$17bn) and extension of Power of Siberia to Kovykta (c.\$6bn)
- Overall suggests breakeven price of c.\$10.5/mmbtu (10% real IRR)

Has the Gazprom-CNPC deal set a benchmark price for Asian imports?

- 30 year contract, with peak flow of 38bcm
- Ramp up period of five years, starting in 2019
- Miller quoted as saying that total value of contract is \$400bn
- However, there are still a lot of uncertainties about the details of the contract
- Range of prices is \$10-11/mcf
- \$/mmbtu value could be as high as \$11.8 depending on calorific value of Russian gas

Profile of Russian gas sales to China

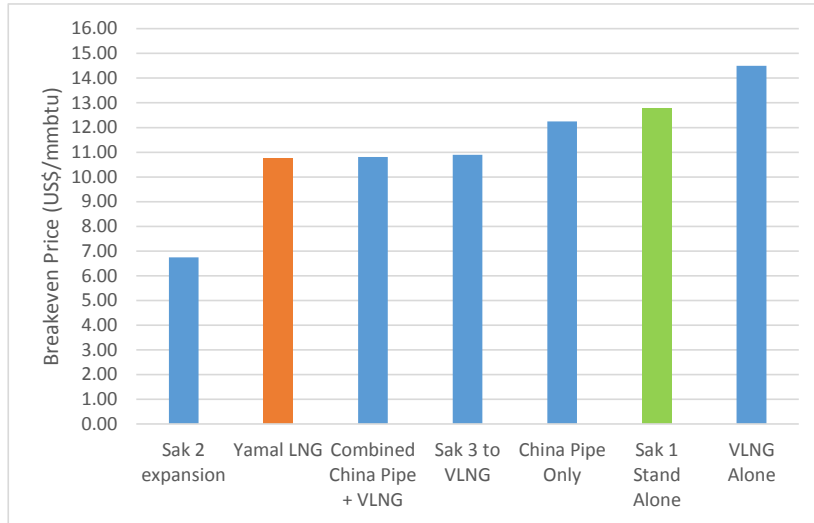


Range of prices in Russia-China gas deal

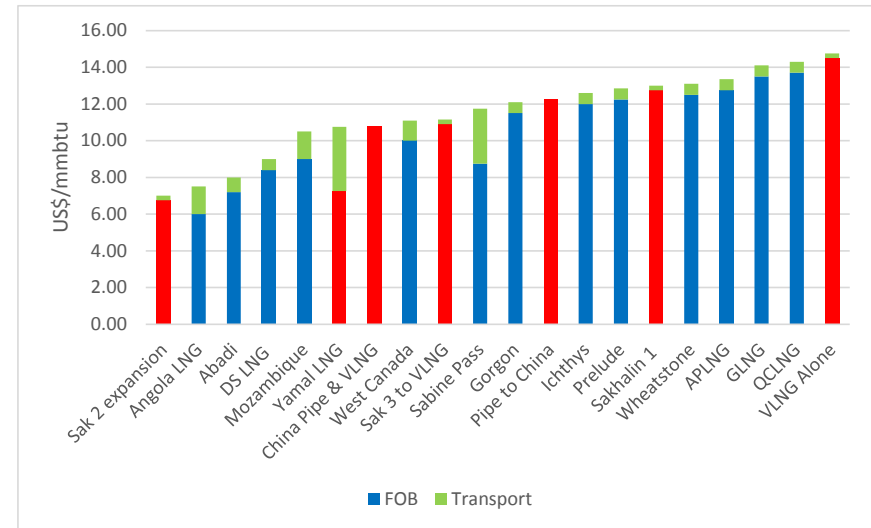
US\$bn	400	390	380	370	360	350
Volume	1032	1032	1032	1032	1032	1032
\$/mcm	388	378	368	359	349	339
US\$/mcf	11.0	10.7	10.4	10.2	9.9	9.6
US\$/mmbtu	10.9	10.6	10.3	10.0	9.8	9.5
US\$/mmbtu*	11.8	11.5	11.2	10.9	10.6	10.3
* possible outcome assuming low Russian gas CV						
kwh/m3						
North Sea	11.6					
Russia	10.8					

