Southeast Asian technologies at enterprises in Arctic zone of Russian Federation

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Abstract. Within the domestic and foreign policy of Russia the Arctic is one of the most important regions, the development of this region ranks a significant place in the plans and strategies of Russian government. The brilliant potential of the region is of particular interest to a number of countries, including the countries of Southeast Asia. It is reasonable that concerned states choose Russia as their partner in the polar region since Russia possesses the largest territories in the Arctic and resolutely develops them. For the Russian Federation such attention to the Arctic is beneficial because of the prospects of technological and economic cooperation. However, are there any possibilities for the states, far from the polar territories, to become crucial partners for the Russian North? In the paper, the authors analyzed this issue and have made the conclusion that despite the mutual interest of both parties in the development of cooperation in the Arctic, the current circumstances and conditions result in the fact that the partnership consists only of the separate joint ventures, not systematic joint work.

1. Introduction
Since Soviet times, the Arctic has been of special meaning to Russian territories due to its high strategic, economic, resource and research potential. Currently the value of the Arctic is increasingly rising not only for Russia and other circumpolar states, but also for the non-Arctic ones. Obviously, the significant resources and strategic importance of the region make the distant states interested in the Arctic affairs too. Their focus on the Arctic has led to some of them even become members of the Arctic Council (AC) – the main international organization handling the affairs of the Arctic region. These states, to variable extend, seek to strengthen their position in the region, gain access to its resources through gaps in the international law, or even, like China, call for the internationalization of the region [1]. Such actions and statements make the circumpolar states worry about their positions in the Arctic, so, they seek to defend their exclusive rights and possibilities there. Thus, the performance of a lot of projects beyond the Polar Circle, so, other states do not have the opportunity to ‘take the place’.

Russia has the unique positions in the Arctic – it is the country that has the largest territories there and it almost completely controls the Northern Sea Route (NSR). Territorial sovereignty issues always have been crucially important to Russia, so the desire of non-Arctic countries to strengthen their position in the region is perceived like a threat to the Russian Arctic territories and its exclusive rights...
here. In the Presidential Decree "The Fundamentals of the National Policy of the Russian Federation in the Arctic until 2035", such actions were marked as challenges to the national security [2]. The document also outlines Russian plans for the active development of resource, implementation of economic improvements in the region and governmental support for the entrepreneurial designs. Such large projects as Yamal LNG, Arctic LNG-1, and Arctic LNG-2 are already being exercising in the Arctic. Arctic projects account for about 10% of Russian GDP, moreover, the government intends to increase the amount of investment to the region to $86 billion by 2025. [3] However, it is obvious that ambitious plans for economic development of the Arctic are hampered by harsh climate conditions, lack of appropriate infrastructure and a vulnerable biological environment. Economic development in such conditions requires special technologies and equipment, for the production of which Russia often does not have enough skills and experience.

Such situation makes Russia to look for partners to participate in the Arctic ventures. Besides, the attention of non-Arctic countries to the polar region, which has already been mentioned, gives these states reasons to find ways to strengthen their presence in the region and become eligible use the Arctic resources, what may result in mutually beneficial cooperation between them and the Russian Federation in the future. Such states are some countries of Southeast Asia. First, they are widely known all over the world for the development and production of innovative complex technologies, software and equipment. Secondly, their long experience in shipping, building and serving port infrastructure and oil and gas branch also plays a big role. However, does such common interests actually lead to active and effective cooperation between Russia and these Southeast Asian countries? Or may it turn out that there are only separate joint projects between the countries and there is no ultimate framework for a long-term partnership?

2. Main part
It is highly important to mention that Russia's technological cooperation with other states within the Arctic projects concerns primarily relates to hi-tech equipment, so, digital products and software are not of particular interest there – this is relevant not only for cooperation with Southeast Asia, but in general. Reasons of such condition lie in the traditional order – since the beginning of automation and digitalization processes in the oil and gas industry and geological exploration, domestic software, developed in Perm, Samara and other cities, has been usually used. Using of foreign software has been quite poor and it was usually used for equipment produced abroad, what is partly relevant nowadays too. After the beginning of the policy of import replacement in 2014, foreign corporations were often denied license renewal and were allowed to continue working in Russian only as subcontractors of Russian companies, what finally reduced using of foreign software even more as foreign equipment was also abandoned in favor of domestic equipment. Thus, using of software developed abroad is extremely rare in the dominant economic branches in the Arctic, what a priori excludes that point from the framework of business partnership. Besides, the trend of using domestic equipment and technologies is becoming more common in Russia.

