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## Western sanctions on icebreakers stall Russia's Arctic LNG expansion

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### Theme

This paper explores the impact of Western sanctions on Russia's development of Liquefied Natural Gas (LNG) in the Arctic. Sanctions aimed at restricting the purchase and construction of icebreaking LNG tankers appear to be particularly effective in delaying the entry into operation of the flagship Arctic LNG 2 project.

### Summary

Novatek's Arctic LNG 2 project faces significant delays due to Western sanctions targeting ship construction and procurement. These sanctions have proved to be successful in restricting the delivery of specialised icebreaking LNG carriers, delaying the project's first shipments initially set for early 2024 and creating uncertainty about its viability. The analysis concludes that a coordinated G7 sanctions policy focused on blocking technology transfer, access to finance and, especially, acquiring transport and logistical capabilities could further derail the project.

### Analysis

Despite the barrage of Western sanctions, Russia's war economy has shown resilience to sustain an expensive conflict. One of the main victims of this geoeconomic war has been pipeline gas exports to the EU, currently at historic lows and expected to decrease further in the future when the transit contract through Ukraine expires on 31 December 2024. Russia holds the world's largest share of natural gas reserves (at around 20%), but without its traditional European market it becomes more difficult to turn this geological gift into revenue. Its main potential market, China, is far away for pipeline development (the long awaited [Power of Siberia II](#)), a project that could take a decade to complete, with a very complex financing and negotiation scheme. LNG, therefore, [has been identified by the Kremlin](#) as a strategic opportunity to export Russian gas to non-European markets.

Since 2009 Russia has exported LNG from Sakhalin-2 in the Far East. The project, now controlled by Gazprom, was developed at the start of the century with technology and know-how from an international consortium led by Shell and subsequently acquired (under political pressure) by Gazprom.<sup>1</sup> Because it was already planned and built when

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<sup>1</sup> Although the Sakhalin-2 project was initially developed during the 1990s by an international consortium without the participation of Russian companies, the paralysis of the project due to administrative obstacles (cont.)

Gazprom took control of Sakhalin-2, it has never been considered fully Russian and the project development did not create substantive domestic capacities associated with LNG technologies. Despite Gazprom's efforts to expand its activities in the LNG sector, [its many failures and delays](#) led the Russian Government to decide to liberalise this sector in 2012, allowing Novatek and Rosneft to develop new LNG projects. With the success of Yamal LNG, Novatek, a private company with close ties to the Kremlin,<sup>2</sup> has been the only national player capable of developing a large-scale LNG project in Russia, breaking Gazprom's monopoly over natural gas exports.

President Vladimir Putin highlighted the strategic importance for Russia of Yamal LNG during its ceremonial opening in 2017 when he said: 'This is perhaps the largest step forward in our development of the Arctic. Now we can safely say that Russia will expand through the Arctic this and next century. This is where the largest mineral reserves are located. This is the site of a future transport artery: the Northern Sea Route.'<sup>3</sup> The Northern Sea Route is a shipping lane along Russia's Arctic coast, stretching from the Kara Sea in the west to the Bering Strait in the east, which has become increasingly navigable as climate change has reduced the Arctic ice cover. It offers a shorter journey between Europe and Asia than traditional routes and avoids critical choke points such as the Danish Straits, Bab el-Mandeb or Malacca. Therefore, for Russia, LNG in the Arctic represents more than just new gas exports. Geopolitically, Novatek's projects are instrumental in developing the strategic Northern Sea Route, enabling Russia to shift its natural gas exports from the lost European market towards Asia.

The Yamal project is an engineering feat that made the first-ever export of LNG from the Arctic possible. For this purpose, the Yamal LNG consortium commissioned the construction of the first-of-its-kind icebreaker LNG tankers in 2014 that were successfully delivered in 2019. After the success of Yamal and with the support of the Russian Government, Novatek embarked on building a second Arctic project in 2017 known as Arctic LNG 2. The project is at a very advanced stage of development, but due to sanctions, difficulties in procuring new icebreaking LNG tankers and other critical technologies are preventing it from coming on stream. The timeline for the first LNG shipments of Arctic LNG2, initially set for early 2024, has been pushed back, creating uncertainty about the project's full operational capacity and commercial viability.