Price appears to be reasonable for Russia and is competitive with cost of supply of alternative gas

Comparative cost of Eastern Russian gas supply



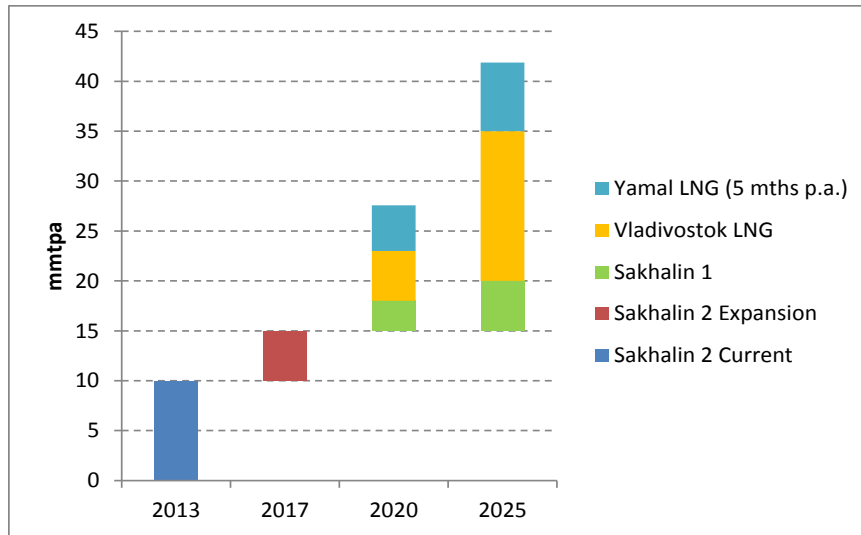
Comparative cost of supply to Asia



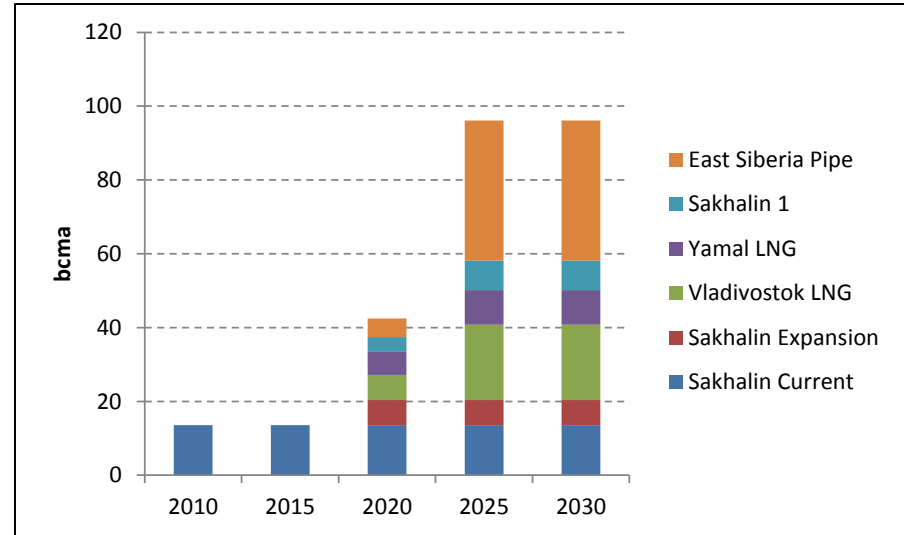
- Despite the high costs of Russia's gas export projects to Asia they can be competitive on cost with other global exporters
- The proximity of the Russian East to Asian markets keeps transport costs down
- The price of the China deal appears to have been struck to allow Gazprom a reasonable (10-12% real) rate of return, as long as it enhances synergy benefits

