Prospects of Russian-Korean High-Tech Cooperation in the Arctic: New Challenges in Light of Sanctions and COVID-19

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Abstract. The article is devoted to the analysis of cooperation between the Russian Federation and the Republic of Korea in the Arctic in the face of a pandemic Covid-19 and new sanctions imposed by Western countries on Russia. In the conditions of economic slowdown, it is cooperation in high-tech industries - shipbuilding, logistics projects - has become a priority for Russian-Korean cooperation in the Arctic. The authors compare the priorities of the participation of South Korean companies in the modernization of the Northern Sea Route, in the development of cooperation in shipbuilding, joint transport and logistics projects with Russia's interests in Arctic. In the context of the pandemic, the introduction of sanitary and restrictive measures, remote staff mode, the ban on the entry of foreign specialists caused a decrease in the volume of shipping in the whole world and between Russia and the Republic of Korea. In the new conditions, business activity, mobility of investors, representatives of medium and small businesses participating in Arctic cooperation decreased. This is evident in the analysis of economic indicators. Despite the obvious negative trends, countries have managed to maintain all areas of interaction. The authors note the consistent implementation of previous agreements on major shipbuilding projects, the preservation of dialogue mechanisms to discuss transport and logistics projects in the region, taking into account the interests of the Russian Federation and the Republic of Korea.

1. Introduction

Today’s Republic of Korea is one of the non-Arctic states that are increasingly interested in the Arctic. In recent years, Russia and the Republic of Korea (hereinafter ‘Korea’; ‘Korean’ means ‘South Korean’ except in geographical contexts) have productively cooperated in the region with a focus on high-tech industries such as shipbuilding, logistics, and navigation systems. Russian-Korean cooperation in the region are facing challenges in the form of severe international sanctions that affect international cooperation in the Arctic, and substantial restrictions related to COVID-19. Despite this, the partnership of the two countries remains in the spotlight thanks to the attractive Northern Sea Route (NSR), the economic benefits of developing the region’s transport and logistics, and successful cooperation in shipbuilding.

This paper analyzes the most prominent aspects of Russian-Korean cooperation in the Arctic in light of the new circumstances. The relevance of this topic is driven by Korea’s heightened interest in
Russia as an Arctic partner within the framework of Korea’s ‘middle power’ foreign policy. Of interest is how this strategy will unfold under the new circumstances.

Notably, Russia is not the only country that Korea seeks stronger cooperation in the Arctic with. For Russia, it is important not to miss the opportunity to reinforce Russian-Korean cooperation in the Arctic while also protecting its national interests and opening up more opportunities for the Russian Arctic to develop. In this regard, it would be of interest to analyze the two countries’ similarities and differences in their approaches to the development of Arctic cooperation priorities, to the configuration of the emerging international Arctic cooperation system, to the priorities of high-tech cooperation, e.g. in shipbuilding and radio navigation.

2. Methodology
The scope of the study is considered through a combination of such methods as comparative analysis and statistical analysis. Based on the results of comparative analysis, the authors compared the priorities South Korean companies' participation in the modernization of Northern Sea Route (NSR), shipbuilding projects with the interests of the Russian Federation, based on the provisions Russian Presidential Decree of March 5, 2020 N 164 " Based on the results of comparative analysis, the authors compared the priorities» and Master Plan of South Korea. The statistical method allowed to trace the dynamics Trade and Economic Cooperation between Russia and RK for the second half 2019 – first half 2020, allocate a financial share of participation South Korean business in Russian projects in the Arctic.

3. Results and discussion
Korea is greatly interested in cooperation with all the Arctic States, being second only to China in the intensity of its Arctic activities [7]. Russia is an important partner for Korea, since Russia has outstanding experience in the development and management of Arctic territories; besides, Russia also owns specific shipbuilding, port, and sundry technologies designed for use in the Far North, while also being the owner of the NSR. On the other hand, Russia’s interest in such cooperation is obvious as well, as it is universally declared. Multiple geopolitical and geoeconomic factors open up new opportunities for such cooperation. First of all, Russia exerts an ever-greater influence on the international situation in Northeast Asia in the 21st century. This influence stems from (or at least stemmed from until 2019) the evolving trilateral cooperation between Russia, China, and Korea on the Korean Peninsula, as well as from the importance of Russia in the resolution of the Korean nuclear dispute. The New Northern Policy («Neo Nord politic») presented by Moon Jae-in in 2017 highlighted Korea’s desire to expand its cooperation with all the Eurasian countries, with a focus on Russia. Secondly, the evolving strategic partnership between Russia and China forces Korea’s foreign policy-makers to consider the need to have a positive political dialog with Russia, to strengthen trade and economic partnership, to build up humanitarian cooperation [2, 7]. Thirdly, this opens Russia’s NSR for use in the development of transport and logistics in the Arctic. Fourthly, Korea is apparently interested in the technologies that Russia uses in the Arctic.