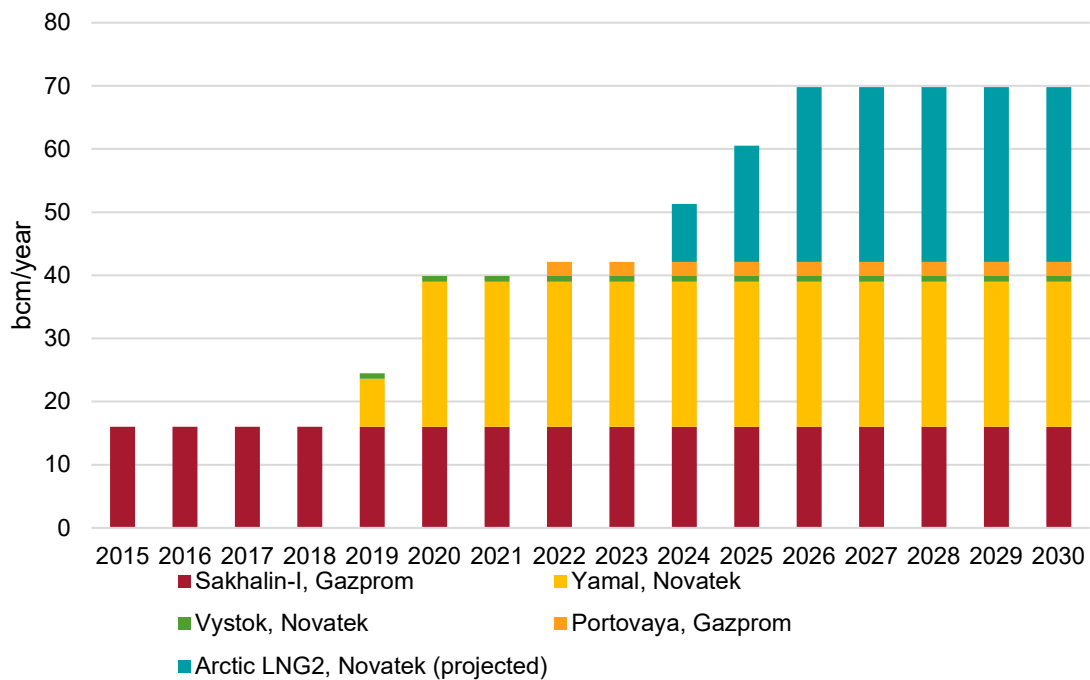
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to the approval of environmental licences forced the entrance of Gazprom as a majority shareholder of the consortium in 2006. Following the Russian invasion of Ukraine in February 2022, Shell decided to give up its remaining 20% share in the project.

<sup>2</sup> Novatek's shareholder structure includes the Russian oligarchs Leonid Mikhelson (24.76%) and Gennady Timchenko (23.49%), the French TotalEnergies (19.4%), Gazprom (9.99%) and other investors (22.36%). In 2022 TotalEnergies attempted to sell its stake in Novatek but was blocked due to sanctions.

<sup>3</sup> Vladimir Putin at Yamal LNG's inauguration speech on 2 December 2017 at Sabetta.

**Figure 1. Russia's LNG development 2015-23 and projected for 2024-30**



Source: [GIIGNL 2023 Annual Report](#).

Western sanctions on the Russian energy sector are wide-ranging, but the most effective to date appear to be those focused on limiting Novatek's growth in the LNG sector. Those aimed at preventing Novatek from acquiring new icebreaker LNG carriers for its nearly completed Arctic LNG-2 project are a prime example of the coercive capacity of this mechanism. Sanctions are a double-edged sword that, to be successful, require inflicting more damage on the target of the sanctions (in this case Russia) than the issuer of the restrictions (the US and the EU). Sanctions on Russian new LNG development are a good example of such an approach because, without affecting the EU's security of supply or the stability of international gas markets, they impose a high cost on the commercial outlook of the Russian gas sector.

