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**Russian Policies for Development of the Northern Sea Route: An Assessment of Recent Developments and Implications for International Users<sup>1</sup>**

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**Introduction**

The Russians government's ambitions in the Arctic have changed. The successful completion of Yamal LNG and the Novy Port oil projects demonstrated that the potential for resource extraction with maritime logistics was greater than thought just ten years ago. This insight matured at the same time as it became clear that international transit shipping would not take off as anticipated in 2010-12. Very ambitious plans for development of resource projects along the Siberian coast have become a cornerstone of state policy.

The new goal is to establish year-round navigation on the NSR, including toward the east to facilitate exports to Asian markets. To do this requires a substantial increase in the number of icebreakers as well as investments in other infrastructure. The basic rationale of the Russian plans is now opposite of the view prevailing before 2012. At that point, it was thought that the opening of the NSR for international transit would generate revenue to help pay for new infrastructure, including icebreakers. Now it is clear that international shipping companies will not start to seriously consider using the NSR unless stable year-round navigation serving resource extraction projects in the Russian Arctic has been established.<sup>2</sup> Thus, for international shipping, key questions concern whether infrastructural development plans are realistic. A central, related question is whether Russia will really have enough icebreakers available to support a substantial increase in international transit use, and in what time frame.

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<sup>2</sup>«Вячеслав Рукша: 'Росатом должен обеспечить российские мегапроекты в Арктике' [Vyacheslav Ruksha: «Rosatom must facilitate Russian mega-projects in the Arctic»], Rosatom (source Novosti), 9 April 2019. [https://www.rosatom.ru/journalist/interview/vyacheslav-ruksha-rosatom-dolzhen-obespechit-rossiyskie-megaproekty-v-arktike/?sphrase\\_id=840187](https://www.rosatom.ru/journalist/interview/vyacheslav-ruksha-rosatom-dolzhen-obespechit-rossiyskie-megaproekty-v-arktike/?sphrase_id=840187)

Simultaneously, the increasing role of destination shipping has also meant that Russia can unilaterally set the terms for the most dynamic segment of Arctic shipping. How have international shipping companies been affected?

Increased Russian interest in Arctic development, and the NSR in particular, led to a re-evaluation of the organizational structure and an internal struggle for authority over the sea route. How should the outcome of this struggle be interpreted and what are its implications for shippers?

### **The icebreaker construction program**

Russia currently has four working nuclear icebreakers, operated by Atomflot, a subsidiary of the state nuclear energy corporation Rosatom. Construction of the Arktika series of three new 60 MW icebreakers began in 2014. The first started undergoing final sea trials in June 2020, and the completion of the two others is expected in 2021 and 2022. Accompanying the more recent, ambitious plans for industrial development in Russia's Arctic, it has been decided to build two more such vessels, to be delivered in 2024 and 2026.<sup>3</sup> By then, three of the four currently operating icebreakers would likely be taken out of service.

A decision was also made in early 2020 to build a 120 MW super-icebreaker Lider (Leader)-class vessel, which is twice as powerful as the Arktika series, at a cost of some USD \$1.7 billion (120 billion rubles), fully financed by the federal budget.<sup>4</sup> It is designed to break through 4.3m-thick ice and open a channel 50 meters wide, which means it would be capable of navigating the whole NSR any time of the year and escorting very big ships. Construction started at the new giant yard Zvezda in the Far East in the summer of 2020 and completion is expected in 2027.

A formal decision to build two additional Lider-class vessels has not yet been taken, but their construction is included as a goal in Russia's new Arctic strategy, published in October 2020.<sup>5</sup>

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<sup>3</sup> «Росатомфлот подписал договор на строительство третьего и четвертого универсальных атомных ледоколов проекта 22220» [Rosatomflot signed contract for construction of the third and fourth universal nuclear icebreaker of project 22220], Rosatom press release, 23 August 2019. [https://www.rosatom.ru/journalist/news/rosatomflot-podpisa-dogovor-na-stroitelstvo-tretego-i-chetvertogo-universalnykh-atomnykh-ledokolov-/?sphrase\\_id=828033](https://www.rosatom.ru/journalist/news/rosatomflot-podpisa-dogovor-na-stroitelstvo-tretego-i-chetvertogo-universalnykh-atomnykh-ledokolov-/?sphrase_id=828033)

<sup>4</sup> «Ледокол «Лидер» введут в эксплуатацию в 2027 году» [The icebreaker 'Lider' will be put in operation in 2025], *Strana Rosatom*, 27 January 2020. <http://strana-rosatom.ru/2020/01/27/ледокол-лидер-введут-в-эксплуатаци/>

<sup>5</sup> Стратегии развития Арктической зоны Российской Федерации и обеспечения национальной безопасности на период до 2035 года [Strategy for development of the Arctic zone of the Russian Federation until 2035], Presidential Decree No. 645, 26 October 2020.

