



Russo-US Power Politics in the Arctic: Implications on Climate Change (2010-2025)

Ezza Tariq

IR Officer, Small and Medium Enterprise Authority, Ministry of Industry and Production, Pakistan. Email:ezzatar14@gmail.com

Hiba Ahsan

Bachelors, International Relations, Kinnaird College for Women, Lahore. Email:hibbahahsan786@gmail.com

Qudsia Akram

Assistant Professor, Department of International Relations, Kinnaird College for Women, Lahore. Email:qudsia.akram@kinnaird.edu.pk

IJKS: Vol. 8 - No. 1/2026

The IJKS

provides a forum for scientific exchange and public dissemination of up-to-date scientific knowledge on the Kashmir conflict, The IJKS is an independent, peer-reviewed, open-access journal. The topics on which we concentrate—Kashmir conflict and violence—have always been central to various disciplines. Consequently, the journal encompasses contributions from a wide range of disciplines, including international affairs, political studies (geopolitics, political economy and other dynamics, diplomacy and public advocacy, law-based approaches, governance and economy (including micro and macroeconomics), self-determination, and other solidarity rights public international law (including human rights and humanitarian laws and intergovernmental organizations), criminology, economics, education, ethnology, history, political science, psychology, social anthropology, sociology.

All articles are gathered in yearly volumes, identified by a QR Code in print volume with article-wise pagination. For more information, please visit www.kprijsk.org

Suggested
Citation:

Chicago: Tariq, Ezza, Hiba Ahsan, and Qudsia Akram. "Russo-US Power Politics in the Arctic: Implications on Climate Change (2010–2025)." *International Journal of Kashmir Studies* 8, no. 1 (2026).

APA: Tariq, E., Ahsan, H., & Akram, Q. (2026). Russo-US power politics in the Arctic: Implications on climate change (2010–2025). *International Journal of Kashmir Studies*, 8(1).



Russo-US Power Politics in the Arctic: Implications on Climate Change (2010-2025)

Ezza Tariq

IR Officer, Small and Medium Enterprise Authority, Ministry of Industry and Production, Pakistan.

Email:ezzatar14@gmail.com

Hiba Ahsan

Bachelors, International Relations, Kinnaird College for Women, Lahore.

Email:hibbahahsan786@gmail.com

Qudsia Akram

Assistant Professor, Department of International Relations, Kinnaird College for Women, Lahore.

Email: qudsia.akram@kinnaird.edu.pk

Abstract

With the emergence of the 21st Century and its modern challenges with respect to science and technology, the world has been facing environmental security issues. Due to climate change, the Arctic is considered as one of the most affected regions around the world. The climate change in the region has shaped geopolitics and emerged strategic importance among the regional stakeholders. This research

proposes the power politics of Russia and the United States which shape and strengthen the implications of Climate Change and other environmental crises over there. On one side, the US has been struggling to maintain unipolarity by dominating while Russia, being a Revisionist state, is asserting its military power. Under the light of environmental security theory, this research has promoted the critical role of global politics and its impacts on both power politics and climate change. Hence, the research presents policy recommendations to preserve sovereignty and interests of each stakeholder along with the environmental security of the Arctic.

Keywords: *Climate Change, Arctic region, Russia, United States, Power politics, Environmental security.*

Introduction

Across the world, globalization has significantly increased in the past few decades which has resulted in a more interconnected global community. This has been specifically seen in the Arctic region which has become a centre of interactions between prominent powers that rule across the globe. Global power dynamics like those of the US and Russia greatly transformed from 2010-2025 as a result of changing environmental concerns. The Arctic region is of great importance with respect to environmental and geopolitical factors. Newer opportunities with respect to natural resources and maritime strategies for both US and Russia arrive. The resultant power competition

spreads across various domains including economic interests, as well as simultaneously highlighting security, socio-politics, global governance and sustainability of environment. This power struggle thus holds great attention from across the world in continuity with constantly shifting dynamics of the environment.¹

This research aims to highlight the complex relationship between climate change and power politics along with their Arctic impacts. The theoretical lens used in this research is that of Environmental Security Theory, which seeks to analyze the key factors that bring an unprecedented power struggle and competition between Russia and the US as an explanation of the changing climate of the Arctic. Environmental Security Theory highlights further the idea that environmental changes bring new opportunities as well as challenges for both state and non-state actors.

