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ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

THE IMPACT OF CLIMATE AND GEOPOLITICAL CHANGES ON RUSSIA'S ENERGY POLICIES IN THE ARCTIC REGION

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Abstract

After the Industrial Revolution, the energy resources under the polar ice sheets became even more important for becoming a global power. Providing the security of this energy, as well as its utilisation, is a very challenging process for countries. However, a new challenge has recently been added to these challenges: The Climate Crisis. In the new global system, new Arctic-centred policies must cover three important issues: Climate, security and energy.

Russia has the longest border in the Arctic Circle. Russia's challenge in the Arctic is not only to extract energy but also to protect it and deliver it safely to ports. Therefore, Russia needs to formulate security policies without ignoring geopolitics and climate, which are of vital importance for its national borders. In this study, Russia's new energy security will be analysed by

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considering the effects of climate and geopolitics changes on the Arctic region. The focus will be on valuable minerals and energy transportation from the Arctic region. The research question is: How is Russia adapting its energy security policies in the Arctic region in response to the dual challenges of climate change and geopolitical security, focusing on the extraction and transportation of precious minerals and energy resources?

Keywords: Arctic Circle, Climate Change, Energy Policies, Russia, Arctic Geopolitics

İklim ve Jeopolitik Değişikliklerin Rusya'nın Arktik Bölgesindeki Enerji Politikalarına Etkisi

Öz

Sanayi devrimi sonrasında kutup buzullarının altındaki enerj kaynakları, küresel güç olmak için daha da önemli hale geldi. Açığa çıkartılan enerjinin kullanımı kadar bu enerjinin güvenliğini sağlamak da ülkeler açısından oldukça zorlu bir süreç. Ancak son dönemde bu zorluklara bir yenisi daha eklendi: İklim Değişikliği. Yeni küresel sistemde Arktik merkezli inşa edilen yeni politikalar üç önemli durumu da kapsamak zorunda: İklim, güvenlik ve enerji.

Rusya, Kuzey Kutup Dairesi'ndeki en uzun sınıra sahip ülke. Rusya'nın Arktik bölgesindeki mücadelesi sadece enerji elde etmek değil, aynı zamanda bu enerjiyi korumak ve limanlara güvenli bir şekilde ulaştırmaktır. Bu nedenle Rusya'nın, ulusal sınırları için hayati önem taşıyan iklim ve jeopolitik değişiklikleri göz ardı etmeden güvenlik politikaları oluşturması gerekmektedir. Bu çalışmada, Rusya'nın enerji güvenliği, iklim ve jeopolitik değişikliklerin Arktik bölgesi üzerindeki etkileri göz önünde bulundurularak analiz edilecektir. Odak noktası Arktik bölgeden değerli madenler ve enerji taşımacılığı olacak. Araştırma sorusu ise, Rusya, iklim değişikliği ve jeopolitik güvenlik gibi ikili zorluklara yanıt olarak, değerli minerallerin ve enerji kaynaklarının çıkarılması ve taşınmasına odaklanarak Arktik bölgesindeki enerji güvenliği politikalarını nasıl uyarlıyor? Çerçevesinde olacaktır.

Anahtar Kelimeler: Kuzey Kutup Dairesi, İklim Değişikliği, Enerji Politikaları, Rusya, Arktik Jeopolitiği

Introduction

As the country with the longest coastline in the Arctic region, Russia thinks of energy and security policies in parallel. Russia is also aware of the need to plan its energy security policies, both theoretically and in practice, with the climate crisis in mind. In addition, we must be aware that Arctic glaciers are important not only for energy but also for the new routes that are emerging in this region. In other words, not only are energy reserves waiting to be discovered in the Arctic region, but new routes to transport energy have also emerged. Based on this idea, we need to think not only about the energy of the Arctic but also about new trade routes.

The main research question addressed in this study is how the relationship between energy security and climate crisis is and should be. This question should be answered by considering Russia's alliances with other Arctic countries and in the Arctic region. The progress will be centred on China, Russia's strongest alliance in the region. National-level policies between energy security and climate change have a significant impact on the international arena. Especially after the war between Russia and Ukraine, Russia has been alone in the Arctic region. NATO's expansion. What is meant by isolation here is that seven Arctic Council members are NATO members after Russia's attack on Ukraine. As a member of the Arctic Council, Russia is the only state in the region that is not a member of NATO.

When we think sequentially, the study will progress as follows: first, we will talk about the geostrategic value of the Arctic region and emphasise its geopolitical importance. Secondly, we will analyse the relationship between climate change and energy security. Third, we will analyse energy security data in the contemporary world and review Russia's energy security policies in general. Fourth, we will analyse Russia's energy policies with a special focus on the Arctic and explore Russia's energy potential in the region. Fifth, we will examine Russia's relations with China as an alternative partner in the Arctic region. In this section, we will analyse Russia's relationship with other Arctic countries as an alternative to NATO expansion.

The Geopolitical and Geostrategic Worth of the Arctic

Russia's Arctic region holds not only geographical significance but also carries substantial geopolitical importance. The Arctic Region of Russia includes about 5 million square kilometres and

extends along the coastal areas of the Barents Sea, Kara Sea, Laptev Sea, East Siberian Sea and Chukchi Sea to the Bering Strait (Paul and Swistek, 2022). The 24,140-kilometer Arctic coastline, stretching from the Barents Sea at the Norwegian border to the Bering Sea and the Sea of Okhotsk in the east, signifies a strategically vital geography. This region has a profound impact on Russia's geopolitical strategies. Russia's Arctic coastlines are rich in elements such as energy resources, maritime routes, and access to strategic points. This richness enhances the geopolitical importance of the region, directly influencing Russia's national security, economic interests, and military strategies. Energy reserves play a critical role in sustaining Russia's economy and ensuring energy independence. The three major river systems in the Arctic region – the Yenisei, Lena, and Kolyma rivers – create strategic waterways, facilitating transportation to Russia's inland regions. These rivers play a vital role in international trade and transportation, especially during the summer months when ice melts. This further adds to the geopolitical significance of the region. Moreover, the extreme climatic conditions in the Arctic can both complicate access to strategic points and impact the military defence and security of these areas. Strengthening Russia's military presence in these regions can be viewed as a significant strategic step in maintaining geopolitical balance (Gamjashvili, 2022).

