

Russia LNG in prime position

The next few years will see the country's gas exporters join the race for markets in Asia

IF THE Kremlin can get its act together, then Russia's fledgling liquefied natural gas (LNG) business could steal a big chunk of expanding Asian demand from emerging suppliers in North America and East Africa. But Russia's success will depend upon president Vladimir Putin successfully realigning various competing interests to accelerate the ambitious expansion plans.

The intent is clear. Last year Putin broke national champion Gazprom's monopoly on LNG exports. Almost immediately local independent Novatek sanctioned its 16.5 million tonne per year (t/y) Yamal LNG scheme that offers some compelling economics and will dwarf Russia's sole liquefaction facility – the smaller Gazprom-operated 9.6 million t/y plant on Sakhalin Island in the Far East.

Novatek and partners Total and China National Petroleum Corporation (CNPC) aim to have the first train up and running in the Russian arctic by early 2017, with the third train complete in 2019.

"We certainly believe that to some extent Yamal is being rushed to market in an effort to get into Asia ahead of US exports," Gavin Thompson, an Asian gas specialist at energy research firm Wood Mackenzie, told *Petroleum Economist*.

Like many other producers, Russia was caught off-guard by the sudden emergence of the US as a potential major exporter. Yet this has provided the impetus that Moscow needed to hasten the development of its LNG sector.

But many observers remain sceptical about Novatek's aggressive targets. "Yamal is in the middle of nowhere, it's going to be built on permafrost, which has never been done. So if they build it in under five years? Then bravo, but I am not sure," Anne-Sophie Corbeau, a senior gas markets analyst at the International Energy Agency, told *Petroleum Economist*.

With a third 4.8 million t/y train mooted for Gazprom's Sakhalin plant, Russia could be adding around 20 million t/y of export capacity – that's nearly as much as Australia's total production today – by 2019. At a stretch, Vladivostok LNG (VLNG), also in the Far East, could add another

10 million t/y within that timeframe. But even with just getting Yamal to market, Russia has a big task, as new supplies from US and Australian projects really start to ramp-up around 2018, although the market could tighten post 2020.

Russia is not exactly flavour of the month in the wake of the Ukraine crisis either.

Still, Yamal, projected to cost \$27 billion, is undoubtedly a mega project – the initial three-train phase is the same size as Australia's flagship North West Shelf plant – and it is fraught with technical risk and logistical complexities. Yet the partners are already planning to double its capacity, with a further three trains eyed between 2022 and 2025.

Shipping concerns

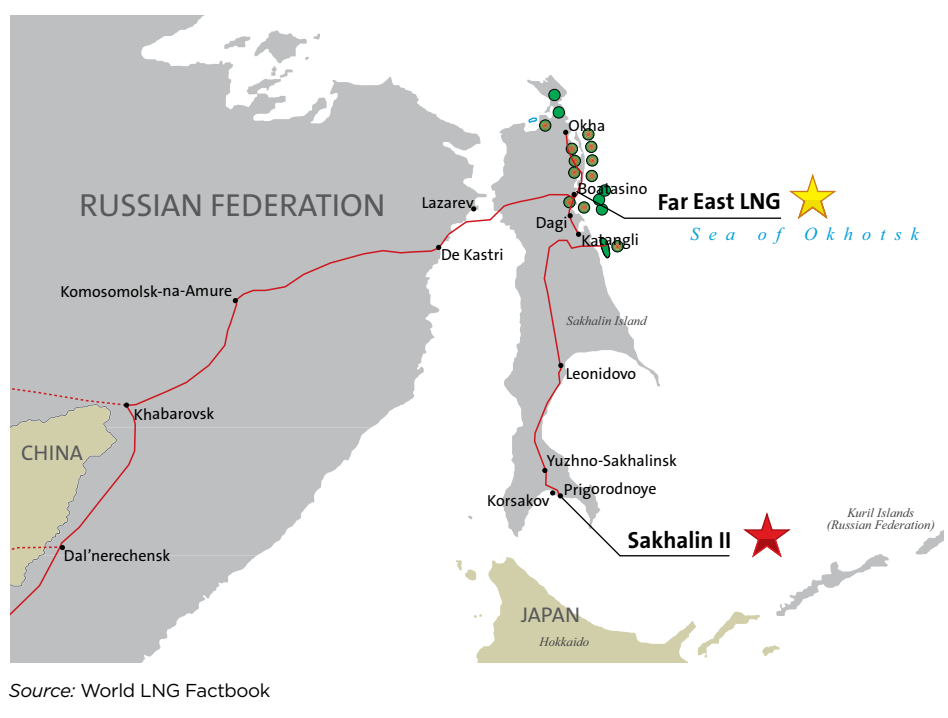
On paper Yamal's cost competitiveness is compelling, says Vitaliy Yermakov, Moscow-based research director at IHS Cera. The biggest uncertainty is shipping the gas through the Arctic's icy waters. Nevertheless, even under the most conservative assumptions, the cost of supply does not exceed \$9-10 per million British thermal units (Btu). Cost of supply could even be