Singapore takes a special place in our research. Firstly, this state is keenly interested in the Arctic affairs. In 2013, Singapore was received the observer-state status in the AC and since has been vastly active in the region. [1] There two fields are of great importance for Singapore: economic and scientific. In terms of economy there are two fields significant for Singapore: sale of prospection and drilling equipment and shipping. Shipping is essential for Singapore – it is one of the greatest world sea hubs and it earns a significant part of income by transportation, serving vessels and terminals and selling devices for that. Sea branch accounts 1/10 part of Singapore’s GDP [4]. Using of the Northern Sea Route (the NSR) may become possible soon due to ice is melting in the Arctic [5], that may severely reduce volume of vessels passing through the Malacca Strait and, therefore, reduce the income of Singapore. Besides the economic benefits, Singapore is an island state, so, it is of great importance to study and monitor climate processes in the Arctic, and especially global warming and rising sea levels, which are extremely dangerous for the state, as it can simply flood [6].
Indeed, Singapore’s experience in maritime is highly attractive for other states, so do the Singapore’s facilities in production of hi-tech equipment. Singapore is able to develop the equipment adjusted to harsh and complicated conditions of work in the Arctic which is also absolutely eco-friendly. Singapore accounts about 70% of the world drilling rig production [7], so oil production is the main branch in the Arctic development. Moreover, Singapore’s company Keppel Fels is one of the biggest producers of offshore drilling systems [27]. Equipment made in Singapore is used all over the world, including the Arctic. Russia is a frequent and particular buyer. It is important to emphasize that the equipment for rescue operations is also of great importance in the structure of the technologies production in Singapore. Besides, in 2016, the same Keppel Corporation presented a project of a floating city that was supposed to be located outside the sovereignty of any state and should help to develop the tourism in the region [8].

Relations between Russia and Singapore have been developing steadily during several decades – in both: economy and politics fields. In 2006, both countries signed Memorandum of Understanding on cooperation in special economic zones, what became the basis for using Singapore’s technologies to Russia [31]. In 2009, the Russia-Singapore Business Council was established, it occupies with increasing the volume of hi-tech technologies in trade between two states, as well as engaging innovative companies to joint work within different projects [9]. In 2010, was an intergovernmental agreement on the promotion and protection of mutual investment was signed [31]. Also, a Business Forum is annually held between the states, this Forum helps to develop cooperation in hi-tech branch [9]. The last meeting of the Forum was held in 2019 [10], because the pandemic force both parties to change their plans in 2020. The operation of Russia and Singapore’s Intergovernmental Commission should develop comprehensive cooperation between two countries in investment, commerce, ICT and so on. The VI meeting of the Commission was held in 2015. Issues on the creation of a free-trade area [FTA] between Russia and Singapore were discussed there [31]. The countries are also important trading partners for each other. In the structure of Russian import machinery and equipment are dominate commodities. According to the Federal Customs Service of Russia, these commodities accounted more than 67% of Russian import in 2019 [11]. Russia exports mainly oil and gas to Singapore, and the volume of this commodities usually accounts about 90% [11].

Of course, the attention of both countries to the Arctic could not be neglected in the defining of partnership areas. Artur Chilingarov, the Special Representative of the President of Russia on International Cooperation in the Arctic and Antarctic, has emphasized that Russia is vastly interested in partnership with Singapore in the polar region in 2016 [12]. It is also important to mention that Russia considers Singapore as a partner also in the Far East and in some other regions but the Arctic. For example, Singapore drilling rigs are already used for the production of hydrocarbons in the Caspian Sea [13]. Polar cooperation has been discussed by representatives of two stated at the High and Highest levels several times, and each time the parties made the conclusion that it is necessary to deepen the partnership. That’s interesting that not only Russia seeks to gain Singapore’s support, but Singapore is interested in Russia too since it cannot develop relations in the Arctic with its common American partners because they have not involved in developing of the Arctic to the same extent yet.

Thus, there are reasons for cooperation between two states and commercial corporations do not mean to neglect them. There are a number of Singapore companies of various profiles in Russian Arctic: energy industry, IT, industrial developments and innovations, mining, shipping and so on. Within Russian Arctic zone, there is a particular demand for Singapore’s assistance in the field of shipbuilding and production of drilling rigs. Russia's large-scale projects in the Arctic seem to be interesting and profitable for various Singapore corporations.