Figure 1: Russian Federation Arctic Military Installations (Perconcordiam, 2021).

With the Second World War, the Arctic region's geostrategic standing observed the USA and the Soviets' power fight. The USA has formed military installations in Greenland

and Iceland and constituted systems within the radar zone. Even though the Soviets and the USA vigorously went into a power scuffle throughout the Cold War period, Soviet Russia's supremacy within the area declined because of the economic disorder in the 1980s (Güçyetmez, 2021, pp. 153-177). These catastrophes, which expanded more, directed the Soviet leader Gorbachev to follow a more non-violent concession strategy to finish the bloc within the region and the global pitch. As of 1987, Gorbachev stated that the area might well convert into an amity region with his demand for a non-violent resolution to the region's difficulties in the context of multidimensional collaboration. By the close of the Cold War, the two nations' competence stage within the Arctic region persisted nominal and scientific studies were mostly taking place. Within the 21st century, the glaciers melting thanks to the outcome of universal heating as well as considerable hydrocarbon deposits that arose from exploring have augmented attention in terms of the area again. There are numerous explanations for this augmented concentration. Initially, the Arctic holds geostrategic standing that permits us to possess control of the whole northern hemisphere of the world. Secondly, the region stays abundant in terms of hydrocarbon and biological reserves. 90% of Russia's gas production and 60% of its oil production takes place in the Arctic. Specifically, 90 billion barrels of oil, as well as 47 trillion cubic meters (tcm) of gas deposits, remain positioned within the Arctic Ocean. Several scientific investigations demonstrate that the Arctic region's glaciers will dissolve pointedly and probably vanish as early as the year 2050. Estimations show that a 12% to 40% lessening in glaciers happens throughout the summer. Within this context comes the meaning that the Arctic Sea passes, which can transform the Arctic Sea into a vital international commercial way and will be opening for certain periods of the year in early 2050. The start of international difficulties stands owing to the existence of the principal deposits within the Russian Federation Arctic (Arctic Review, 2024).

The extent of the entire Arctic coastline stands at 38700 km. Russian Federation section involves 22600 km. As stated by Gusher, the scope of the zones that each Arctic state can be enlisted as Russia – 5,842 million square kilometres, Canada - 1,430 million square kilometres, Norway - 0,746 million square kilometres, Denmark - 0,372 million square kilometres, and the USA – 0,126 million square kilometres. The standing of this area in terms of humankind stands set forth as follows (Kılıçbeyli et al., 2021: 218):

- The Arctic covers enormous energy deposits which, as stated by specialists, stand the imminent of entire manhood;
- The Arctic stands abundant in akin and sporadic earth metals, minerals, and ores, as well as other rare resources of tactical standing;
- Likewise, within the context of this region, it remains massive biological reserves of universal standing;
- The Northern Sea Route (NSR), accompanied by the North-West Passage (NWP), remains a significant transportation route. The attention of numerous states in terms of the management and expansion of cross-polar voyages stands rising;
- This area impacts the neighbouring atmosphere as well as climate change.

The Relationship Between Climate Change and Energy Security

Since the beginning of the Industrial Revolution, the investments of developing countries have become globalised. The increasing use of fossil fuels with the Industrial Revolution has made the problem of global climate change evident. This problem seriously affects all developed and developing countries. Therefore, this problem, which requires a global solution, affects everyone regardless of the level of development between countries. In this context, international cooperation and strong policy measures are required for sustainable development and mitigation of environmental problems. The transition to renewable energy can break this chain cycle, ensure environmental sustainability, and provide an effective solution to the global climate change problem (Baysal and Karakaş, p. 33).

The Arctic region is particularly highly interactive with global warming, which is one of the biggest environmental problems threatening the world. Problems such as the melting of glaciers in the Arctic, rising sea levels and changes in ecosystems make climate change in the region more evident. For the Arctic region to support a sustainable economy and reduce environmental impacts in the long term, the use of renewable energy sources will play a critical role. This requires a unique strategy to preserve the region's ecological balance and combat climate change. The shaping of energy policies in the Arctic region should be planned not only to consider the ecosystem and climatic conditions specific to the region but also

to be in line with global climate change efforts. The transition to renewable energy sources and sustainable development strategies represents important steps in protecting environmental sensitivity in the Arctic region (Garbis et al., 2023, p.176).

Energy security stands as a "changeable" conceptualisation, given that there stands an inclination in the literature to examine that term from various perspectives in economics and politics or to alter its context through the concentration on the slight viewpoint of security of supply or over the wide-ranging standpoint for encompassing ecology, cheap markets as well as productivity. Even though the International Energy Agency (n.d.) describes the security of energy as "the never-ending obtainability of energy reserves in an inexpensive charge", Brussels assumes a different encircling viewpoint regarding the description of the concept of energy security as "Guaranteeing, for the comfort of its people and the appropriate running of the economic system, the continual physical accessibility of energy goods within the market, at a charge which stands reasonably priced to whole end-users, though showing respect to ecological considerations as well as observing to workable progress" (Sarkhanov and Muradzada, 2023, pp. 69-70).