COVID-19 pandemic has affected the positive trends in Russian-Korean cooperation, including that in the Arctic. Russia’s foreign trade in Jan-Jul 2020 dropped by 17%. Russian-Korean trade dropped by 20% [3]. More than 60% of the international events where the two countries would have discussed their economic cooperation were canceled or postponed.

The situation has had the greatest negative impact on the importation of mechanical engineering and microelectronics products to Russia, which fell significantly; on the supply of components, etc. Shipbuilding is the most affected aspect of the emerging Russian-Korean cooperation in the Arctic. Although none of the projects was suspended over the intervening period, cooperation definitely lost its pace. This happened primarily due to sanitation-related restrictions including remote work, entry ban for international specialists, and delays in the import of ship equipment from Korea to Russia. On the other hand, no major project was suspended, and all the earlier agreements have been implemented in full, including the cooperation agreement signed by SSC Zvezda, Primorsky Krai, where Hyundai
Heavy Industries Co. Ltd. is the technology partner, and Rosnefteflot is the operator. December 2019, they commenced the construction of the first Arc6 ship, a 69 thousand ton shuttle tanker; in November 2020, they laid another Aframax-class tanker.

The pandemic gave rise to new forms of contact between authorities and businesses in Russia and Korea. September 22, 2020 the Russian-Korean Business Dialog took place [3]. It is a traditional event that had earlier been part of the annual Eastern Economic Forum. The event seeks to create a platform for Russian and Korean businesses to cooperate in a variety of industries. At the event, officers of medium-sized and large Korean businesses as well as representatives of some Korean regions stressed their interest in preserving and furthering the existing contracts and projects in progress. The author hereof talked to Kim Jin-dong, Minister Counsellor of the Republic of Korea in Moscow, and Second Secretary Lee Yu-bin on December 21, 2020; in these conversations, the two emphasized Korean businesses’ interest in further cooperation in shipbuilding, where both parties had projects in progress and had signed agreements on further cooperation. The Koreans noted that, unfortunately, severe US and EU sanctions were hindering such cooperation.

Let us now discuss three priorities of Russian-Korean cooperation in the Arctic: use of the Northern Sea Route and the development of transport and logistics projects; shipments of hydrocarbons and coal, transport and logistics development roadmaps; and shipbuilding cooperation.

3.1. Russian-Korean cooperation for the use of the Northern Sea Route and for the development of transport and logistics

Korea quickly rose to prominence as a participant in political and research projects in the Arctic. Over the last decade, it has shown great interest in economic cooperation in the region. To date, the country prioritizes, among other things, the development of transport and logistics systems that will utilize the Northern Sea Route (NSR) as the backbone. This is where the Russian-Korean partnership is blossoming with its focus on high-tech cooperation. Korea is most apparently interested in these maritime routes as a way to cut the costs of shipping from East Asia to Europe. The international legal frameworks that would govern the NSR are still in infancy, which might potentially enable direct involvement in making the new rules for transport and logistics systems in the Arctic, with South Korean companies having a voice in the establishment of new ship convoying practices. Of interest are the prospects of participation in infrastructure projects in the Russian Arctic. Importation of natural resources found in the Arctic, especially hydrocarbons, is the next factor that drives the Korean interest in Russia as a partner. The growing interest in such cooperation does not falter even in light of high production costs. There is also an apparent interest in R&D cooperation. Many researchers have noted the emergence of novel partnerships between the two countries that as recently as 10-15 years ago seemed unpromising because the parties were not interested, and the prospects were unclear at best. These include cooperation in shipbuilding, cooperation with the indigenous peoples of the North, cooperation in research and education [6].