### 1. LNG logistics in the Arctic

From November to June, during the winter season, LNG exported from the Arctic (where Russia holds most of its unexploited vast natural gas reserves) needs to use special ice-breaking LNG carriers to access international markets. The Yamal LNG project was the first and, as of today, the only project in the world to employ this type of vessel to export its natural gas. The project was led by Novatek (50.1%) in a consortium formed together with TotalEnergies (20%) and the Chinese CNPC (20%) and Silk Road Fund (9.9%). It reached Final Investment Decision (FID) in late 2013, a few months before the Euromaidan and the pro-Russian protest in eastern Ukraine, which eventually led to the Russian-Ukrainian war. The project advanced despite [US sanctions](#) restricting Novatek's access to Western financial markets in 2014 thanks to a [US\\$12 billion loan](#) injection from the Export-Import Bank of China and the China Development Bank in 2016. This has been a common mechanism in Russia's recent LNG expansion: when sanctions prevent the arrival of Western capital or technology, China steps in to fill the gap.

The success of the project was to overcome a new barrier in natural gas logistics, demonstrating the economic viability of developing these activities in the most extreme conditions. The port where Yamal LNG is located, Sabetta, is inaccessible to conventional ships during winter months as it is surrounded by icy waters that prevent safe navigation. For the realisation of the project, Hanwha Ocean Shipping, formerly known as Daewoo Shipbuilding & Marine Engineering (DSME), was commissioned to build 15 icebreaking vessels, the first in the world, at a cost of US\$320 million each. The 15-vessel fleet valued at US\$4.8 billion, is today responsible for exporting Yamal-produced LNG to European and Asian markets. These vessels are owned and operated by four shipowners: Sovcomflot,<sup>4</sup> Teekay (in partnership with China LNG Shipping), Dynagas and MOL LNG (in partnership with China Shipping Group) (see Figure 2).

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<sup>4</sup> Due to sanctions, Sovconflot transferred to Dubai based Sunship Mgmt its ice-breaking LNG tanker. It later transferred it again to Gas Carriers Scf, both front companies based in the UAE.

**Figure 2. Fleet profile of the 15 active icebreaking LNG carriers in the world**

Vessel name	Owner	Operator	Operator nationality	Builder
Eduard Toll	Seapeak CLSICO JV	Teekay Shpg. (Seapeak)	Canada/China JV	DSME/ Hanwha
Rudolf Samoylovich	Seapeak CLSICO JV	Teekay Shpg. (Seapeak)	Canada/China JV	DSME/ Hanwha
Georgiy Ushakov	Seapeak CLSICO JV	Teekay Shpg. (Seapeak)	Canada/China JV	DSME/ Hanwha
Nikolay Yevgenov	Seapeak CLSICO JV	Teekay Shpg. (Seapeak)	Canada/China JV	DSME/ Hanwha
Vladimir Voronin	Seapeak CLSICO JV	Teekay Shpg. (Seapeak)	Canada/China JV	DSME/ Hanwha
Yakov Gakkel	Seapeak CLSICO JV	Teekay Shpg. (Seapeak)	Canada/China JV	DSME/ Hanwha
Vladimir Rusanov	Arctic Blue LNG (MOL)	MOL LNG	UK/Japan	DSME/ Hanwha
Vladimir Vize	Arctic Green LNG (MOL)	MOL LNG	UK/Japan	DSME/ Hanwha
Nikolay Urvantsev	Arctic Purple LNG (MOL)	MOL LNG	UK/Japan	DSME/ Hanwha
Christophe de Margerie	Gas Carriers Scf (formerly Sovcomflot)	Gas Carriers Scf (formerly Sovcomflot)	UAE (formerly Russia)	DSME/ Hanwha
Boris Vilkitsky	Dynagas	Dynagas	Greece/China JV	DSME/ Hanwha
Boris Davidov	Dynagas	Dynagas	Greece/China JV	DSME/ Hanwha
Boris Vilitsky	Dynagas	Dynagas	Greece/China JV	DSME/ Hanwha
Georgiy Brusilov	Dynagas	Dynagas	Greece/China JV	DSME/ Hanwha
Nikolay Zubov	Dynagas	Dynagas	Greece/China JV	DSME/ Hanwha

Source: the author based on available open sources.

To optimise the voyages of these specialised ships, the natural gas they carry is transferred to conventional LNG carriers in warm-water ports. These transshipment services, essential for Russian LNG logistics, occur mainly in Zeebrugge (Belgium) and Montoir-de-Bretagne (France). In winter, permanent darkness and ice in the Arctic Ocean make it impossible for LNG carriers, even icebreakers, to travel in an eastward direction to reach Asian markets through the Bering Strait. This forces shipments to be re-routed through European ports servicing LNG from Yamal if they want to reach Asian markets.