Consequently, energy has been converted into practically as vital as the other non-military characteristics of power to guarantee security. Consequently, energy security stays evaluated as a matter of supremacy notice that develops into an inquiry into national strategy. Particularly when it is considered in terms of the supply security aspect, getting into or possessing energy sources has turned out to be deliberately central within the milieu of existing situations for worldwide market/politics and states; for example, Russia has set forth plans adjacent to the theoretical entitlement that energy remains "critically significant" to stand studied as "a topic of universal political economy" by itself (Yılmaz and Sever-Mehmetoğlu, 2016, pp. 106-107).

Energy stands as a business with a strategic economic reputation within most countries, as it enables industries and households to work. Reaching energy and heat remain correspondingly a determining factor of the improvement of civilisation. Due to this factor, the operative and effective design of long-standing energy strategies remains among the most significant commercial primaries. Within twenty years, energy topics have stayed extensively debated in the literature and commercial science because of two significant complications, which stand: the lessening of unrenewable sources and also the

necessity to decrease CO_2 discharges over linking with the macroclimate emergency, with the latter existing predominantly projecting within Europe forcing for the abolition of unrenewable energy resources and a carbonless economic system (Jonek, 2022, p. 302).

Russian Energy Security Policies in the 21st Century

Russia remains amongst the world's foremost states in the scheme of the world's flow of energy resources. Russia is aggressively involved in trading these resources and participates in global collaboration within this area. Russia's location is particularly central to the world energy market. Within the past few terms, Russia has possessed top places in terms of oil production and realised 12 % of the oil trade over the world. More than 4/5 of Russian Federation oil stands sold to European countries, and the Kremlin's stake in Europe accounts for nearly 30 %. Russian oil outputs stand similarly to those exclusively sold to the European states. Russia stands as the world's principal state in terms of deposits (23% of the deposits within the world) and the yearly generation of gas. Moscow realises 25 % of the world gas trade, leading not only within Europe but also in the Commonwealth of Independent States (CIS)' domestic natural gas markets (Ministry of Energy of the Russian Federation, 2010, p. 23).

Russia ranks second in coal deposits within the world context (19 % of the reserves on earth), fifth in yearly generation (5% of the world generation), and constitutes roughly 12 % of the world's thermal coal commerce. Russian nuclear electric energy industry characterises 5 % of the world nuclear energy market, 15 % of the world nuclear reactors market, 45 % of the world uranium enrichment market, and 15 % of the world market of spent fuel conversion. Russia realises 8 % of the world's generation of natural uranium (Ministry of Energy of the Russian Federation, 2010, p. 21).

Moreover, according to Statista Research Department Publication on July 27, 2023, regarding the Russian oil deposits between 2000-2020, the overall size of verified oil deposits within Russia has declined from 112.1 billion barrels by the beginning of the 21st century to 107.8 billion barrels as of the beginning of the second decade of the 2000s. Within this milieu, the Kremlin's portion in terms of international oil deposits has increased by 6% (Statista, 2023a).

As stated by Statista Research Department on July 26, 2023, concerning Russian gas deposits between 2000-2020, as

of 2020, Russia would possess resources of more than 37 trillion cubic meters (tcm) of natural gas. Russia has been the state holding the greatest verified gas deposits in that term, constituting almost the largest 1/5 of the mentioned energy resource's entire volume in the world (Statista, 2023b).

Russia has verified deposits equal to 767.3 times its annual utilisation. This means that it has approximately 767 years of coal reserves (at existing usage levels and also not including unconfirmed deposits) (Worldometer, 2016). Rosatom ranks second in the position for established nuclear capacity as well as the number of operative nuclear units. In total, 38 nuclear units stand operational within Russia at 11 nuclear power sites (counting the moving nuclear power plant centred within Pevek). The entire volume of Russian NPPs accounts for 30,576 GWe. Nuclear plants produce more than 19% of Russian electricity power (Rosatom, 2023).

It should be mentioned that energy sales stand as a trade activity pursued by exporting natural resources possessed by states to contribute to the local economic system. As stated by the Eurostat statistics, one can observe that Europe, specifically reliant on energy coming from abroad, stays in need of 36 % of its energy imports from Moscow (gas, coal and oil), Europe, Moscow's biggest market in terms of gas, makes Moscow powerful. When we come to Russia, which supplies more than 50 % of budgetary incomes originating from net energy sales, it must discover brand-new markets. However, its central objective is preserving its current markets and augmenting its sales income. Thanks to this mutual dependence, Moscow wishes to re-constitute the image that it lost after the disintegration of the Soviet Union in terms of diplomacy and politics. The pipelines that benefited from the sale of energy resources via several states have enabled Moscow to enlarge its political impact zone; nonetheless, occasionally, one can observe that the contrary happens. Almost 90 % of hydrocarbons exported by Russia towards Europe go over Ukrainian territory, which has transformed Ukraine into a transit state. Thanks to Kyiv's strategies towards Moscow, the Kremlin has not stopped its involvement and response, ending up with the energy stream towards Ukraine halted in times of Ukrainian crises in the past years, and thanks to this issue, energy importations of Europe have been risked (Al and Kaya, 2022, pp. 90-96).

Due to Europe's turning its face to the Caspian Basin and the Middle East to reduce its dependence on Russian hydrocarbons after the crises experienced by Russia and Ukraine in 2006, 2009, 2014 and 2022, this movement has

been seen by Russia. To preserve the energy stream of its gas to Europe, Russia has been able to activate the Nord Stream I and Turk Stream projects and has been obliged to suspend the Nord Stream II Project after the 2022 Ukrainian War. Moreover, Moscow, which has preferred to direct itself towards the Asian energy market to lessen its mutual dependence with Europe, stands similarly achieving to sign brand-new energy deals with such states, principally China, Japan, and North and South Korea and also stays, therefore differentiating its sales market. Moscow's economic interest-centered relationships with Beijing, named as its universal and regional competitor, represent very important factors. Moscow, reliant on the energy demand coming from Europe from its economic view, continues to endeavour to maintain this mutual dependence with Chinese and Far Eastern markets. Therefore, Moscow intends to empower itself to pursue more effective talks regarding energy sale charges with Europe. The hydrocarbon lines that are being constructed in terms of energy transfer towards China will correspondingly permit Moscow's energy net to access the East Asia region (Al and Kaya, 2022, pp. 96-98).