Rosatom has presented a sketch, indicating that the vessels could be delivered in 2032 and 2034, respectively.<sup>6</sup>

Atomflot has also launched plans to construct a series of 40 MW icebreakers powered by LNG. In the most recent plans for deployment of Atomflot’s icebreaker fleet, the LNG-powered icebreakers would take care of the western sector of NSR, whereupon all the nuclear icebreakers would be moved into the eastern sector.<sup>7</sup>

### Adding up investments

Calculating the cumulative expenditures for icebreaker construction presented above is fraught with complications. The numbers include already committed sums and planned expenses, as well as uncommitted budget allocations and estimated costs. Most of the sums have been announced in the period 2017-19 and do not include any adjustments. But the budget for the first three 60 MW icebreakers was made in 2014 and has been adjusted in line with later reported price increases.



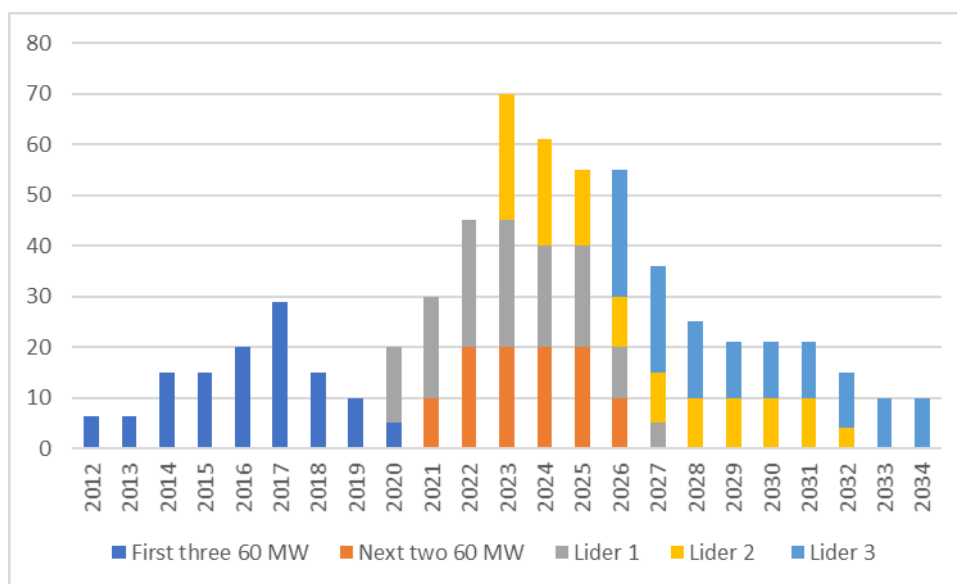
Figure 1: Projected deployment of Atomflot’s icebreakers 2025-2030.

<sup>6</sup> К. Yu.Кnyazevskiy, «Развитие атомного ледокольного флота для обеспечения крупнейших национальных Арктических проектов» [Development of the nuclear icebreaker fleet to facilitate large national projects]. Atomflot, Presentation, St. Petersburg 20-21 June 2019.

<sup>7</sup> Вячеслав Рукша, op.cit.

*Legend: Green = First series of new 60 MW icebreakers; red = 50 years of victory icebreaker; blue = new LNG powered icebreakers; white = second series of new 60 MW icebreaker; orange = first 'Lider-class' 120 MW icebreaker.*

Source: Atomflot, 2019.