One of such companies is Pavilion Energy, which was founded in 2013 and is fully owned by Singapore Temasek Holdings. It provides one-third of Singapore's demand for LNG, it worth nothing to mention that the company is not engaged in gas production, but only sales and delivery [33]. Chief executive of the corporation, Frederick Barno, stated that the company did not consider investments in the production of hydrocarbons suitable, because it did not believe that this corresponds to its capabilities [33]. However, in 2018, Pavilion Energy has signed a Memorandum of Understanding
with Russian company Novatek, specialized in oil and gas production, on participation in the Arctic LNG-2 project in Yamal-Nenets Autonomous Okrug [14]. The deal was caused by the increasing of demand for liquefied natural gas in Southeast Asia and Singapore, in particular. According to geological exploration, about 2 billion cubic meters of natural gas and about 105 tons of liquid hydrocarbons deposit in the field. In the course of negotiations, it was designated that Pavilion Energy will acquire a share in the project, and a certain amount of LNG will be reserved for it. The companies are going to cooperate in marketing, production, storage and sale of LNG, jointly invest in the construction of storage facilities for LNG and tankers for its transportation as well as in the leasing of these tankers. Moreover, Pavilion Energy will participate in the creation of infrastructure for the storage and transshipment of LNG. Besides Singapore, other companies from different countries also are concerned of the project: the Japanese company JOGMEC and the Chinese corporation CNPC also signed memoranda of understanding with Novatek (in 2019, Japan invested about $3 billion in the project [15]), the French company Total immediately acquired 10% of the Arctic LNG-2 shares (in 2011, it was named a strategic partner of NOVATEK and acquired 20% of the shares of another project Yamal LNG [17]), Saudi Aramco intended to invest about $5 billion too [16]. In 2019, according to the plan, construction of an LNG refinery factory with a capacity 20 million tons has started. Novatek also has booked the construction icebreaker fleet to Sovkomflot and other corporations [18].

As for the construction of icebreakers, it is essential to mention that despite the fact that Singapore is a southern country, it has great experience and skills in the construction of ice-class vessels, and Russia use this knowledge. One of the greatest shipbuilding company in Singapore is Keppel Offshore&Marine (20% of the shares are also owned by Temasek Holdings). Back in 2008, working together with the Finnish engineering company ILS [34], specialized in the building of ice-class vessels, Keppel Offshore&Marine sold to Lukoil-Kaliningradmorneft two icebreakers with a total cost of $174 million for operations at the Varandeyskoye field in the Nenets Autonomous Okrug [19]. By the way, the tug "Toboi" was designed specifically for rescue operations. Thanks to this deal, Keppel Offshore&Marine entered the Arctic market. To adjust the vessels for working in the fragile Arctic nature, they were created in accordance with the standards of clean design and zero discharge.

Trafigura, a Singapore-based MNE, back in 2013 became one of Russian Rosneft's main partners, when it provided Rosneft with $10 billion loan for the takeover of TNK-BP [20]. The partnership was further strengthened after 2014 and the sanctions imposed on Russian projects by Western companies. In 2015, Trafigura became the main exporter of Russian crude oil [35], spending more than $500 million [36] for 9 million barrels exported by Rosneft, most of which were directed to Asian markets [35]. In 2020, Trafigura acquired a 10% share in the Vostok Oil project [20] launched by Rosneft in the North of the Krasnodar Krai. This money will be used for acquiring of electrical equipment and the construction of several power stations. The other part of money will be spent for the construction of 10 ice-class tankers and for order of drilling rigs adjusted work in northern conditions. This equipment is supposed to be produced by Russian companies and factories [20]. It was noted that India also was interest in the project.

Cooperation with Singapore in the Arctic does not exist only due to business transactions. There is also a desire of Singapore government to provide assistance to indigenous and small-numbered people who live in the Arctic territories. Singapore is especially qualified in the education field and offers scholarships and special curricula at local universities for the Northern residents as well as assistance in developing similar ones in Russia and other circumpolar states [21]. People living in the Arctic have already used the opportunity to study master programs designed by Singapore.

Singapore, as was mentioned above, is also interested in scientific research in Russian Arctic. In 2016, during the visit of Nikolai Patrushev, the Secretary of the Security Council of Russia, to Singapore, the possibilities for joint research in the polar region with using of Singapore's technologies were discussed. Furthermore, the terms of deal on scientific purpose were negotiated [22].