The energy sector remains to be affected by Russia's attack on Ukraine, which in February 2022 glimmered the first real worldwide energy catastrophe. Two years later, energy charges have retracted from very high levels; nevertheless, tendencies fluctuate extensively amongst areas. In numerous parts of the world, charges stand still– restraining economic development, damaging the funds of households and businesses, and thwarting initiatives to progress into electricity. Energy markets, challenged with a remarkably high level of geopolitical vagueness, keep on control. Subsequently, it occupied Ukraine in 2022; Russia has halted 80 billion cubic meters (bcm) of pipeline gas volumes to Europe, plummeting the area into an energy disaster. While the European Union dedicated to abandoning Russian fossil fuel importations "immediately possible," it confronted an instant energy shortfall it wanted to fill. Because of a stoppage in gas transfers from Russia's Gazprom even before the war, along with remarkably weak hydropower and nuclear production, the EU eventually would have to make up 160 bcm of "missing gas" within 2022. As stated by IEA analysis, different sources of supply – most particularly liquefied natural gas (LNG) from the United States – could meet more than 40% of this shortage. However, the chief regulations have been in demand. Gas usage within the industry has fallen by virtually 25%, whereas a mild winter would decrease usage by 10 per cent. Original renewable energy capacity and productivity enhancements together have lessened

gas need by 10 per cent. Burning more coal has been able to fill not more than 4% of the breach. Natural gas originating from Russia would be able to meet under a quarter of the European Union's whole gas need within 2022. By 2023, the portion has lessened to nearly ten per cent, as pipeline transfers from Russia have decreased an additional 38 cm, and the United States has strengthened its place as the EU's chief LNG provider (International Energy Agency, n.d.). In the current circumstances, nearly 74 per cent of the Russian oil output has been directed to exportation. Moreover, more than 80 per cent of Russian oil exports are to Western, Central and Eastern European countries.

The Geopolitical and Economic Dynamics of Russia's Energy Sector: Balancing Trade, Alliances, and the Climate Crisis

The strategic goal of local energy strategy stands to arrange a steady and self-changeable scheme safeguarding local energy security centred on adjusted territorial construction of energy generation as well as usage. Executing local energy strategy in a state, namely, Russia (holding diverse climatical and socio-economic circumstances), ought to be centred on a combination of local features accompanied by deliberate nationwide goals for long-standing progress of the economic system as well as the energy area. One of the subsequent objectives must be grasped for attaining the deliberate objective of national energy strategy: execution of foremost local calculated efforts of Moscow and energy commerce (energy advancement of the Eastern Siberia, Far East, Yamal Peninsula and the Arctic) (Ministry of Energy of the Russian Federation, 2010, p. 44).

The strategic goal in terms of external energy policy stands as the supreme effective benefit from the Russian energy capacity for full-size incorporation into the universal energy affairs, improvement of sites thereupon and acquisition of the maximum probable income towards the countrywide economic system. Moscow stays keen on providing an additional upsurge in generation productivity as well as the sale of whole chief energy deposits and goods of giving out therefrom, along with know-how regarding which Russian energy and industrial businesses possess viable rewards. Constant dealings with traditional customers of Russian energy resources and determining correspondingly unchanging affairs over innovative energy markets stand the utmost imperative trajectories of the state's energy strategy within the realm of international energy security, providing nationwide benefits for

the state. To achieve the strategic goal of the external energy strategy, the subsequent objectives must stand implemented: establishment of competent worldwide collaboration in the enactment of dangerous and sophisticated projects within Russia (counting shelf Arctic projects). The most imperative strategic initiatives embrace the following:

- progress of hydrocarbon facilities within the country's eastern districts;
- progress of oil and natural gas capacity of the continental shelf of the Arctic seas and northern terrains in the country;
- progress and three-dimensional divergence of energy setup;
- advancement of non-fuel energy;
- advancement of energy saving.

Progress of oil and gas complex, Expansion of oil and gas capacities of the continental shelf of the Arctic seas and northern lands of Russia stays projected for holding alleviating part within the dynamics of hydrocarbon generation, reimbursing probable reduction in terms of the generation stage within the context of traditional hydrocarbon generating areas located at the Western Siberia up to 2015–2030. Formation of trade hubs of gas generation over the Yamal Peninsula and continental shelf of the Barents, Pechora and Kara seas are going to delight the potential need for the economic system in terms of gas, make available state's energy security as well as maintainable progress of the petroleum and energy infrastructure over a long-standing foundation within the milieu of circumstances in increasing need of the economic system for energy reserves. All-inclusive progress of the specified lands and building of suitable sea and pipe transfer setup will endorse the advancement of businesses tangled in amplification of contemporary engineering accommodations, the know-how of search, survey, generation, and transference of hydrocarbons over the continental shelf of RF, accompanied by progress of the Arctic Sea Way (Ministry of Energy of the Russian Federation, 2010: 44, 56-57, 61).

Russia remains active when compared with the past within the Arctic Region. The state possesses a noteworthy populace located within the far-off North. 30% of its GDP originates from that area. Moreover, due to the melting of sea ice, an original transportation direction stands opening over Russia, which is named the Arctic Sea Way; once it grows sturdy, it will be able to lessen the total time occurring for a freight ship to transport between Western Europe and Asia within two-week time, in comparison with benefiting from the

Suez Canal. "Fundamentals of the State Policy of the Russian Federation in the Arctic for the period up to 2020 and beyond" has set forth advancing innovative instruments to pursue the country's strategy within the milieu of the Arctic-" via targeted and harmonised actions of involved centralised executive groups, public authorities of the subjects of RF, resident self-governance organs, trade and non-trade establishments ensuring their authorities as well as parts of motion over the philosophies of communal-personal relationships within the polar cooperation, besides within the basis of collaboration of Russia with overseas nations and transnational establishments and as well as this paper has identified the instruments of combined supervision (Arctics Knowledge Hub, 2009; Yılmaz and Limon, 2022, pp. 858-860).