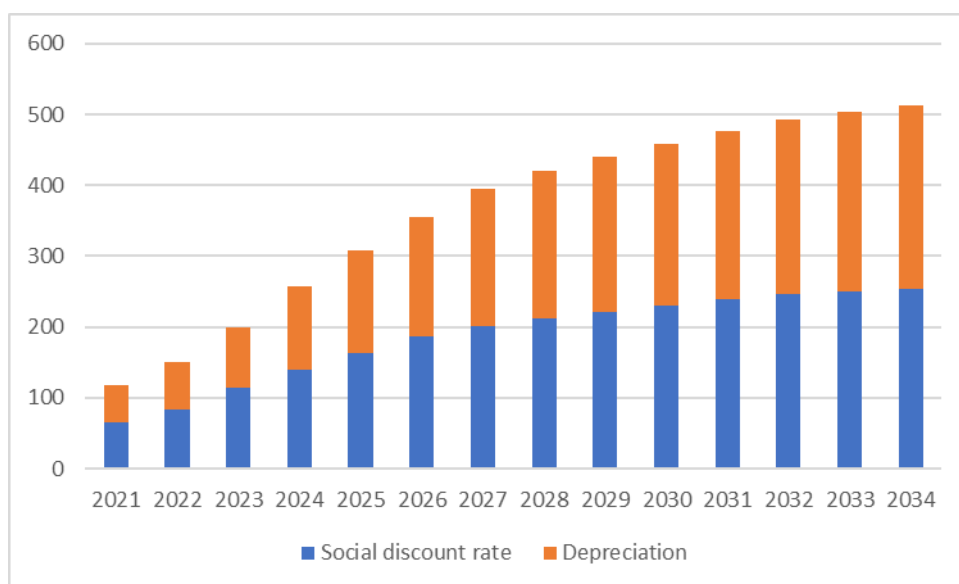
**Figure 2: Projected budgets for construction of nuclear icebreakers (bill. 2019 rubles).**

*Data compiled from various sources. Implementation schedules according to projections from Atomflot. Distribution of budgets over years calculated by author.*

Altogether this nuclear icebreaker construction program amounts to at least some USD \$9-10 billion (597 billion in 2019 rubles). If all the icebreaking needs in the western part of the NSR (Ob Bay, mouth of Yenisei, Kara Sea), are, as announced by Rosatom, covered by new LNG-powered icebreakers, then logically all the costs of building new nuclear icebreakers must be attributed to development of the eastern direction of NSR and the establishment of year-round passage. This raises the question of whether the investments are likely to be repaid by income from services to increased traffic in the eastern direction on NSR.

To estimate annual capital costs, we calculate accumulated investments starting in 2020, assuming that icebreakers have a 30-year service life during which the investments are depreciated linearly, i.e. 3.3 per cent per year. We add a social discount rate (interest) of 3.2 percent, in line with recommendations from the literature.<sup>8</sup>

<sup>8</sup> Tatiana Kossova and Maria Sheluntcova: Evaluating performance of public sector projects in Russia: The choice of a social discount rate. *International Journal of Project Management*, Volume 34, Issue 3, April 2016, Pages 403-411. <https://www.sciencedirect.com/science/article/abs/pii/S0263786315001891?via%3Dihub>



**Figure 3: Estimated annual capital costs for new nuclear icebreakers in million USD.**

Following these assumptions, the annual capital cost will grow from 9 billion rubles in 2021 to 39 billion in 2034, corresponding to USD \$120 million and USD \$520 million at an exchange rate of 1:75. In addition to these costs there are of course operating costs, which are hard to calculate because of lack of data.

### Income

The icebreaker construction program is based on an assumption of rapidly growing traffic on the NSR. According to Atomflot, in the period 2025-30 cargo shipped eastwards on the NSR to the Asian market will grow to 20 million tons annually, compared to 60 million tons shipped westwards to Europe. After 2030 Atomflot believes cargo flows eastwards should increase to 70 million tons, reflecting the expected increased icebreaking capacity (three Leaders’), whereas westward flows should drop to 30 million tons.<sup>9</sup> An overwhelming share of this cargo will be LNG from projects in the Ob Bay area.

How much will the cargo owner pay for icebreaking? As reported by Vedomosti, referring to Novatek, transporting 21.1 mill. tons of LNG eastwards to Asian markets via a trans-shipment facility in Kamchatka represents an annual saving of USD \$225 million compared to the western route.<sup>10</sup>

The specially designed icebreaking LNG carriers for Yamal LNG and Arctic LNG-2 (and other planned LNG projects) will not require icebreaking assistance for the whole year,

<sup>9</sup> К. Ю.Князевский, op. cit.

<sup>10</sup> «Строительство СПГ-терминала «Новатэка» на Камчатке начнется через год» [Construction of Novatek’s LNG terminal on Kamchatka begins I one year], *Vedomosti*, 19 March 2019. <https://www.vedomosti.ru/business/articles/2019/03/19/796814-spg-terminala-novateka>

however. In principle a cargo owner is unlikely to pay for the service in more or less ice-free periods. Thus, the question becomes, “What might be the income from servicing voyages in the ice-infested season?” One can envisage hard negotiations on this point. But if we assume that icebreakers are needed two thirds of the year and that Novatek is willing to pay almost all the savings obtained in these months, it would amount to \$150 million. That sum would cover approximately a third of annual capital costs when the first Lider-class vessel is put into operation in 2028. If the volume is doubled by 2034 when three Liders are in operation, the income would cover 60 percent of the annual capital cost.