Export sales based around LNG and piped gas

Four LNG projects could export 40mtpa

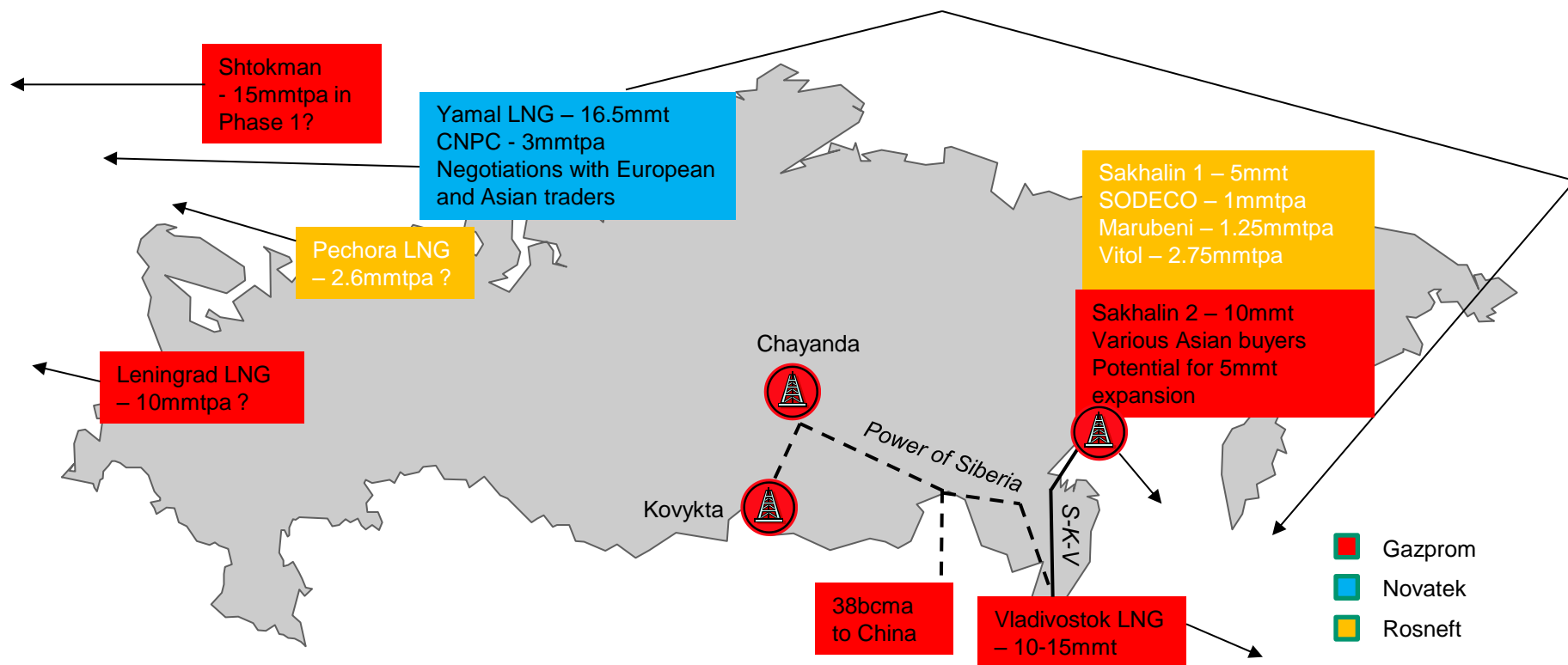


Pipeline exports could take total to c.100bcma



- Russia has multiple options for gas exports via LNG and pipeline
- By 2025 total Eastern exports could reach 100bcma, or two thirds current exports to Europe
- The China pipeline export route could match current gas sales to Germany
- However, decisions about the prioritisation of projects and the sources of gas for liquefaction remain uncertain until full extent of China deal is confirmed and construction of pipe comences

The growing competition between Gazprom and the Independents is now playing out in the Asian export markets