Within this milieu, before detailing the Fundamental Priorities of Russian Federation (RF) State Policy in terms of Arctic to 2035, approved as of 2020, it is useful to provide the Central Primacies of RF State Policy regarding Artic towards 2020 approved in 2008, to better understand the evolution of Moscow's approaches on this issue. Within the 2008 document, the fundamental primacies of RF toward the Arctic Region have been put forward for taking advantage of the Russian Arctic as a strategic source centre to offer solutions to the difficulties of societal as well as economic progress of the state, to maintain the Arctic as a district of concord as well as collaboration, to defend the sui generis environmental systems within Polar accompanied by benefiting from the Polar Sea Way as a local conveyance way in terms of Russia within the Arctic (Klimenko, 2020; Yılmaz and Limon, 2022, pp. 861-862).

Within this document, chief nationwide primacies of RF within Polar have been specified (Davis and West, 2020, pp. 3-4);

- safeguarding the control and national veracity of the RF;
- conserving the Arctic as a land of amity, solidity, and reciprocally useful collaboration;
- snowballing the eminence of life as well as the comfort of the inhabitants of Russia's Polar region;
- advancing the Polar district of RF as a deliberate resource centre, as well as its workable practice to quicken the economic progress of RF;
- advancing the Polar Maritime Way as RF's practicable countrywide conveyance channel in terms of the world marketplace;
- defending the atmosphere within the Polar, conserving the instinctive areas, and maintaining

the traditional mode of life of the home-grown general public existing within the Arctic area of RF.

In parallel with this document, Russia also targets the formation of settings for the operation of key economic initiatives within the Arctic district of RF; the instigation of execution of the initiatives concentrated on constructing a unified set-up laterally the Polar Maritime Way, the constitution of an arrangement of hydro-atmospheric, hydrographical and navigation funding for the passageway of its waters, and the upgrading of the icebreaker armada. Also, in this document, for the Russian strategic thinking, a prime risk to nationwide safety within the Arctic in terms of this research paper's subject stands the deliberate stride of geographical search of potential inorganic source grounds of the Polar region of RF. By taking into consideration these issues, the purposes of the Russian official strategy in the Polar remain;

- to quicken the economic progress of the lands of the Arctic region of RF and also upsurge their input to the commercial progress of Russia;
- to defend nationwide primacies of RF within the Arctic, predominantly in terms of the economic domain.

The key purposes for the economic progress of the Arctic region of RF have been defined in this document as,

- growing involvement of individual stockholders within the context of the execution of venture initiatives over Polar shelf while upholding official regulation above the acting course, as well as advancing the organisation of inorganic deposit centres logistically linked to the Polar Maritime Way;
- expanding geographical search initiatives sponsored by communal and individual ventures within the progress of hydrocarbons as well as hard mineral deposits; encouraging the progress of rigid for improving energy deposits; snowballing hydrocarbon mining portions, progressing oil decontaminating, as well as generating liquefied gas and gas-biochemical outputs, progress of energy supply grid; renewal of home-grown power services; increasing the practice of non-fossil energy deposits, liquefied natural gas, and home-grown petroleum deposits, guaranteeing the workable practice of natural resources, counting in traditional areas as well as spaces of economic actions of native subgroups vigorously appealing Polar and non-

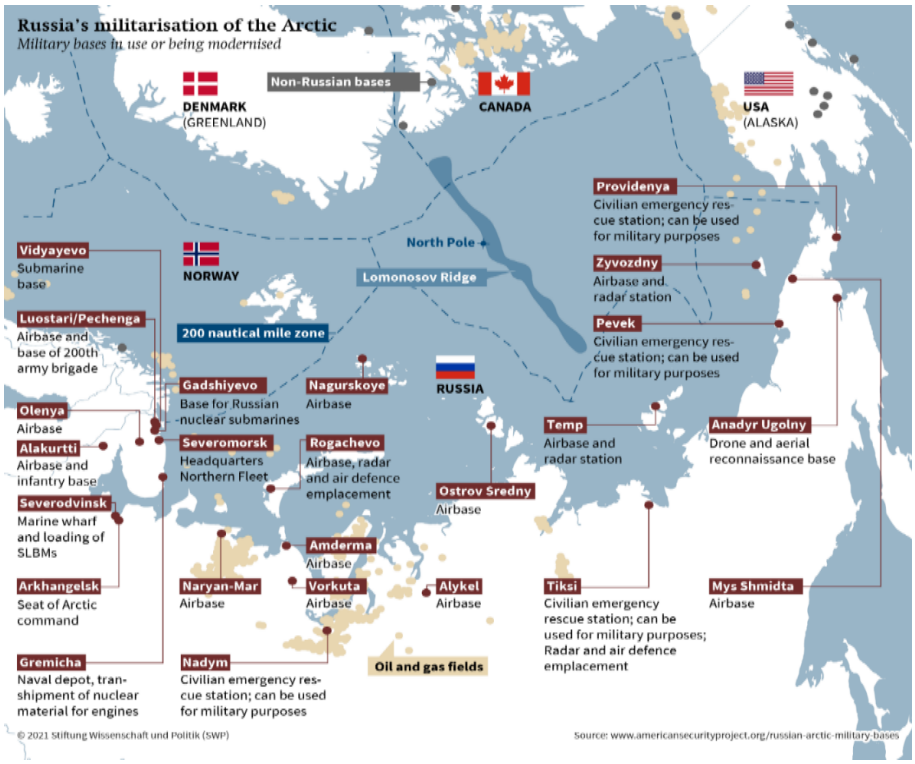
Polar states within jointly useful economic collaboration within the Arctic region of RF.