The key objectives of this research are to highlight the causes and impacts of unprecedented climate change on the region. The research will further explore the power competition between US and Russia and its implications on the region and how these two powers are

¹ Geoffrey D. Dabelko, Lauren Herzer, Sylvia Null, Meaghan Parker, and Russell Sticklor, *Backdraft: The Conflict Potential of Climate Change Adaptation and Mitigation*, Environmental Change and Security Program Report 14 (Washington, DC: Woodrow Wilson International Center for Scholars, 2013), <https://www.wilsoncenter.org/publication/backdraft-the-conflict-potential-climate-change-adaptation-and-mitigation>.

positioning themselves over there as well as the impact of this power politics on the environmental security in the Arctic.

This research can effectively bridge the gap between environmental concerns and geopolitics by providing a thorough explanation of changing dynamics of the Arctic, forming an argument that mutually reinforces the ideas of climate change and geopolitics through the lens of Environmental Security Theory. The Environmental Security Theory's threat-multiplier mechanism is identified as a crucial threat to the concept of climate change during the time period of 2010 to 2025. The research thus contributes to academia by bridging the gap between environmental factors and geopolitical dynamics, which have previously been studied in isolation to one another.

Theoretical Framework: Environmental Security Theory

Environmental Security Theory (EST) refers to a broadly scoped theoretical framework which studies environment, security, and their various factors. If the idea of security is discussed, it is mainly focused upon military and/or state-centric threats, also considered traditional security. The term 'environmental security' broadens this concept further into the realm of non-traditional security, dealing with environment related issues and aiming to ensure the wellbeing of individuals, societies and states. It highlights how global environmental challenges such as climate change, global warming,

resource depletion and loss of biodiversity impact human security, including food, health, water, migration and basic livelihoods.²

Rooted in the mid-20th Century, the evolution of EST reflects increasing awareness of the importance of the environment in security studies. Beginning from Rachel Carson's *Silent Spring* (1962) and Garrett Hardin's *Tragedy of the Commons* (1968), environmental degradation and resource competition were recognized as global concerns. Initially, environment and security were separate, with security linked to traditional military threats. However, debates emerged on how environmental degradation impacts human populations and political stability.

In the 1990s, EST experienced theoretical expansion and empirical research. Thomas Homer-Dixon provided evidence linking environmental resource scarcity to violent conflicts, highlighting how environmental degradation and resource scarcity can brew security issues. Similarly, Robert Kaplan in *The Coming Anarchy* (1994) argued that environmental degradation contributes towards global instability, linking environmental issues with political and socioeconomic instability, governance structures and resource management. These works emphasized that environmental concerns

² Simon Dalby, "Environmental Security and Climate Change," *Oxford Research Encyclopedia of International Studies*,
https://www.researchgate.net/publication/342639107_Environmental_Security_and_Climate_Change.

are not isolated but contribute to broader security challenges (Kaplan, R. D., 1994).³

In the 21st Century, scholars highlighted the concept of ‘threat multipliers’, where climate change, rising sea levels, changing weather patterns and global temperature increase intensify existing political and economic instability. As climate change emerges, migration increases due to absence of regional resources, leading to political and economic instability. Environmental changes, therefore, act as catalysts that increase competition among individuals, societies, and states, often resulting in conflict, especially where resources are limited and poorly managed.⁴

EST also highlights the role of both state and non-state actors. States have the capacity to deal with environmental conflict through policy regulation mechanisms and protection of national interests. At the same time, non-state actors such as NGOs, organizations and private groups contribute through adaptation and awareness programs. International institutions also play a crucial role for instance, the Paris Agreement (2015) addresses environmental issues globally and promotes sustainable development. Indigenous communities

³ Robert D. Kaplan, “The Coming Anarchy: How Scarcity, Crime, Overpopulation, Tribalism, and Disease Are Rapidly Destroying the Social Fabric of Our Planet,” *The Atlantic Monthly* 273, no. 2 (1994): 44–76, <https://www.theatlantic.com/magazine/archive/1994/02/the-coming-anarchy/304670/>.