Nevertheless, Singapore is not the only Southeast Asia state that takes part in the development of the polar region but there is not any equal competitor to it according to the scale of activity. However,
in comparison with China its number of joint ventures is pretty modest. Vietnam is one more Russian partner in the Arctic. Vietnam is concerned with the Arctic mostly because of the energy resources which are necessary for emerging Vietnamese industry. Russia is a key partner for Vietnam in the polar region. In is necessary to mention that Vietnam is the main Russian partner in the Southeast Asia what is determined mostly because of the historical circumstances. Besides the Arctic, countries conduct a number of successful projects in various parts of the world. One of the largest Russian oil-production corporations cooperates with Vietnamese company PetroVietnam in the field of LNG import to Vietnam through the Thi Nai port [38]. Moreover, reported by Gazprom, companies plan to expand cooperation on exploration and production of hydrocarbons, especially on Vietnamese shelf. In 2016, the corporations entered into agreement on joint exploration at the Dai Hung oil field in Vietnam, as well as in oil sands in Algeria, Cambodia, Equatorial Guinea, Bolivia and Grenada [38].

First attempt to establish partnership in the oil and gas field were undertaken in 2010s. Vietnam tried to cooperate with Russian company Zarubezhneft which prior to this had bought the entire shares of another company Arct gymnorrneftegazrazvedka and become eligible to offshore oil production. At that time Vietnam faced the restrictions of Russian law, which could not be amended because of Rosneft and Gazprom objections which concerned to lose their exclusive positions in the oil market. Cooperation with Vietnam remained uncompleted. Nevertheless, Rosneft by itself showed interest to cooperate with Vietnamese companies. In 2014, the contract with PetroVietnam on joint development of the fields in the Pechora Sea and supply of Russian BCTO oil to Vietnam was signed. A little bit later CEO of Rosneft Igor Sechin delayed the cooperation with Vietnamese partners and stopped the negotiations. Moreover, Rosneft postponed the development of Dolginskoye field in the Pechora Sea, where PetroVietnam was supposed to take part, until 2031. However, there are some successful projects of cooperation.

Nevertheless, there are still successful joint projects: a joint venture called RusVietpetro was founded by Zarubezhneft and PetroVietnam in 2006. Since 2009 it has been developing an oil reservoir in Central Khoreyversky uplift (Nenets Autonomous Okrug). Apart from this field, RusVietpetro is also engaged in the development of 13 fields in the Nenets Autonomous Okrug. In 2014, CEOs of PetroVietnam and Gazprom signed an agreement on joint development of Severo-Purovskoye (Yamalo-Nenets Autonomous Okrug) and Nagumanovskoye (Orenburgskaya Oblast) fields [37]. Furthermore, its subsidiary company Gazprom Neft signed an agreement on extension of cooperation in the area of oil and gas exploration and extraction in the Pechora Sea offshore drilling with PetroVietnam. Also, Gazprom Neft submitted conditions of buying a part of Vietnamese refinery factory Dung Quat shares, that costed about 2.5-2.7 million dollars [23]. Another company SovVietpetro, which was established during the period of strong ties between the USSR and the Socialist Republic of Vietnam, is engaged in the development of oil reservoirs on Vietnamese shelf.

It might be a surprise that the Philippines are attracted by the Arctic too. The Philippines is a young and upcoming producer of high technologies. Now it has the only project in the Arctic, but its scale is quite impressive. In 2014, Philippines’ industrial process outsourcing firm The Atlantic Gulf & Pacific Company (AG&P) was awarded to a major contract to supply critical process modules for Yamal LNG in Yuzhno-Tambeyskoye gas condensate field [32]. Yamal LNG is a titanic project, distinguished by its scale, capacity, complex infrastructure and international participation. Silk Road Fund (China), China National Petroleum Corporation (CNPC), American corporations and Chinese government also had also invested in the project and acquired shares. The venture operates natural gas extraction, its liquefying, storage and shipping. The venture has its own transport infrastructure – Sabetta port and airport. The project is really great, so, Philippines’ participation help both sides to benefit, furthermore, Philippines’ equipment is used in the venture which is quite essential for almost every state due to the fact that liquified natural gas is used almost everywhere, and it is Southeast Asia which has particular demand of LNG.

Malaysia and Indonesia participation in the Arctic development is quite modest, moreover, existing cooperation does not apply technological field. Both countries pay little attention to the Arctic matters and prefer to focus on their own region. By the way, Singapore’s activity and diplomacy has motivated
them to contribute the development of the region. Malaysia and Indonesia have supported Singapore’s program of promotion academic exchange and provide grants and scholarship to the North indigenous and small-numbered people and have established such programs in some of their universities [4]. Nonetheless, corporations and governments of these countries have not shown interest to joint projects with Russia in the Arctic yet.

3. Conclusion

Now we have ascertained that there are obvious reasons for the development of cooperation and mutual striving to expand partnership but the number of joint projects between Russia and Southeast Asian states in the technology field remains modest. The current analysis of the information presented in Russian and foreign mass media and research papers proves this fact. However, why are Southeast Asian technologies so insignificant in Russian Arctic projects?