as low as \$5-6/million Btu for four to five months per year when ice-free travel through the Northern Sea Route to Japan is possible – with a shipping cost of \$1-1.5/million Btu – Yermakov told *Petroleum Economist*. That said, shipping costs could jump as high as \$4-5/million Btu if nuclear icebreakers need to be heavily relied upon or the gas has to be shipped long-haul via reloads in Europe. Fortunately, upstream costs at less than \$1/million Btu are extremely competitive, while liquefaction costs are pegged at \$3-4/million Btu, says the consultancy.

Established buyers in northeast Asia are the natural markets for Russia, though for Yamal, given the shipping distance via the Suez Canal, a player such as Total, which has a 20% stake in the scheme, may look at portfolio deals into Asia, Thompson said.

Novatek, the operator with a 60% interest, says that around three-quarters of the planned production has already been sold, destined for both Atlantic and Asian markets. CNPC has agreed to buy 3 million t/y and Spain's Gas Natural 2.5 million t/y. Indian national oil company ONGC Videsh and Japanese players

Figure 1: LNG infrastructure in Russia's Far East



are competing for a 9% stake in Yamal, too.

In the Far East, a plethora of projects are on the drawing board, with a handful of competing players all vying for a slice of the action. "The result is a game of scrabble focused around Sakhalin Island.

It's a question of how to match available resources to all the planned export plants as the interests of the stakeholders are very different," says Yermakov.

Russian independent Rosneft and its US partner ExxonMobil have proposed a standalone 5 million t/y plant, fueled by their Sakhalin 1 resources, projected to start-up in 2019. However they need access to Gazprom's Sakhalin-2 pipelines. But getting Gazprom to budge is easier said than done. Most analysts agree it would make sense to amalgamate the two projects.

Attractive offer

The economics of expanding the Sakhalin-2 export complex look attractive, as it's essentially a brownfield operation. This will make it faster to build than other greenfield projects, too, Corbeau said. "If I were the Kremlin I would really have this one moving forward."

Sakhalin, which ships most of its gas to Japan, has also consistently got the highest netback of any LNG project because of its proximity to the main market, says Tony Regan, a gas specialist at Singapore-based consultancy Tri-Zen.

LNG can be shipped to Japan in less than 24 hours, eliminating storage needs and minimising boil-off losses.

LNG is stored at its boiling point and inevitably small quantities evaporate over time, despite well-insulated storage tanks, meaning the energy value of the stored LNG gradually diminishes.

Elsewhere, Gazprom's proposed two-train 10 million t/y Vladivostok LNG scheme on the Pacific coast will remain a white elephant, unless the China-Russia gas pipeline deal is sealed, which would make it economically viable, says Keun-Wook Paik an expert on northeast Asia energy issues at the Oxford Institute for Energy Studies.