⁴ Norman Myers, “Environmental Refugees,” *Population and Environment* 19, no. 2 (1997): 167–182, <https://doi.org/10.1023/A:1024648717514>.

represent those most affected by environmental degradation, facing threats to their livelihoods and displacement due to climate change. Similarly, international and regional institutions contribute to governance and cooperation in addressing environmental challenges.⁵

The theory provides a multidisciplinary approach, involving political science, economics, sociology, environmentalism and international relations. It focuses on planning and policy making to prevent environmental threats and resultant security concerns, emphasizing long-term strategies and sustainable governance. Environmental challenges are trans-boundary and impact global society collectively, requiring national and international policy framework.

EST is particularly relevant in understanding the Arctic region. The Arctic has emerged as an area of environmental and geopolitical importance due to climate change, melting glaciers, and resource accessibility. Environmental changes such as melting ice and rising temperatures have opened new opportunities for resource extraction and control, increasing geopolitical competition among major powers. The theory highlights that environmental change not only impacts ecosystems but also shapes political interactions, security concerns and competition for resources.

⁵ Esther Brimmer, "Changing Geopolitics in the Arctic," Council on Foreign Relations, July 18, 2023, <https://www.cfr.org/report/changing-geopolitics-arctic-0>.

In the context of Russia and the US, environmental change acts as a catalyst for competition, while competition further exacerbates environmental degradation. The Arctic represents both a climate-regulating region and a strategic space for power politics, where states pursue national interests, sovereignty and resource control. EST explains this relationship by linking environmental degradation with security concerns, highlighting how climate change intensifies geopolitical tensions while also creating new environmental risks.

Thus, EST provides a comprehensive framework to understand how environmental challenges influence human, national and international security. It emphasizes that environmental changes and geopolitical competition are interconnected, shaping the dynamics of conflict, cooperation and policy making in the contemporary international system.⁶

Research Methodology

This research adopts a qualitative, document-based case study design to examine the interplay between climate change and Russo-US power politics in the Arctic between 2010 and 2025. The time frame is bounded at the lower end by the intensification of Arctic strategic competition following Russia's 2010 UNCLOS continental shelf submission and associated infrastructure expansion, and at the upper

⁶ Esther Brimmer, "Changing Geopolitics in the Arctic," *Council on Foreign Relations*, July 18, 2023, <https://www.cfr.org/report/changing-geopolitics-arctic-0>.

end by the most recent available policy and climate data at the time of writing. This period also captures three distinct US administrations (Obama, Trump, Biden), allowing the study to trace continuity and change in US Arctic policy against a relatively stable trajectory of Russian assertiveness.

The study draws on three categories of primary and secondary sources: (1) official government and institutional documents, including US Department of Defence Arctic Strategy reports, NATO exercise records, and Russian federal submissions to UNCLOS; (2) scientific and climate data from NOAA, NASA, the IPCC, and AMAP, used to establish the empirical basis of Arctic environmental change; and (3) secondary academic and policy literature on Arctic geopolitics and environmental security theory, used to situate findings within existing scholarship.

Given its reliance on secondary and publicly available primary sources rather than original fieldwork, interviews, or quantitative modeling, this study is interpretive rather than predictive in nature. It does not claim to establish causal mechanisms in a statistical sense; rather, it applies Environmental Security Theory as an analytical lens to trace patterns of association between environmental change and strategic behaviour. This approach is appropriate given the study's aim — to map a conceptual relationship — but it does carry limitations, discussed further in the conclusion, including the difficulty of isolating climate change as an independent driver of

policy from parallel drivers such as economic interest and traditional great-power rivalry.

Geographical Significance of the Arctic Region

The Arctic region is widespread to eight states, considerably Russia, the largest state by area, Norway, Denmark, Sweden, Iceland, Finland, the United States, and Canada. This region is marked as close yet unified. With respect to each state, this region has quite different aspects when it comes to the economy and the social lifestyle. Other than that, cold climate due to snow and glaciers as well as the plentiful amount of natural oil gas are the region's characteristics. Additionally, as far as its physical appearance is concerned, the Arctic is composed of permafrost, ice and glaciers. These features have been under severe threats due to climate change and environmental discrimination since the 20th century.⁷

⁷ Arti Kumari, "The Geo-Strategic Significance of the Arctic Region: Indian Perspective," *International Journal of Creative Research Thoughts* 11, no. 7 (2023).