On the one hand, there is the particular role of the PRC. China is an important political and economic partner for Russia — two states have even signed an agreement on strategic partnership. The scale of the Arctic partnership between Russia and China is quite large, and in recent years, cooperation has become deepen. This happens mainly due to the increasing of PRC’s to the Arctic. Ut has also designed its own Arctic policy [26]. According to this document China has defined itself as a near-Arctic State, it also called for the internationalization of the region and claimed its rights to use the region's resources and exploitation of the NSR. Such an aggressive policy towards the Arctic was likely to force Russia to stay remote from the China and even confront it, but the result is quite the opposite [24]. Perhaps, the political outline, which implies rapprochement with China, still dominates in the definition of Russian Arctic strategy. Additionally, the economic ties, investment and technological assistance that Russia benefits from cooperation with China, particularly in the Arctic, also play a big role. Besides, Chinese commodities generally prevail in Russian market – China is the main trading partner for Russia [25].

Within the cooperation in the Arctic, in 2017, the PRC and the Russian Federation signed a Memorandum of Understanding on the development of the NSR and published a joint declaration on further deepening of strategic partnership in the Arctic [39]. In 2019, the COSCO Shipping Group, Novatek, Hyundai Merchant Marine Public Company and the Silk Road Fund signed an agreement on Arctic shipping in order to establish a long-term partnership in the field of joint development, financing and conducting of Arctic shipping [39]. Both countries cooperate in scientific research — in 2016, a joint scientific expedition was held in the Arctic Ocean, and in 2018, the second expedition was conducted [39]. During the expeditions, Earth phenomena in the Arctic were monitored and the bottom of the Laptev Sea was explored. Besides, joint scientific research, China and Russia has established the Arctic research center to conduct long-term and deep cooperation in Arctic research. In addition, the Chinese government and enterprises, as it has been mentioned above, participate in Yamal LNG – China has invested more than $5 billion in total, reported CEO of Novatek, Leonid Mikhelson [40]. Some modules for the construction of the plant, some vessels for the transportation and one of five cryogenic drilling rigs for Yamal LNG were produced by China [39]. Chinese companies are also engaged in creation of venture’s infrastructure – bases, roads and railways, airports and maritime ports. Russia also plans to fulfil several large-scale infrastructure designs in the Arctic region, including the construction of the 850-kilometer Belkomur railway (White Sea–Komi–Ural), the Northern Railway, Murmansk transport hub, Arkhangelsk deep-water port, and some others [39]. Russia may face some financial and technological difficulties in conduction these envisages what provides opportunities for Chinese companies to participate.

On the other hand, the policy of import replacement is of great importance, as it has already been noted above. Furthermore, despite the fact that technological assistance from foreign countries is undoubtedly matters and may often simplify and improve work and research processes, Russia's own facilities are not so poor as it may seems. For example, the world-famous Prirazlomnaya offshore oil platform, erected by Gazprom Neft on the Arctic offshore, was almost entirely built by Russian manufactures and to was served by them (except some equipment for the rig, which was provided by
American corporation Indrill International). Also, a significant number of modern innovative projects in the Polar region are implemented with the use of Russian technologies. Drones, which are already being massively used in the Arctic to monitor climate processes, shipping and operations in the fields and to trace the movement of ice, were created by Transas company located in Saint Petersburg [29]. In the future, such drones are going to be used in the Far East, and there will also be developed a special class of drones to deliver cargos. The project of the Arctic rescue robots, which was supposed to be launched in 2021, was elaborated by the Russian Central Research and Development Institute of Robotics and Technical Cybernetics, they also developed software for these robots [28]. These robots will work in connection with domestic drones to track emergency situations. Also, Russian politicians and experts plan to launch the creation of 3 smart cities in the Arctic zone – in Yakutsk, Petropavlovsk and Velikiye Luki, as it was discussed at the International Arctic Forum 2019 [30]. The creation of smart cities is supposed to be accomplished by their own efforts.

Thus, it turns out that the mutual interest and desire of the Russia and the Southeast Asian countries to strengthen cooperation in the Arctic mainly allows Russia to fill ‘the gaps’ with such joint projects. The Russian Arctic zone does not lack foreign concerns and does not suffer from the incapacity of domestic facilities to provide its development, therefore, partnership with the countries of Southeast Asia only helps Russian political line towards the polar region to be comprehensive and multi-vector. For the further research, it would be useful to analyze the involvement of other foreign states in the development of the Russian Arctic zone and to emphasize role of the China in these papers.

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