Crucial Performance Pointers of the Execution of RF State Policy within the Arctic have been outlined within this document as the stake of ventures in static money chosen allocated for defence and workable benefit of natural sources within overall ventures within the context of secure money within Polar zone of RF; the stake of petroleum (counting gas condensate) and natural gas generated within the Arctic area of RF in terms of the overall size of crude oil (encompassing gas condensate) as well as gas generated within RF together with the capacity of LNG generation within the Arctic area of RF (Davis and West, 2020, pp. 4-13).

It is also beneficial to discuss how Moscow approaches this region within the context of its 2023 Foreign Policy Doctrine, published on 31 March 2023 and approved by President Vladimir Putin. Under the fifth section of this doctrine entitled "Regional tracks of the foreign policy of the Russian Federation", the priorities of the Kremlin within the context of the Arctic region have been put forward as follows: Russia stands looking to protect peace and stability, boost ecological sustainability, decrease intimidations to nationwide safety within the Arctic, and form favourable universal situations for the common and economic progress of the Polar area of RF (counting to defend the unique environment and traditional living of the native persons existing there), along with advancing the Polar Maritime Way as a viable countrywide carriageway, enabling its intercontinental practice for carriages amid Europe and Asia. To achieve these objectives, Moscow will concentrate on (The Ministry of Foreign Affairs of the Russian Federation, 2023):

- The peaceful settlement of global issues related to the Arctic stems from the idea that the Arctic countries are responsible for the sustainable progress of the region and the adequacy of the United Nations Convention on the Law of the Sea of 10 December 1982 to define political relations in the Arctic Ocean (counting defending the maritime atmosphere and delineating nautical zones);
- offsetting the hostile nations' plan intended for militarising Polar and restraining Moscow's capability for exercising its self-determining privileges within the Polar area of RF;
- guaranteeing the unchangeability of the factually recognised transnational lawful rule of the interior nautical seawaters of RF;

• creating a jointly useful collaboration with the non-Arctic nations achieving a positive strategy to Russia and keen on global actions within the Arctic, counting advancing set-up of the Polar Maritime Way".



Map 1: Russian Arctic Military Bases (Paul and Swistek, 2022)

China and Russia's Strategic Collaboration in Arctic Energy and Maritime Ventures: Navigating Economic and Geopolitical Challenges

Despite China's increasing size of electricity production, its thriving need for energy spending has not happened up till now. Between 2019 and 2021, the yearly chief energy usage by developing economic systems increased by 15 exajoules (EJ), and Beijing solely constituted 13 EJ; to compare, energy need within advanced states was reduced by 8 EJ. As of 2021, the world's total key energy remained at nearly 595.15 EJ; Beijing, Washington, and Brussels used 157.65 EJ (26.5%), 92.97 EJ (15.6%), and 60.11 EJ (10.1%), separately. As of 2018, Beijing alone made up roughly 21 % of energy consumption in the world (Feng, 2023, p. 3).

Within 2020, Beijing had purchased nearly 304 million tons of coal, 542 million tons of crude oil, and 102 million tons of gas. For now, China's energy-connected external venture has remained climbing to the highest level in history. China will purchase roughly 70% of its oil usage as of 2050 and also approximately 50–60% of its gas usage in the aftermath of 2030. Consequently, guaranteeing that those purchased energies will be transferred to China carefully grows into an urgency for decision-makers. The primary selection of China has remained to enlarge global collaboration with energy resource-rich states, principally Iran and Russia. Another alternative has been, as a component of the "One Belt and One Road" initiative, to construct pipelines within South Asia to enhance energy security. Advancing non-fossil energy has been coming into the fore because China has projected to accomplish 20 % of its internal energy outputs to stay renewable by 2030 (İncekara and Güçyetmez, 2021, pp. 739-740, 746).

China has been developing long-term collaboration with Russia because the two states have stayed coextensive in purchasing vast amounts of gas within the past ten years. China's global commerce will take advantage of the opening of Arctic waterways because of global warming. On the way to improve its energy security, China has followed a purposefully constructive attitude to participate in Arctic matters, converting into the observer state within the Arctic Council as of 2013 and also allocating US$1.3 trillion for advancing transportation ways, building setups as well as putting money into the hydrocarbon area within the Arctic region (Feng, 2023, pp. 1-3).

The Arctic remains of deliberate significance for Russia because of its vast resources and socio-economic capacity. Russian Arctic hydrocarbon deposits stand in an enormous volume, totalling nearly seven USD billion, not encompassing other kinds of deposits. They create noteworthy attention in terms of the diversity of players. There are two main tools that can arouse Arctic offshore hydrocarbon deposits within Russia: political determination and tax policy.

The Kremlin is searching for augmenting the socio-economic capacity related to Arctic offshore hydrocarbon deposits as well as hydrocarbon exploitation. However, the significant components stand between venture earnings and taxes. Some researchers reflect the tax management of Russia to advance Arctic offshore hydrocarbon deposits stays comparatively favourable when compared with the rest of the Arctic states. In the meantime, profit tax and royalties stay slightly low. However, the taxation scheme remains not as much of adjustable to distinct pointers of an area. Additionally, the

administrative regulator suggests restricted entree to the seaward areas (not any communal obtainable geographical statistics, restricted entrée aimed at global corporations), owing to 'resource protection' (Devyatkin, 2020).