Figure 1: The Arctic Region

Source: Woods Hole Oceanographic Institution

Russia, being the country with longest access to coastlines, is taking leverage of the Northern Sea Route in the Arctic. This access makes Russia a strategically beneficial state in terms of trade and interests. Likewise, the US, on the other hand, is also geographically a significant state despite its short coastline near the Alaska region. It strengthens the US proximity with Russia in terms of power politics and influence. As far as routes and passages are concerned, the strategic geographical location for trade and economic activity from economic hubs like the US and Russia has great interests in Northwest Passage and the Transpolar Sea Route because of its shorter time travel to a greater degree.

Particularly for military deployment, the Sea Routes has been playing a pivotal role between the super powers (the US and Russia) for active participation and counter-balancing acts in the regional military relations since the Cold war to the date. The Arctic has also become a hub of high technological weapons which made it a strategic geographical location since the end of World War II. In the post world war period, the region was being used for military and political interests, for instance, the use of airspace for the deployment of intercontinental ballistic missiles. In the 1980s, beneath the arctic ice sheets in the deep waters, the Soviet northern fleet was moved from the kola peninsula to the central arctic basin for further acceleration. Additionally to the security nexus and geostrategic significance of the region which influence the current strategic significance of the arctic, the region has transformed from a military vacuum to an active military deployment hub.⁸

Geopolitical Significance of Arctic Region

For state and non-state actors, the geopolitical significance of the Arctic contains real world factors. For instance, geopolitical assets, strategic location, territorial demandings, militarization, and the natural resources of the region.

⁸ Scott G. Borgerson, "Arctic Meltdown: The Economic and Security Implications of Global Warming," *Foreign Affairs* 87, no. 2 (2008): 63–77.

The Arctic contains a richness of oil and gases which are located in every state's exclusive economic zone (EEZ). To be on point, 90 billion barrels of oil and 1670 trillion cubic feet of gas have been discovered in the region since history. Exclusive economic zones give economic interests to the states and its legality comes under the jurisdiction of these states and the UNCLOS which make it more politically intense in terms of "who rules what". Likewise, non-state actors also add-on their interests in the international waters for trade, making it more controversial and politically more challenging like a race of power and influence (Dolata, 2015). The arctic contains undiscovered oils of 13% range and undiscovered gases of 30% range. This makes the arctic a hub of exploring natural resources. Inclusively, Greenland also plays an important role by leading the 20% of global demand in its kvanefield project. Russia owns approximately 4.8 million barrels of oil around the Pirazlomnoye field, per annum. 10.4 billion of oil reserves is being held under the USA's Alaska region. These resources are getting exploited and triggered due to the increased ratio of climate change and the melting of glaciers.

"The History of the Arctic" is well portrayed by Charle Emmerson. He says that the resource extraction in the region is a threat and challenge to climate change in a long-term runway of regional sustainability. He elaborates that this resource richness turns the power politics making it a hub of dependency pattern with new and

emerging status quo. For instance, political resource competition due to China's energy strategy under its Polar silk road initiative in the arctic. In the meantime, Russian geopolitical ramifications trigger due to its dominance via projects with around 16.5 million tons for the international market, for instance, Yamal LNG project.⁹

In managing trade and economic relations, strategic points play a significant role. Since the Arctic shares frontiers with Canada, Denmark, Norway, and the major powers; the US and Russia, it marks it as a hub of economic, political, and military influence. For instance, 53% of Russian command in the arctic coastline through its northern fleet joint strategic command. This lets them achieve their economic and military wills. The US, on the other hand, maintains its influence for shipping and military activities via its bering strait near Alaska.

For the military mobilization and missile deployment of the US and Soviet Union, the Arctic region has served as a buffer zone. For instance, under ice signals for security navigation, the United States "ICEX" (Ice exercise) took place. Side-by-side, as compared to the Suez Canal route, the Russian coast provides 40% less travel time and distance from Europe to Asia through the northern sea route. In the book "The new ice curtain", Heather A. Conley talks about the

⁹ Lassi Heininen, "Globalization and Security in the Circumpolar North," in *Globalization and the Circumpolar North*, ed. Lassi Heininen and Chris Southcott (Fairbanks: University of Alaska Press, 2010), 221–264.

emerging arctic trade routes which ultimately shows Russia's regional interests. This political approach highlights geopolitical competition, leaving the region as a theater. Contrarily, to compete with Russia's growing interest, the US under North American Aerospace Defense Command (NORAD) like the Trident Juncture, has set a bar, marking it as a defensive strategy in the region.¹⁰