Unlike crude oil transshipments, the technical specification of LNG transshipment operations means that they must be carried out in specialised ports. Russia has built two floating terminals to carry out these transshipments in national waters in Murmansk, on

the western Arctic, and Kamchatka, on its eastern side, but US sanctions imposed on both projects in September 2023 have delayed their entry into full operation. [The US sanctions](#) target the company's operating the Murmansk and Kamchatka floating terminals, Arctic Transshipment LLC,<sup>5</sup> which has halted the mostly Western LNG carrier operators from delivering or picking up LNG from the terminals. [The EU is also likely to ban such services](#) in European ports as part of the forthcoming 14<sup>th</sup> round of sanctions on Russia.

## 2. Sanctions and the LNG industry

Most LNG carrier owners and operators are companies with a good reputation that depend on their image for their commercial success. LNG vessels are valuable assets that can only operate under strict technical specifications, which limits their operability to a small number of ports. This creates a profound vulnerability for LNG exporters to US sanctions. Making use of the centrality of the US in the global economy, the White House can impose 'secondary sanctions' on foreign firms, which are forced to choose between trading with US sanctions targets or forfeiting access to the US financial system. Secondary sanctions go beyond targeting the primary sanctioned country or entity. Instead, they focus on third-party individuals, businesses or countries that conduct business with the primary sanctioned entity, in this case, Yamal LNG 2. The goal of these secondary sanctions is to further isolate the targeted country or entity by creating a broader deterrent effect that includes non-US actors.

As a small market (there are roughly 7.500 oil tankers compared with [772 vessels in the LNG industry](#)), companies operating in this market cannot afford to be sanctioned and excluded from the US financial system. Most shipyards, LNG tanker owners, insurance companies and LNG terminals are operated by Western or internationally embedded companies. This explains why Iran, a country proficient in sanctions evasion and oil smuggling with enough in-house engineering capacities, has not been able to successfully develop LNG export projects, despite sharing the huge gas field South Pars/North Dome from where QatarEnergies exports around 20% of the world's LNG. This reality stands in stark contrast to the crude oil trade, which has shown a remarkable ability to effectively circumvent the sanctions and restrictions recently imposed on Russia, Iran and Venezuela by the US and the G7. LNG is therefore a fertile ground for the imposition of sanctions as it is a small transparent market with few service providers and a very specific technology.

## 3. US sanctions on Russian Arctic LNG 2

After the success of Yamal and with the support of the Russian government, Novatek embarked on building a second Arctic project in 2017 known as Arctic LNG 2. The Arctic LNG 2 Project, located on the Gydan Peninsula, is a major natural gas upstream initiative led by Novatek with an initial total cost of more than [US\\$20 billion](#), with TotalEnergies, the Chinese CNPC and CNOOC, and the Japanese Mitsui and JOGMEC (10% each) as international partners. The project is designed to export 27 bcm of LNG annually,

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<sup>5</sup> Arctic Transshipment LLC is a subsidiary of Novatek with a 10% participation by TotalEnergies.

becoming the largest LNG project in Russia, doubling Novatek's export capacity when fully completed (see Figure 1).

The first US sanctions affecting Russian LNG development were imposed in 2014 following Russia's annexation of Crimea. These sanctions targeted Novatek's access to Western financial markets and were part of broader measures targeting Russia's financial, energy and defence sectors. They restricted entities from providing services or technology to support Russia's energy exploration or production in Arctic offshore and deepwater. In April 2022 the EU also included a ban on the transfer of key liquefaction technologies to Russia in its [fifth sanction round](#).

For the Arctic LNG 2 project, the first specific sanctions were imposed in September 2023, aiming to restrict the project's development by targeting Russian engineering firms and their subsidiaries involved in the project, as well as firms from third countries attempting to circumvent these restrictions. These sanctions also included the two Arctic transshipment vessels designed to offer these services in Russian waters to optimise ice-breaker services in Murmansk and Kamchatka and avoid the reliance of these operations on EU ports. As of today, these two transshipment platforms remain idle.