Rosneft and Gazprom have stayed the companies for accomplishing these settings, and these two corporations have even now acquired approximately 80 % of the seaward Polar authorisations. The two other remote corporations that are interested in partaking in Arctic offshore projects - Novatek and Lukoil – hold partial entry to seaward Polar projects, albeit they possess practice within the context of experience at work within Arctic-identical circumstances. Owing to restrictions, corporations readdress ventures from the Arctic offshore resources. Overall, it recognises the deliberate significance in terms of Moscow regarding the exploration of the Arctic hydrocarbon deposits lead over further subjects. The most considerable feature impacting Arctic offshore hydrocarbon deposit exploration within Moscow remains the oblique sanctions. They have meaningfully changed venture agendas and forced global businesses to abandon their ventures in RF (e.g., ExxonMobil, Eni, and Statoil). Consequently, businesses in Russia have problems guaranteeing adequate capital for exploration and reaching into know-how (Morgunova, 2020, pp. 74-75).

Although China is not originally an Arctic state, in addition to the energy reserves that might be found in the region and new sea transportation routes, as the world's leading exporter and energy importer, Beijing has increasingly been directing its interest to this region and has defined itself as "A State Close to / Neighbouring State to the Arctic" with the declaration of White Book issued at the beginning of 2018. On the other hand, even if China does not have any sovereignty claim in this region, it possesses the privileges of doing scientific research, navigation, fisheries, laying down subsea lines and constructing pipelines. The priority subject in terms of Beijing is to access the natural deposits within the area (Korkmaz, 2021, pp. 132-135).

The White Paper on "China's Arctic Policy" issued by Beijing in 2018 echoed that "Beijing stands as an imperative shareholder in terms of Polar matters," explained China's Arctic upright place. Definitely, in terms of the Belt and Road Initiative partnership, particularly bearing in mind noteworthy rises in China's venture within Polar in the past few terms, it remained delivered the "Belt and Road Initiative Maritime Cooperation Concept," where Beijing declared for constituting "Ice Silk Road." Subsequently, in the 18th National Congress of

the Communist Party of China, the Polar area would convert into an innovative course for China's external investment. However, because of strategy and popular opinion confrontation, some investments might be overwhelmed completely, or they can resist an unfinished implementation of investment purposes. The targeted state's political and societal aspects establish China's exclusive restrictions on Arctic investment. Equally, Moscow's LNG generation strategy has remained freshly advanced to 80–140 million tons yearly as of 2035, as stated by the Energy Strategy. LNG project advancement stands set forth as ground-breaking. Meanwhile, it stands centred on original technology advancement (Steblyanskaya et al., 2021, pp. 450-451).

When it is examined within this context, Russia and China started to collaborate in the context of Polar Maritime Way in 2010, and they also had a trial for the transportation of LNG from Murmansk to Nigbo. Additionally, Sovcomflot, one of the leading transportation firms of Russia, and CNPC have agreed on oil transportation via Polar Maritime Way. In 2011, most steel would be transferred from Murmansk to China's shores via that route. Between 2012 and 2013, oil and natural gas transfers would be realised from the Russian port of Vitino to China. In 2013, the Chinese Yong Sheng cargo ship was the first foreign commercial ship to pass the Northern Sea Route. In 2014, China would issue its first Arctic Navigation Guide. In 2017, Moscow and Beijing agreed on the formation of a Polar Silk Road based on the North Sea Route. Russia first followed a negative approach regarding Chinese initiatives on energy production and prioritised developing initiatives with Western firms. However, accordingly, the sanctioning policies were applied counter to Moscow after the Ukrainian Question, which caused the formation of partnerships between Russia and China. In 2013, Russian Rosneft proposed to CNPC that joint initiatives be made in three sea fields located in the Barents and Pechora Seas. In 2016, Gazprom made a proposal similar to those of CNPC and CNOOC. On the other hand, it can easily be stated that the most successful joint energy venture within the Polar region has been the Yamal Peninsula LNG plant (Kısacık, 2022, p. 1473).

The construction of the project, developed by Russian Novatek in 2009, started in 2013. Its shareholding system can be described as Novatek: 50.1 %, Total: 20 %, CNPC: 20 % and China Silk Road Fund: 9.91 %. The reason why the Chinese Silk Road Fund is a member of this project is that Beijing wants to include the Arctic Region in the One Belt-One Road Project. Russia has been able to supply the investment that is needed

from China after encountering limitations on the Western-based financial assistance and know-how transfer directed against it. In line with this issue, Chinese banks have provided 12 billion dollars to the project. By the completion of the project operational in 2017, it is envisaged the transportation of nearly seventeen million metric tons of LNG will be realised from Sabetta Port to European and Asian countries (Kısacık, 2022, p. 1474).

As of 2018, PetroChina has publicised its plans to substitute whole long-standing LNG agreements that stand connected to petroleum charges with petite and more elastic contracts. Dealings with Qatargas, Yamal and Gorgon stand anticipated. Those stand agreements stay intended for being deceased between 2025 and 2038. As stated by S and P Global Platts Analytics, the whole capacity of agreed LNG stands at nearly fifteen million tons per annum. In the extensive era, China's portion of worldwide LNG need will stand fit for the Japanese one as S and P Global Platts Analytics forecasts. Within this framework, it can be projected that Chinese traders are going to play a growing role in determining the international LNG market and its charges. As a portion of the building of the 4th line (1 million tons) for the Yamal LNG project, it stands premeditated to benefit from the Russian LNG liquefaction know-how "Arctic cascade," which will benefit in the creation of "Arctic LNG-2 in the future. The generation volume of the Arctic LNG-2 plant will reach 20 mln.t, which exceeds the stated volume of the three Yamal LNG lines (16.5 million tons). (Steblyanskaya et al., 2021, pp. 453-454).

Moreover, as of 26 March 2021, as stated by the Russian Novatek, 50 million tons of LNG have been transported since the inception of the project, and the milestone cargo was loaded into the Arc 7 ice-class tanker named Nikolay Zubov, and this would be 685. LNG cargo after the first cargo loading in December 2017. For instance, in 2020, 18.8 million tons of LNG would be produced in that complex, which accounted for 5 % of the global LNG market (Kısacık, 2022, pp. 1474-1476).