Korea’s Master Plan 2013 highlights three Arctic priorities: establishment of international cooperation in the Arctic, intensification of relevant research, and creation of novel Arctic industries. Korea’s National Logistics Master Plan 2016-2025 lists the following promising points of Arctic cooperation: (1) expansion of logistics services in the Arctic; (2) expansion of maritime navigation in the coastal zone of the Arctic Ocean; (3) support for Korean companies willing to export crude oil from Yamal Island, Russia; (4) support for domestic logistics service providers to better compete against Russian and Chinese businesses; (5) support for the Greater Tumen Initiative; (6) promotion of funding for the shipbuilding industry should anti-Russian sanctions be lifted [2, 11]. Three of these priorities (3;4;6) are directly linked to Russia, and the remaining three will not bear fruit unless Russia cooperates. A number of initiatives is in place to create new special economic zone projects and support the existing ones [5]. Currently, there exist five international special economic zones, three of which are on the east coast of the Korean Peninsula, with a focus on the development of transport and logistics in East Asia as well as on the expansion and improvement of maritime routes, including those that utilize the NSR. It is quite obvious what Korea seeks: Korean ships transporting LNG, among
other goods, in the Arctic; the development and management of maritime facilities; the creation of new transport hubs in the Ports of Ulsan and Yeosu in the north of the country; and integrating some of the projects-in-progress in the Arctic shipments. The Greater Tumen Initiative (GTI) exemplifies an attempt to economically integrate and develop a cross-border region between Russia, China, North Korea, and Mongolia in the Tumen River basin [1,7,11]. Six institutions have been established as part of the Initiative [11] The core idea of this intergovernmental initiative supported by the UN Development Programme (UNDP) is to create a Free Economic Zone in the near-border territories so as to boost the economic activity there, to create ‘another Hong Kong’ in this cross-border triangle. The Initiative does not seek the implementation of the Master Plan directly; however, some of its focus areas do indeed overlap the Arctic policies. These include first and foremost the creation of a transport and logistics network in Northeast Asia to service the member states’ markets (the responsible body is the Transport Board), to create a new Kaesong-like industrial complex on the east coast of the DPRK with a focus on the development of shipbuilding-supporting industries, and to create a touristic region along the Tumen River.

The best-known project is titled the Rason-Hunchun-Khasan line, better known as Rajin-Khasan in Russia; this is a railway route that enables transport from Russia to South Korea via North Korea. Integrating the route with the NSR is under consideration. In 1991, they established the Rason Special Economic Zone, granted the status of a ‘special city’ in 2011. Port of Rajin is located in the north of North Korea 150 km southwest of Vladivostok (along the coastline). This is an ice-free port that has convenient deep-sea approaches. The project was launched in 2015; the original idea was to transport diverse cargo in containers. It was mainly on Korea’s request that the project then refocused on coal shipments, mainly from China, then also from Russia. In 2008, Russia and North Korea signed an agreement to found RasonConTrans, a joint venture (JV). 70% of the company’s authorized capital is owned by Russia, 30% belongs to North Korea, which grants the right to use the Port of Rajin. One of the biggest challenges facing the project is to modernize North Korean railways to connect them to Russia’s Trans-Siberian Railway. After the obvious positive changes in the inter-Korean dialog since 2008, Korea has shown great interest in the projects, being actively involved in upgrading the North Korean railway system. This project was excluded from the UN sanctions on North Korea’s foreign trade. However, as the relations between the two Koreas deteriorated, South Korea imposed unilateral sanctions, the latest of them dating back to 2016-2017. Some Russian and South Korean experts believe this project is promising both as part of the multilateral economic cooperation on the Korean Peninsula, and as part of Korea’s New Northern Policy in the Arctic, although some are skeptical about the prospects of the project [2,6].

NSR-focused logistics projects remain a promising area of Russian-Korean cooperation. Geographically, the Korean Peninsula is at a disadvantage due to its remote location, which hinders the country’s cooperation with the EU, the European part of Russia, and Central Asia. In 2018, 63% of the exports went to Asian countries, 15% went to North America, and only 10.4% went to Europe. This is mainly due to the duration and high insurance costs of shipping. NSR might potentially increase the presence of Korean goods in the European market. Korea has obvious expectations with regard to the NSR: far shorter voyages; lower freight and crew costs; lower premiums on the insurance of risks arising from shipping via pirate-ridden areas such as the Strait of Malacca, the coasts of Indonesia, the Philippines, and Thailand, Indian, Shri-Lankan, Bangladeshi, Somali, and Tanzanian coasts; and saving on the transportation fees of the Suez Canal.