Table 1: Geopolitical Significance of the Arctic

Aspect	Geopolitical Competition	Resource Management	Climate Change Impacts
Key Players	United States, Russia, China	Arctic and non-Arctic states	Arctic and global stakeholders
Main Interests	Strategic influence, military presence	Oil, gas, minerals, and other resources	Navigation routes, environmental protection
Current Trends	Increased military activity, territorial claims	Competitive exploration, drilling, and extraction	Melting ice, new shipping routes, ecosystem changes
Challenges	Territorial disputes, military tensions	Resource disputes, environmental degradation	Environmental impact, increased vulnerability
Opportunities	Strategic partnerships, influence over global policies	Economic benefits, technological advancements	New shipping routes, global trade implications

Source: International Journal of Transcontinental Discoveries

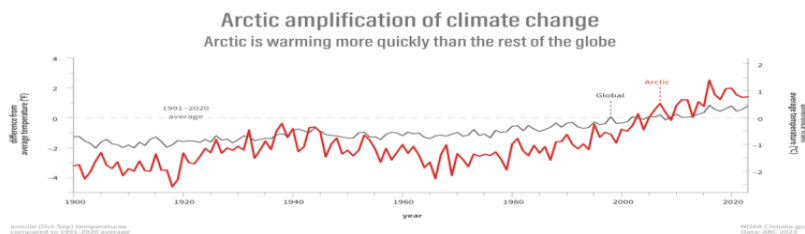
¹⁰ Oran R. Young, “Governing the Arctic: From Cold War Theater to Mosaic of Cooperation,” *Global Governance* 11, no. 1 (2005): 9–15.

Environmental Significance of the Arctic Region

The Arctic is considered as the region of ice and glaciers which play an important role in sinking heat for the Earth's temperature. The Arctic snow landscape acts as a reflection to solar radiation and this phenomenon is known as the Albedo Effect. This process implicated reversely to the arctic and the global temperature as it led to the unprecedented warming since the past few decades. As compared to the world since the 1980s, The Arctic is warming at about two to four times the rate. This caused massive melting of ice and glaciers. Hence, this melting leads to the absorption of more heat from the sun rather than decrease in temperature. This has decreased the rate at which the region used to give off cool winds and air to the world, marking it as a faster warming of the Earth. This phenomenon is known as the Arctic Amplification.¹¹

¹¹ Michael Meredith, Martin Sommerkorn, Sandra Cassotta, Chris Derksen, Alexey Ekaykin, Anne Hollowed, et al., "Polar Regions," in *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*, ed. Hans-Otto Pörtner et al. (Geneva: Intergovernmental Panel on Climate Change, 2019), 203–320, <https://www.ipcc.ch/srocc/>.

Figure 2: Arctic Amplification

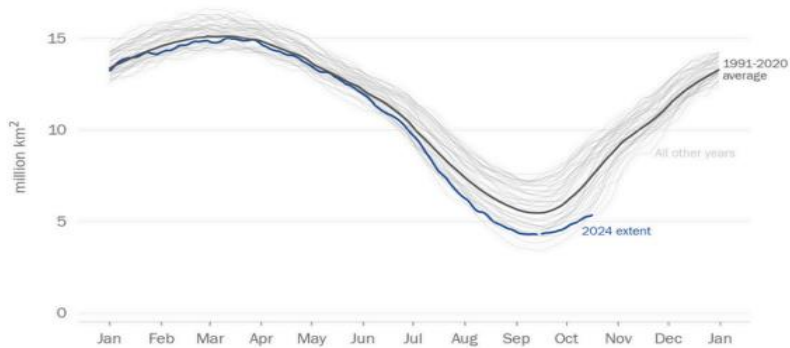


Source: National Oceanic and Atmospheric Administration

Moreover, due to the meltings, the rise in sea levels occurs which ultimately threatens the arctic's coastal sites. The researchers of National Aeronautics and Space Administration (NASA) claim that in September 2024, the Arctic has reached its minimum levels of ice. This reflects the crucial extent of ice melting. The graph below has shown the minimum levels of sea ice since 2024. With such great environmental significance of the region, the rapid climate change and massive melting of the Arctic is alarming for the global community (World Meteorological Organization.¹²

¹² World Meteorological Organization, *State of the Global Climate 2024* (Geneva: WMO, 2025), <https://library.wmo.int/records/item/69455-state-of-the-global-climate-2024>.