These assumptions are very crude and can be challenged, but it looks like the implementation of the icebreaking program will amount to a substantial subsidy to LNG projects that may use the eastern route year-round.

Cargo owners other than Novatek may also be interested in the eastern route. Indeed, in the cargo scenarios for NSR it is assumed that a series of export-oriented projects will be implemented, some of which will target Asian markets. But whereas it can be attractive to sail east in the ice-free season, it may be more costly when icebreaking and payment of accompanying fees is required. Some cargo is not time sensitive and may be stored until the ice melts. We can also not assume that the expected projects always will have a better market in Asia than in the Atlantic basin and that consequently more cargo will go west even if the eastern route is open. Importantly, there is considerable uncertainty about the realization of several projects, notably big coal developments on the Taymyr Peninsula. The opening of all-year traffic on the whole NSR remains tightly connected to development of LNG exports.

Many will argue that this calculus is too narrow, and that year-round icebreaking capacity has a value for Russia beyond the potential direct commercial benefits, including military security and the ability to move anywhere in the Arctic, including supporting scientific research. It can also be argued that the icebreaking capacity should be regarded as general public infrastructure that will bring benefits to communities and industrial projects along the northern Russian coastline. Atomflot argues that the existence of a year-round corridor will attract transit shipping in the future, which will increase the income base, even though it cannot be accurately estimated today.<sup>11</sup>

If we follow this line of thinking, the cost of constructing new icebreakers is more like an expense, not an investment. An implication is that the focus will be on the annual operating costs compared to income. That has been the usual approach in discussing “NSR economics.” Even if we have not included operating costs here, scattered information suggests that they will be covered even under a modest cargo scenario.

But looking at construction costs as an expense makes it appropriate to consider the numbers in the context of annual state expenditures. The sums are not trivial. According to the investment schedule presented above, annual outlays in this decade will hover between 20 and

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<sup>11</sup> Вячеслав Рукша, *op. cit.*

70 billion 2019 roubles, or between \$267 and \$933 million USD, just for icebreaker construction. Other infrastructure costs will also be substantial.

In the short term there may be delays in construction caused by capacity constraints, cost overruns and financial problems at the shipyards. But the preconditions for implementation of the full icebreaker construction program are mainly determined by federal policy and politics. The program needs to enjoy high political priority and the state must be able to transfer sufficient funds.

As of today, the Russian government's willingness to sponsor icebreaker construction has seemed limitless. However, if the overall economic situation becomes more challenging, trade-offs in budget allocations are likely to become more visible—and contentious. If the development of most of the new icebreakers is explained by improved markets for LNG exports, and these improvements appear marginal, then it will be asked if the heavy state investments are justified. If international prices for LNG are less than expected, Novatek may negotiate for lower escort fees. The volatile international energy markets witnessed in 2019 have already affected the speed of the build-up of LNG projects. Technological improvements in the next generation of icebreaking LNG carriers could reduce the need for icebreaker support further.<sup>12</sup>

Such developments could result in a re-evaluation of the icebreaker program, which would also have consequences for the potential for year-round transit shipping.

### **New framework conditions and policies<sup>13</sup>**

Recent Russian protectionist tendencies have added an additional layer of complexity to the calculus of Arctic shipping economics. In 2018, Russia introduced regulations mandating that all oil, liquefied natural gas, and coal loaded from within the Northern Sea Route area could only be transported on Russian-flagged ships to the first point of destination or transshipment.<sup>14</sup> More restrictions were adopted soon after; after 2019, transportation of hydrocarbons out of the NSR area would be reserved for vessels *built in Russia*.<sup>15</sup>

It was obvious that the new regulations could not be implemented immediately. The fleet of carriers built in Korea for Yamal LNG already delivered or under construction were all

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<sup>12</sup> Malte Humpert, "New Powerful Arc7 LNG Carriers Could Eliminate Need for Icebreakers on Northern Sea Route", *High North News*, 29 October 2020. <https://www.highnorthnews.com/en/new-powerful-arc7-lng-carriers-could-eliminate-need-icebreakers-northern-sea-route> Arc7 roughly corresponds to Polar Class (PC) 3-4.