Beijing lingers on stopping the technology breach because of the departure of Western corporations from Moscow's Arctic energy ventures. For the past year, Novatek has searched for critical gas turbines for its Polar LNG 2 venture. Initially, Baker Hughes had stood scheduled for delivering the apparatus to dissolve natural gas and produce power within the facility. Nevertheless, succeeding in the incursion of Ukraine and successive sanctioning policies, the corporation would be unable to provide most of the turbines, remaining Novatek with only four out of a whole of twenty obligatory for functioning

entire 3 generation lines of Polar LNG 2. A respective generation system necessitates nearly 150MW of electricity production. In 2022, Novatek has formulated strategies for agreement on a moving Turkish electricity facility to meet its power requirements. Those initiatives, nevertheless, have dwindled, as stated by Novatek; subsequently, the two parties possibly will not settle over the conditions of the pact. The much-required turbines will be supplied by Harbin Guanghan Gas Turbine Corporation, a subdivision of China's Shipbuilding Industry Company. The corporation is going to make available turbines for the primary- and second-generation systems, anticipated for commencing generation as of 2023 and 2024 (Humpert, 2023; Kubny, 2023).

Moscow would accept Polar LNG 2's initial section, leaving through the Polar Maritime Way from the Murmansk area to its forthcoming generation area located on the Gydan peninsula. Putin, as the leader of the country, has been attaching sui generis importance towards the energy projects within the state. Moscow deeply counts on hydrocarbon generation, although Moscow remains concentrating on advancing its expertise during sanctioning practices of the Euro-Atlantic Bloc. Murmansk area stands as the home for the primary plant for mass-generating gas liquefaction trains on gravity-grounded structures, which will benefit from the use of Arctic LNG 2. Arctic LNG 2 is going to stand as Russia's third large-scale project for generating LNG after a Gazprom-commanded Sakhalin 2 facility within the Russian Pacific as well as Yamal LNG under the control of Novatek. It is going to assist Moscow in accomplishing its objective of acquiring 20% of the universal LNG market as of 2035 from roughly 8% presently. Putin has underscored that "LNG ventures stand very vital. They permit Moscow to surmount a portion of the international LNG marketplace and progress connected subdivisions. There stand motives to have confidence in that Polar LNG 2 will stand executed in time". Novatek, possessing a 60 % share, is the leader of a 60% stake in LNG 2, projected to commence generating the super-cooled gas in late 2023 or at the beginning of 2024 in its first high-tech system (Soldatkin, 2023). Senior company executives of Russia's Arctic-2 LNG project, wherein CNOOC possesses a 10 % portion, stand on as planned, with the first stage to begin action in 2023. Chief financial officer Xie Weizhi has underlined that "Thus far all associates...have remained funding the venture consistent with the standard. Nobody stays suspended in terms of backing it. The venture consequently stands as premeditated." The statement stands parallel with former Chinese state energy

firms' standings to continue with prevailing initiatives within projects in Russia but then stay away from guaranteeing new funds (Aizhu and Hayley, 2023).

Conclusion

In this paper, we examined the impacts of climate change on energy policies in the Russian Arctic, centred on both regional energy reserves and measures taken to protect them. The basis of the research assumed that climate change in the Arctic has implications for shaping and implementing energy policies. The data analysed throughout the paper showed that rapid climate change in the Arctic poses serious challenges and opportunities in key areas such as access to energy resources, energy production and transport.

Climate change has profoundly influenced Russia's energy policies in the Arctic region, driving both opportunities and challenges. The retreating ice and opening of new maritime routes have enhanced access to vast untapped hydrocarbon reserves, positioning the Arctic as a strategic asset for Russia's energy ambitions. This accessibility has prompted Moscow to intensify its exploration and production activities, notably through major projects like Yamal LNG and Arctic LNG 2, and to seek international partnerships, particularly with China.

However, these opportunities come with significant geopolitical and environmental risks. The imposition of sanctions by Western nations, particularly following Russia's actions in Ukraine, has complicated Russia's ability to secure the necessary technology and investment from Western sources. Consequently, Russia has increasingly turned to China and other non-Western partners to mitigate these challenges. China's involvement not only provides crucial financial support but also aligns with its own strategic interests in securing energy resources and establishing new trade routes through the Arctic.

When the ever-increasing energy demand is considered, energy-producing countries prioritise pursuing policies centred on the exploration of new oil and gas resources in order to continue their dominant positions in the related markets and for the sustainability of their systems. States lacking energy reserves are trying to discover those resources in their territories or pursue policies to develop alternative energy resources. When it is examined in this milieu, some regions have started to come to the forefront more due to having energy resources than other regions. The Arctic Region (Northern Pole Region) that we examine in this study is one of those regions.

Global warming has resulted in the discovery of new energy resources and new transportation routes in the Arctic region. As it is put forward by the estimations, it has been understood that there primarily exists a high potential for valuable raw materials/energy resources in this region. As a result of this situation, there has been a very serious/intensive geopolitical, geostrategic and geoeconomic competition, specifically among regional states such as Russia, Norway, USA, Denmark and Canada. For the discovery, management and transportation of estimated oil and gas reserves, in addition to the Arctic Five, such outer regional countries as China, South Korea and Türkiye have intensified their efforts for scientific research in this area in recent years.

In summary, while climate change has unlocked new opportunities for Russia's energy policies in the Arctic, it has also introduced a complex web of challenges. Balancing the economic benefits with the geopolitical, environmental, and operational risks will be crucial for Russia as it navigates its future in the Arctic energy sector. The success of these endeavours will depend not only on Russia's strategic decisions but also on the evolving global climate policies and international relations.

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