Figure 3: Arctic Sea Ice extent in 2024 compared to the average and historical records since 1978.



Source: World Meteorological Organization (2024)

Causes of Climate Change in Arctic Region

Climate change is one of the most important and concerning elements of global warming in the arctic region. With reference to arctic amplification, this region has marked itself as warming 4 times faster than the rest of the world. Due to carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), Greenhouse gases occurs leading to the climate change. These gases appear in the atmosphere due to human activities for instance, Burning fossil fuels (oil, coal, and gas), Deforestation, Industrial agriculture. According to the report by the Intergovernmental Panel on Climate Change (IPCC, 2021), in the pre-industrial era, the atmospheric CO₂ level was 280ppm which has

increased to 420ppm in 2023. This led to more heat retention and ended up accelerating the greenhouse effect.¹³

Due to a feedback loop which involves ice, snow, and solar radiation, Arctic amplification occurs. When the snow and ice reflect the sunlight, high albedo happens because more heat is absorbed by darker ocean and land surfaces on the melting of more ice. This phenomenon leads to the positive feedback loop because when the temperature rises more, ice melts even more. As indicated by the National Snow and Ice Data Center (NSIDC), the amount of the September Arctic Sea ice has decreased by roughly 13% per ten years since 1979.

Rise in temperature has also led to the dismantling of permanent frozen ground of the arctic which is also known as a “permafrost” to thaw. contributing to global warming, methane and CO₂ that have been held for thousands of years are released. According to NASA, in the atmosphere, approximately 1,500 tons of carbon and double of it is already found in the arctic permafrost.¹⁴

¹³ Michael Meredith, Martin Sommerkorn, Sandra Cassotta, Chris Derksen, Alexey Ekaykin, Anne Hollowed, et al., “Polar Regions,” in *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*, ed. Hans-Otto Pörtner et al. (Geneva: Intergovernmental Panel on Climate Change, 2019), 203–320, <https://www.ipcc.ch/srocc/>.

¹⁴ Roxana Bardan, "Temperatures Rising: NASA Confirms 2024 Warmest Year on Record," *NASA*, January 10, 2025, <https://www.nasa.gov/news-release/temperatures-rising-nasa-confirms-2024-warmest-year-on-record/>.

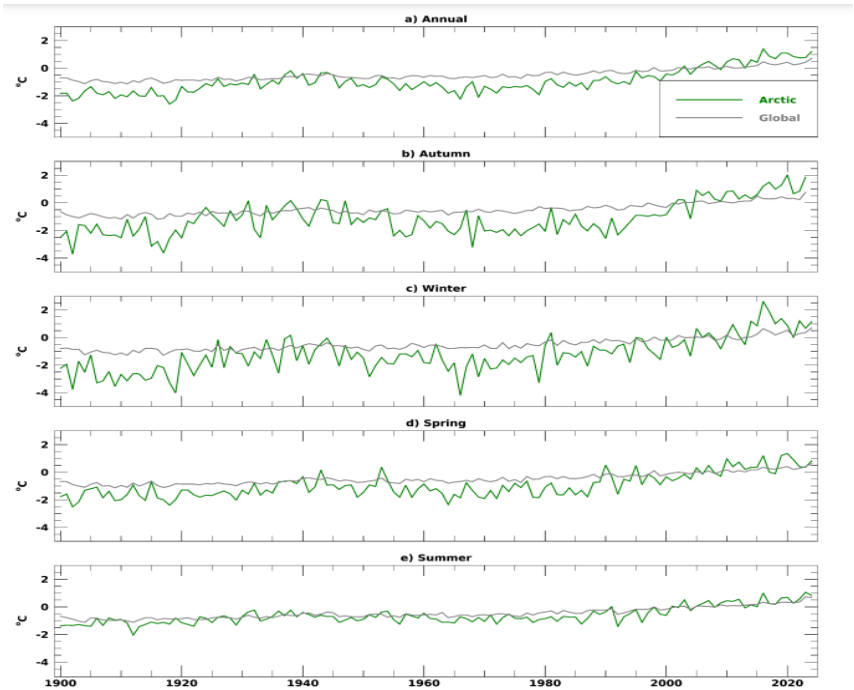
Increased black carbon emissions from ships, Oil and gas exploration, Infrastructure development has occurred due to the melting ice is opening up new sea routes and access to Arctic resources. United Nations Environmental Programme report, 2020, states that in between of 2015 and 2019, the black carbon emissions from shipping in the Arctic increased by 85%. Global wind and ocean currents have also been disturbed due to climate change. For instance, Changes in the Atlantic Meridional Overturning Circulation (AMOC) due to the weakening of the Jet Stream. According to the Arctic Monitoring and Assessment Programme (AMAP), melting of ice is also caused due to the fact that black carbon can reduce Arctic snow albedo by up to 50% (Meredith, M., Sommerkorn, M., Cassotta, S., Derksen, C., Ekaykin, A., Hollowed, A., ... & Talley, L. D., 2019).