In November 2023 sanctions directly targeted the company behind the Arctic LNG 2 project, implementing comprehensive restrictions on dealings with the company by US persons and entities, and potentially by non-US entities due to secondary sanctions risks, increasing the pressure on technology procurement for the project. In February 2024 the US started to focus its sanctions on the procurement of new LNG ice-breakers tankers made in Russia by Novatek when it included the Zvezda shipyard as a sanctioned entity. The US Treasury also included in the sanctions list the Russian tanker operator Sovcomflot and [Sun Ship Management](#), a Dubai-based front company to which Sovcomflot had transferred a large part of its fleet, including LNG tankers.

#### 4. Sinking the fleet: preventing Russia from acquiring icebreaking LNG carriers

For its next big project, Arctic LNG 2, Novatek and its project partners had placed orders for 15 Arc7<sup>6</sup> LNG carriers to be built at the Zvezda shipyard in Russia and for six more at Korea's Daewoo Hanwha shipyards. These icebreakers are an improvement over the previous design. According to [Vitaly Yermakov](#), these upgraded Arc7s for Arctic LNG 2 are expected to have improved capabilities to move independently through the ice. With these new vessels, the Northern Sea Route to Asia was anticipated to be open for a longer period of time, reducing Novatek's dependence on the European market for most of the year. Despite the previous success of Hanwha Ocean shipyards, Novatek opted for the construction of icebreakers on Russian soil. [Political pressures](#) to develop the value chain in Russia and a [subsidy scheme on the cost overrun](#) of the vessels compared with the Korean offer would explain this riskier decision.

In Russia, Novatek planned to build 15 Arc7 Ice-Class at the shipyard of Zvezda, supported technologically by Samsung, and with the involvement of other European

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<sup>6</sup> Arc7 Ice-Class LNG tankers are specialised vessels designed to transport liquefied natural gas through extremely harsh Arctic conditions, capable of navigating independently through ice up to 2.1 metres thick.

companies such as [GTT](#), for the gas membranes, and [MAN](#) and [Wärtsilä](#) for the propulsion systems. However, due to [US and EU sanctions](#) these firms stopped servicing the shipyard and left the project gradually from 2022. The exact status of the LNG tankers is unknown, but [High North News](#) indicate that two of the vessels were close to completion by the time Western firms left and might be already in the water pending some final work. The other three tankers under construction lack critical technology (membrane and storage devices) and there are doubts as to whether they will be able to become operational without technological assistance from third parties. The other 10 ships initially planned for construction at Zvezda are, in the current geopolitical and sanctions context, a near-impossible mission.

To try to solve this issue, [Novatek has sent 200 skilled personnel](#) to the Zvezda Shipyard to try to materialise the delivery of the most advanced first two Arc7 LNG carriers. [Currently there are no manufacturers of membrane cargo containment systems for LNG tankers](#) on the Russian market, despite the Kremlin's efforts to achieve import substitution of key technologies used in the oil and gas sectors. According to [High North News](#), if Novatek succeeds in getting the first two icebreakers up and running, it could export around 2.8 bcm of LNG per year, a fraction of the 9 bcm of the train 1 project capacity and the 27 bcm of the entire project. With the help of conventional LNG carriers during summer and the use of the sanctioned transshipment terminals at Murmansk and Kamchatka, this figure could be higher. Novatek should, in any case, find new buyers willing to assume the risks of sanctions after the [declaration of force majeure](#) of Arctic LNG 2 offtake contracts in December 2023. Potential alternative buyers, presumably Chinese, would face the risk of secondary US sanctions and foreclosure from the rest of the global financial market. Without a US Treasury waiver, which is highly unlikely, the leading Chinese LNG players (Sinopec, PetroChina, CNOOC and Jovo Energy) would not be able to become involved in the project without developing opaque innovative mechanisms through front companies.

The stalling of this construction is particularly painful for Russian ambitions in the Arctic. These 'made in Russia' ships were to be operated by the state-owned company Sovcomflot. The success of their construction allowed for the development of domestic capacities from construction, operation and marketing of LNG in the Arctic, thus serving Russian interests of pivoting its gas exports from the EU to Asia and dominating the Northern Route. The disruption of Korean cooperation seems critical. [Russia saw South Korea](#) as a temporary technology supplier that would eventually end up ensuring the development of domestic capabilities and self-sufficiency in LNG tanker construction. Samsung's exit from Zvezda would have come too soon to affect the technology transfer that was expected from this partnership.