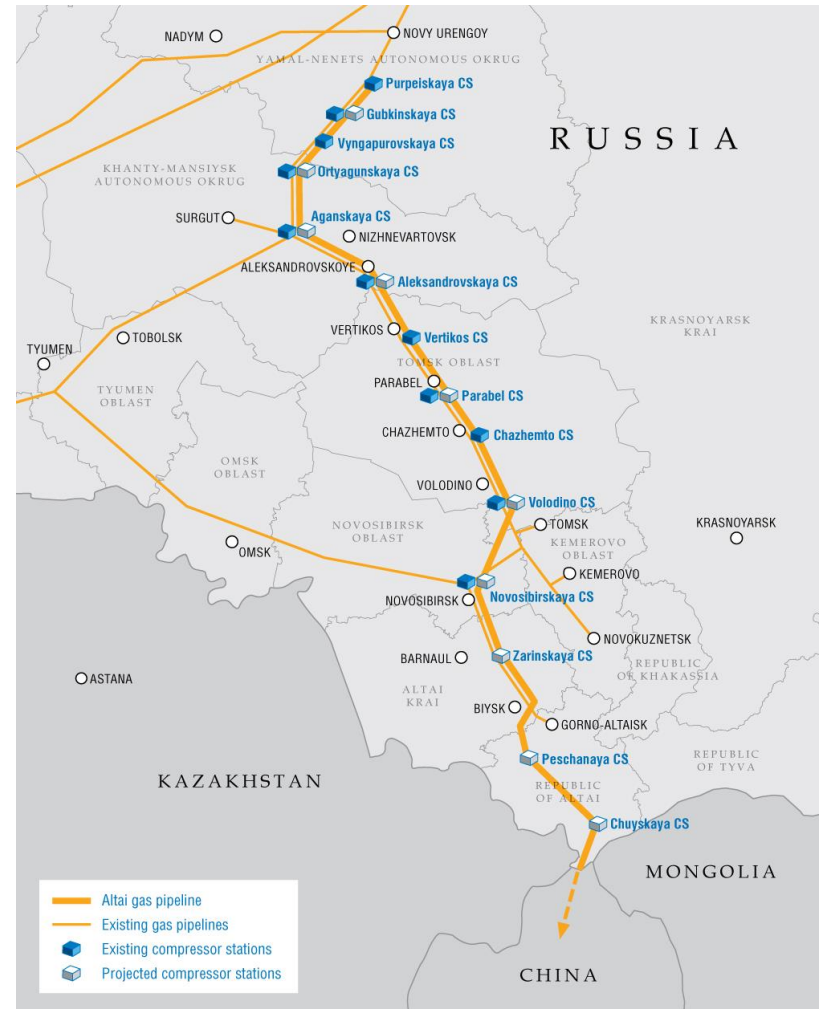


- A significant battle is taking place to become the leader of Russia's LNG strategy
- The ending of Gazprom's monopoly on LNG exports signifies government support for 3rd party exporters – Rosneft and Novatek are actively competing with Gazprom for customers
- Managed competition is the Russian government target, but Rosneft is becoming more assertive – asking for TPA in export pipelines and has formed JV with CNPC in East Siberia

Western export route to China

- Negotiations about the export of gas to western China have begun again
- Would create a link for 30bcm of West Siberian gas to Asia
- Competition with Central Asian gas arriving in Xinjiang
- Price would have to compensate for long transport distance to east coast of China
- \$9.50/mmbtu would be competitive and could generate profitable netback for Gazprom
- Russia creating a global gas hub?

The Altai Pipeline



Conclusions

- Russia has a number of clear incentives to promote gas exports to Asia, which have been heightened by the current events surrounding Ukraine
- Expansion into Asia has been a long-term Russian goal, and the country's eastern regions have significant reserve and production potential
- The exact strategy for export (and domestic) sales will now depend upon the construction of Power of Siberia and Gazprom's strategy to capture synergy benefits
- Gazprom is under some pressure to deliver, as competition is increasing from international and domestic peers
- Rosneft appears to have an aggressive marketing strategy that involves eastern LNG and discussions about access to piped export sales
- Gazprom could further enhance its own position by developing a second pipeline to China, but its price expectations need to be realistic
- Russia's shift to Asia could create significant disturbance in global gas market