Rising Climate Change Impacts in The Arctic Region

The global climate statistics claims that with almost twice or thrice as much global climatic warming, the Arctic is the region with the fastest average of warming up. The rate of warming in winters has been significantly higher than that in the summers since 1900. eventually leading to a decreased volume of the ice sheets and glaciers of the Arctic because of warmer winters. The winter warming trend has increased. For instance, in the 1990s, the winter warming trend has increased from 0 degrees to near 0.8 degrees per decade now. According to the National Oceanic and Atmospheric Administration (NOAA) Arctic Report Card 2024, since the 1990s, the arctic has

gotten warmer. But, with its average anomaly extending beyond 1.2 degree Celsius of the mean temperatures from 1990-2020, the Arctic in 2024 was the warmest. The comparison of the rise in the overall temperatures across various seasons in the Arctic in contrast to the global rise in temperatures has shown in the figure below.¹⁵

Figure 4: The Comparison of Rise in Temperatures during different seasons in the Arctic and rest of the Globe

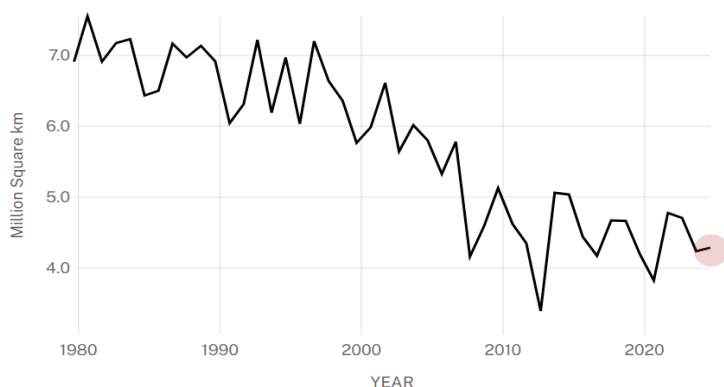


Source: NOAA Arctic Report Card 2024

¹⁵ Twila A. Moon, Mark L. Druckenmiller, and Rick L. Thoman, *NOAA Arctic Report Card 2024: Executive Summary* (Washington, DC: NOAA, 2024), <https://repository.library.noaa.gov/view/noaa/66870>.

NOAA Arctic Report Card 2024 is also shown below which shows that as compared to the rest of the world, arctic temperatures have increased at a much greater rate. This shows that after the 1990s, the increase rate of world temperature is less than that of the arctic's increased rate.¹⁶

Figure 5: Annual Decrease in Minimum Ice Extent in September



Source: NASA¹⁷

¹⁶ National Oceanic and Atmospheric Administration, *Arctic Report Card 2023* (Washington, DC: NOAA, 2023), <https://www.arctic.noaa.gov/Report-Card>.

¹⁷ R. Bardan, "Temperatures Rising: NASA Confirms 2024 Warmest Year on Record," January 10, 2025, <https://www.nasa.gov/news-release/temperatures-rising-nasa-confirms-2024-warmest-year-on-record/>.

Implications of the Climate Change on Political Dynamics

Under the umbrella of security studies, Changing dynamics in the Arctic's environment and natural resources has emerged. as they posit their interests and actions, the geopolitical implications start. In a nutshell, the challenges and opportunities to the region in the context of monetary, security, and political factors occur due to the changing landscape of the arctic. r. James L. Regens and John S. Beddows argues that the geopolitics emerges due to the interests in terms of politics, economy, and strategic alignment. In incorporated capacities, environmental conversion necessitates an antagonistic approach. Additionally, they argued on the imperatives that for acclimatization of the US and NATO's security stances to the developing Arctic geography, interest increases. In defending regional security, It highlights the essence of cooperation and strategic precognition.