South Korean freight carriers have had a positive experience of using the NSR in recent years; in 2010, Korean bulk carriers transported Nor nickel’s metal products from Murmansk via Dudinka to Busan (South Korea) and Shanghai (China) without an icebreaker convoy. In 2013, a South Korean ship delivered equipment from Ust-Luga to Gwangyang via the NSR. A new milestone was reached in 2014-2015 with the success of Korean government-supported commercial NSR voyages that were undertaken as part of feasibility studies. In 2017, South Korean liner Hyundai Glovis made an Asia-to-Europe voyage via the NSR. South Korean experts published several papers on the feasibility of this route. [1] Despite its high associated costs and the problematic rendition of services, the Northern Sea
Route turned out to be more competitive than Suez Canal routes for Korea-to-Europe shipping. A 20-ton container would cost 5665 US dollars if shipped from Busan via the Suez Canal to Europe (Berlin), traveling 20,945 km over 45 days; or 5995 US dollars if shipped from Busan via the NSR to Europe (Berlin), traveling 12,645 km over 20 days. Despite its high associated costs and the problematic rendition of services, the Northern Sea Route turned out to be more competitive than Suez Canal routes for Korea-to-Europe shipping. Yong Kim’s calculations return a total competitiveness factor of 0.3442 (1 = 100%) for the latter route, cf. 0.4088 for the former. [1]. In light of the complicated nature of the Trans-Korean Railway project that is compromised by the periodic Seoul-Pyongyang tensions, the NSR turned out to be the most competitive line of all the alternatives. It is regrettable to acknowledge that the use of radio navigation in the eastern corridor of the NSR is problematic for the Koreans, which makes this option less appealing. Kim Jin-dong, Minister Counsellor of the Republic of Korea in Moscow, believes that the lack of advanced geolocation technologies for ships and the fear of sanctions against NSR-using companies are the two factors that currently force South Korean businesses to stay away from this seaway.

3.2. Shipping of hydrocarbons and coal, development of transport and logistics systems
The Republic of Korea currently ranks 5th in the world in terms of crude oil imports, 2nd in liquefied natural gas (LNG) imports. With its location and complicated relations with North Korea, the Republic currently lacks access to gas pipelines. In the late 1990s and early 2000s, there was a prominent discussion of the idea to construct a gas line from Russia to Korea via the territory of its northern neighbour [8]. The idea never came to fruition, first for economic reasons, then because of the Korean tensions.

To date, Korea is not a major buyer of Russian oil and gas. Russia is not a major supplier of either product to the Korean Peninsula, accounting for only 6% of oil imports and 5% of LNG imports. [10].

![Figure 1. South Korea's crude oil imports by source, 2019](image-url)
Korea is clearly interested in increasing the supply of LNG from Russia [9]. Moreover, it can offer profitable cooperation in the manufacture of gas transport containers and in building various vessels for oil and gas transportation. Most of the projects under discussion are focused on hydrocarbons produced in the Russian Arctic. South Korea is also interested in promoting its high-tech products for the production and transport of hydrocarbons. One example is the cooperation with Yamal LNG. In 2020, Novatek and KOGAS confirmed their memorandum of understanding on cooperation in gas liquefaction, as part of which the South Korean company can become part of Arctic LNG 2, a project based on the Utrenneye Field on the Gydan Peninsula in Yamalo-Nenets Autonomous Okrug ~70 km off Yamal LNG (via the Gulf of Ob). The project has been an active work in progress since the completion of front-end engineering design (FEED), the commencement of preparatory engineering works, the construction of the core energy facilities, the drilling of operational wells, and the construction of the mooring in 2018. It is regrettable to admit that Korea suspended cooperation on the project in the second half of 2020 due to sanctions.