<sup>13</sup> A more extensive analysis is provided in A. Moe (2020) "A new Russian policy for the Northern sea route? State interests, key stakeholders and economic opportunities in changing times," *The Polar Journal*, DOI: 10.1080/2154896X.2020.1799611

<sup>14</sup> Federal Law. "О внесении изменений в Кодекс торгового мореплавания Российской Федерации и признании утратившими силу отдельных положений законодательных актов Российской Федерации." [About amendments in the Code for merchant navigation and recognition of expiration of some provisions of legal acts of the Russian Federation] No. 460.F3, December 29, 2017, *Rossiyskaya gazeta*, December 31, 2017. <https://rg.ru/2017/12/31/fz-460-dok.html>

<sup>15</sup> "Севморпуть в импортозамещение," [The Northern Sea Route in import substitution], *Kommersant*, 22 March 2018. <https://www.kommersant.ru/doc/3579782>

planned to sail under flags of convenience. Exceptions from the new rule were made, reluctantly. A bigger challenge was the obligation to build the next series of LNG carriers, destined to serve Arctic LNG 2 in Russia. Until now no LNG carrier has been built in Russia., The president of Novatek, the company responsible for developing the Arctic LNG projects protested openly, arguing that insisting on Russian-built carriers from now on would risk halting the progress of LNG development and make the ambitious projections of NSR cargo increases even more uncertain. Again, exemptions have been granted, and foreign-built vessels will also be allowed to transport LNG from trans-shipment hubs outside the NSR area on Kamchatka and near Murmansk to foreign markets. The protectionist measures do not conflict with international law, and they apply only to a segment of NSR shipping, namely destination shipping, but they may be read as a sign that Russia is increasingly looking at NSR as an exclusively domestic affair.

Another major development was the transfer of key functions in the management and development of NSR to Rosatom. Rosatom now has control over current operation of the NSR and is in charge of navigational and hydrographical services. Moreover, it manages state property and assets in ports; in addition to overseeing the icebreakers, it coordinates and distributes state investments and collects state income. Rosatom's new role as "infrastructure operator" commenced in 2019.<sup>16</sup>

For potential foreign users of the sea route the key parameters are commercial terms, predictability, and safety. Centralization of infrastructure in the hands of Rosatom may enhance coordination and better services, but if the consolidation of functions within this structure means less transparency, users may become more sceptical about investing for the long term. Many will find it problematic that Rosatom is a de facto monopoly provider of icebreaker services as a business activity at the same time as it is the de facto authority. In addition, Atomflot is starting to offer its own freight services, in competition with ordinary shipping companies. A plan to establish its own international container shipping business represents another widening of Rosatom's activities.<sup>17</sup> If such plans are realised, Rosatom may have less interest encouraging other users and instead build up a transit monopoly.

## Summing up

This paper has looked at three interrelated issues: icebreaker construction, protectionist legislation, and centralization of NSR development and operations. These are parts of a

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<sup>16</sup> "О внесении изменений в отдельные законодательные акты Российской Федерации." [On amendments to some legal acts of the Russian Federation", Federal Law No. 525-F3, 27 December 2018. <https://rg.ru/2018/12/29/fz-525-dok.html>

<sup>17</sup> «Севморпуть оставят в прежних границах, но транзит по нему будут развивать» [The Northern Sea Route will be left within its former boundaries, but transit on it will develop], *Rossiyskaya gazeta*, 16 July 2020. <https://rg.ru/2020/07/16/reg-szfo/sevmorput-ostaviat-v-prezhnih-granichah-no-tranzit-po-nemu-budut-razvivat.html>



massive political enterprise to develop the Russian Arctic, where state priorities are intimately involved in plans and investments made by industrial actors. The overarching question has been how developments can be interpreted from outside.

All in all, the impression is of a more inward-looking NSR development than the expectation had been when international navigation started a decade ago. Encouraging international transit shipping on the NSR continues to be official Russian policy and declarations about the NSR's potential as an international waterway can still be heard, but it is now a task for the longer-term future, some ten years or more from now. International shipping would need years to prepare in any case. Obviously, a series of factors connected to freight markets and competing routes, logistics, and more will play a major role, but have not been discussed here. Still, conditions established by Russia—in the form of infrastructure as well as legal framework and organization—are extremely important. Official declarations will not be enough to convince investors. What counts for them is the *perception* of trends in framework conditions and organization as well as the reliability and predictability of these frameworks over time.