For the six remaining Arc7 LNG carriers being built at Korea's Hanwha Ocean shipyards, even though three of them are already built, sanctions have blocked their transfer to its operators, Sovcomflot and Japan's MOL LNG. The question now is what the future of the icebreakers will be. In principle, Hanwha Ocean will struggle to find an alternative to the Russian market. As LNG icebreakers, their fuel consumption is much higher than that of conventional ships and up to [50% more expensive](#). Hanwha has expressed its discomfort with these sanctions, and although constrained to comply with them, unsuccessfully attempted to transfer the icebreakers to an unsanctioned front company



in the United Arab Emirates in February 2024. Since there are no other LNG projects with demand for these type of vessel in the world, Hanwha and MOL LNG are already studying how they could be converted into Floating Storage and Regasification Units (FSRUs) in other markets if the [transfer to Russia remains blocked](#). Coordination with the South Korean government for the success of sanctions is key in light of the critical involvement of its companies in the entire Russian LNG value chain in the Arctic.

**Figure 3. Status of ice-breaker LNG vessels orders**

Name vessel	Operator	Operator nationality	Builder	Status
Alexey Kosygin	Sovcomflot	Russia	Zvezda Shipyard	5 under construction, 10 additional ordered by Sovcomflot. Questions remain surrounding the readiness of the membrane of the LNG storage system. French company GTT and American General Electric, providers of key equipment, pulled out of Russia in 2023. Formerly built by Zvezda and Samsung, but the latter left the project in 2022. The Alexei Kosygin and Pyotr Stolypin vessels are close to completion.
Pyotr Stolypin	Sovcomflot	Russia	Zvezda Shipyard	
Sergei Witte	Sovcomflot	Russia	Zvezda Shipyard	
Konstantin Posyet	Sovcomflot	Russia	Zvezda Shipyard	
Viktor Chernomyrdin	Sovcomflot	Russia	Zvezda Shipyard	
Pyotr Kapitsa	Formerly Sovcomflot	-	DSME/Hanwha	Western sanctions rendered Sovcomflot unable to provide payment resulting in Hanwha cancelling the order. The company, however, completed them at its own expense and is now looking for alternative buyers.
Lev Landau	Formerly Sovcomflot	-	DSME/Hanwha	
Zhores Alferov	Formerly Sovcomflot	-	DSME/Hanwha	
Ilya Mechnikov	MOL LNG	Uk/Japan	DSME/Hanwha	Not delivered.
Nikolay Basov	MOL LNG	Uk/Japan	DSME/Hanwha	Not delivered.
Nikolay Semenov	MOL LNG	Uk/Japan	DSME/Hanwha	Not delivered.

Source: the author based on available open sources.

## Conclusions

### The time is now for maximum pressure on Arctic LNG2 progress

Novatek's Arctic LNG 2 project faces significant delays due to recent Western sanctions targeting ship construction and operations at critical shipyards. These sanctions have impacted the Zvezda shipyard in Russia and indirectly the South Korean Hanwha Ocean facilities, restricting their ability to deliver specialised icebreaking LNG carriers essential for the project's Arctic operations. Consequently, the timeline for the first LNG shipments, initially set for early 2024, has been pushed back, creating uncertainty about the project's full operational capacity and commercial viability.

These sanctions delay the start-up of the project and expose Russia's weakness in the LNG market. They impose a significant financial and reputational cost on the rising star and leading company in the sector, Novatek, and consequently on Russia's growth outlook in the LNG segment. Before Russia successfully develops its technological and logistical capabilities in the Arctic, it is time now for the G7 to implement a coordinated policy of sanctions on Russia's gas development in the region. Sanctions should focus on blocking technology transfer, access to finance and, especially, acquiring transport and logistical capabilities. A maximum pressure strategy could derail the Arctic LNG 2 project and make it financially unviable, at least in the short term. Icebreaker procurement seems to be one of Russia's weak spots, and energy sanctions should continue to be targeted in that direction.