3.3. Shipbuilding as complementary cooperation

Russian-Korean shipbuilding cooperation is complementary. Russia is the world's leading builder of icebreakers and ice-class vessels. Russia has 41 Arctic-class ships varying in capacity and intended use. Neither in quantity nor in quality can any fleet compete against the Russian one in terms of convoying ships in winter at high latitudes. Sweden has seven icebreakers, Finland has six, Canada has four such vessels in operation and one under construction. China has 2 ice-class vessels. More than 60% of the world's expensive and high-tech ships are manufactured in Korea. The RK strongest specialization is the construction of LNG tankers, making South Korea the world's best manufacturer of such vessels. Russia has a strong engineering school with a long history and outstanding experience; however, Russian businessmen admit they lack human resources. Professional Training Center has been founded in the town of Bolshoi Kamen. The facility is equipped to train 300 to 400 people every year [4]. The key point of emphasis is the vessels and platforms for the development of the Arctic Shelf and the NSR. Apparently, the two countries have much to offer each other in such cooperation. To date, the prominence of Korean shipbuilders among the premier manufacturers of the most expensive and advanced ships, as well as the furtherance of cooperation in shipbuilding are driving the cooperation in related industries: metallurgy, chemistry, instrumentation, and electronics.

Upward trends in the Russian Arctic shipbuilding and in the associated international cooperation are obvious. Thus, in 2016 the Baltic Shipyards launched Arktika, the lead ship of Project 22220
icebreakers, and Siberia, a nuclear-powered Project 22220 icebreaker. Arktika’s completion was scheduled for mid-2019, Siberia’s for November 2020, and Ural (the second commercial nuclear-powered icebreaker) is scheduled to be completed in November 2021. In 2017-2020, Russian shipbuilders supported by the South Korean government placed orders for the production of 31 ships at Hyundai Heavy Industries shipyards [4]. In 2019, SSC Zvezda and Samsung Heavy Industries Co. Ltd. (Republic of Korea) announced the establishment of a joint venture to manage the construction of shuttle tankers ranging from 42 to 120 thousand tons of deadweight at SSC Zvezda; the announcement was made at the V Eastern Economic Forum.

Russian and Korean engineers willingly share their experience in the design and construction of shuttle tankers. Samsung Heavy Industries is an experienced and highly qualified designer and builder of shuttle tankers, being one of South Korea’s Top 3 shipbuilding companies; they provided SSC Zvezda (a shipbuilding facility at the Zvezda Shipyard, established by the Rosneft-spearheaded Consortium of Investors) with specifications and documentation including the basic and detailed ship designs. Today, they are also actively promoting cooperation with CDB Lazurit for the development of design documentation for shuttle tankers.

South Korean businesses have placed orders for 26 ships with SSC Zvezda. As part of this project, Zvezda will construct four multifunctional ice-class vessels, ten ‘green’ Aframax tankers running on natural gas, ten Arctic shuttle tankers with a deadweight of 42 thousand tons, and a single shuttle tanker with a deadweight of 69 thousand tons. In November 2020, they began the construction of another Aframax tanker. In the retrospect, Russian-Korean cooperation looks good. Specialists, however, note a few issues. First, Russian shipbuilders’ projects for NRS shipping lack technological independence. 60% to 80% of all engineering is done by the Koreans, which in turn leads to these shipyards being reliant on the supply of Korean components. This gives rise to another issue. Right now, South Korean businesses are cautious about further cooperation with their Russian counterparts, new long-term projects being virtually non-existent as a result. The idea of creating a Russian-Korean shipbuilding cluster in St. Petersburg is slowly becoming history.

4. Conclusions.
Over the last ten years, Russian-Korean cooperation has shown positive dynamics in all three aspects: promotion of the NSR as a shipping route, joint shipbuilding projects, and infrastructural cooperation. However, the introduction of COVID-19 related restrictions and the global reduction in shipping (estimates vary from 18% to 35%) slowed down the pace of such cooperation significantly. COVID-19 associated reduction in demand for energy (6% drop in coal demand and 4% reduction in LNG demand in Korea) coupled with an economic slowdown has had a negative impact as well. The engagement and mobility of investors and SMEs involved in the Arctic cooperation show a downward trend as well. So far it is difficult to estimate the possible consequences, but there will definitely be some. For now, we can note a few positive trends, including the consistent implementation of earlier agreements on major projects in shipbuilding and technological cooperation in the Arctic, as well as the survival of dialog on transport and logistics projects in the region which serves the best interests of Russia and Korea. Hope remains that once the pandemic is over, Russian-Korean cooperation in the Arctic will gain traction. Hopefully, the US and EU sanctions will not become an insurmountable hindrance to such cooperation.

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