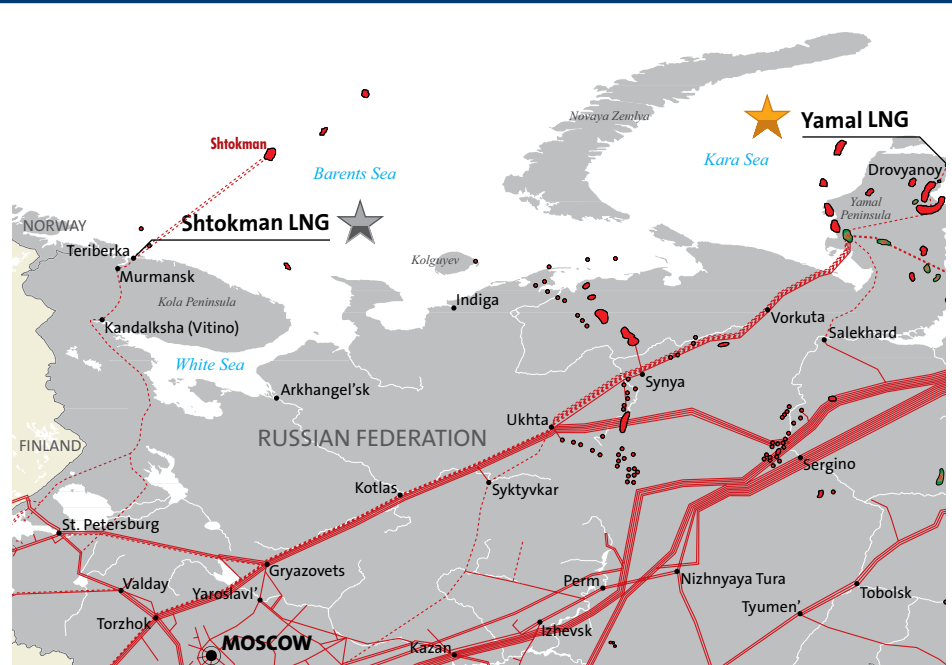
The Russian giant planned to feed the plant with gas from its

Table 1: Existing & Proposed LNG Liquefaction plants

Project	Country	Million tonnes	FID	Start up	Shareholders
Sakhalin LNG	Russia	9.6		2009	Gazprom, Shell, Mitsubishi, Mitsui
Yamal LNG	Russia	16.5	2013	2017/18/19	Novatek, Total, CNPC
Sakhalin T3	Russia	4.8	2014	2018	Gazprom, Shell, Mitsui, Mitsubishi
Vladivostok	Russia	10	2013	2018	Gazprom, Itochu, Japex, Inpex, Marubeni
Yamal 2	Russia	16.5		2022-25	Novatek
Pechora	Russia	2.6		2018	Ch-Oil&Gaz
Sakhalin 1	Russia	5		2019	Rosneft, ExxonMobil
Baltic LNG	Russia	10		2018	Gazprom
Total		75			

Source: Tri-Zen/Petroleum Economist

Figure 2: LNG infrastructure in western Russia



Source: World LNG Factbook

Sakhalin-3 resources, but the suitability of the Yuzhno-Kirinskoe field is in question.

A deal that would use Rosneft's Sakhalin-1 gas has been thrown about, but it seems silly to pipe Rosneft's gas 2,000 kms to Vladivostok when it could be more economically exported from Sakhalin.

Still, it's best to think of VLNG, which is well supported by the Japanese, as an insurance policy, says Yermakov.

The plant, which would be tied to the proposed Power of Siberia trunkline designed to supply China, offers an alternative sales point, limiting China's leverage against Russia.

"Its timing pretty much depends

on the pipeline deal between China and Russia. Once that's finalised it can proceed quickly," adds Yermakov.

Before the surge in US gas production Russia had the luxury of playing games.

But the urgency to beat emerging international producers including North America and East Africa to market will overtake individual turf wars.

The resource base among all the players is sufficient, notes Yermakov. The competing Russian exporters simply need to optimise who is doing what and how the game is played. "In the end president Putin will be the ultimate arbitrator". **DE ●**