MAP highlights the Arctic issues interdependently due to the Concerns of the global system and procedures. Over the region, focal point is considered as the regional circumpoint for major influential activities. There are approximately 10 key areas for the identification of pollution. For instance, Northern seas because it aligns with south i.e, 51.1 degrees. Through a science-informed boundary-making process, AMAP has classified Arctic boundaries. Such as, geographic and oceanographic boundaries, climatic boundaries, vegetational boundaries, and permafrost limits. For instance, the 60° N parallel boundary of Canada which determines the political relations. Due to

geopolitical interests over resource management, human-induced climate shift has also been witnessed at multiple scales and boundaries in the region. This causes habitat loss as well as endangered species worldwide. This has boosted a new paradigm shift. Because the melting ice promotes the Atlantification of Arctic waters in the Svalbard seas during summers. This turns into an increase in fishing activities and other concerns to gain economic interests.¹⁸

A vital theater has been created since 2010. Under the principle of environmental security theory, it reflects various factors such as geopolitical dynamics, economic interests, and strategic environmental concerns which ultimately generates products like climate change and global warming. The region has witnessed profound transformation, due to local and international activities and exploitations. This increased environmental change by a ratio of four times as compared to the rest of the world. The Arctic is witnessing more environmental threats but on the other hand, regional actors access the region for economic interests like using shipping routes for trade and creating dominance to counter geopolitical rivals.¹⁹

¹⁸ Scott G. Borgerson, "Arctic Meltdown: The Economic and Security Implications of Global Warming," *Foreign Affairs* 87, no. 2 (2008): 63–77.

¹⁹ Oran R. Young, "Governing the Arctic: From Cold War Theater to Mosaic of Cooperation," *Global Governance* 11, no. 1 (2005): 9–15.

Russo-U.S. Power Politics in the Arctic (2010-2025)

United States and Arctic Region

The US approach to the Arctic region reflects its counterbalancing strategy in the context of Russian expanding influence. To maintain US dominance over there these strategies include “Freedom of navigation” and “Countering Russian militarization”. Because the Russian government asserts control over NSR by requiring shipping permits and navigation fees, while the US claims NSR as international waterways, both countries continue to experience regional tensions that influence the peaceful governance of the Arctic's . For example, the United States initiated its Freedom of Navigation Operation (FONOP) in 2018 as a counter-balancing. This operation highlights the continuation of unilateral control for surveillance missions in the Arctic's waterways by increasing coast guards.²⁰

Additionally, to gain military power reflects another dynamic for the US to adopt the deployment of military weapons by Russia. Russia has stationed various weapons such as the S-400 for air defensive purposes and settled the “Umka-2021” exercise in the Arctic. Washington sees these Russian dominance acts as a challenge to its power, also facing difficulties in protecting US interests and regional

²⁰ Jason E. Box, William T. Colgan, Torben R. Christensen, Niels M. Schmidt, Mads Lund, Frans-Jan W. Parmentier, et al., “Key Indicators of Arctic Climate Change: 1971–2017,” *Environmental Research Letters* 14, no. 4 (2019), <https://doi.org/10.1088/1748-9326/aafc1b>.

stability. In response, the US showed its presence through Alaska by deploying F-35 fighter jets at Eielson Air Force Base. To balance naval coordination, NATO allies started “Dynamic Mongoose”. Similarly, “Arctic Strategy” in 2020 was released by the Pentagon which exercises the region as a growing security threat for the region and claims the Russian military presence. It concentrates on three pursuits:²¹

1. The US hegemony is being protected by improving Arctic security credentials and infrastructure.
2. US contests with Russia to uphold regional resilience, to counter Russia's militarization.
3. US Assuring freedom of navigation to challenge the power politics, To negate Russia's power over the Northern Sea Route.

In 2018, NATO launched "Operation Trident Juncture" in the Arctic, the US under the umbrella. This is to maintain its influence and counteract the Russian aggression over there. In the North Atlantic, Norway, and the Arctic, the exercise was mainly executed.

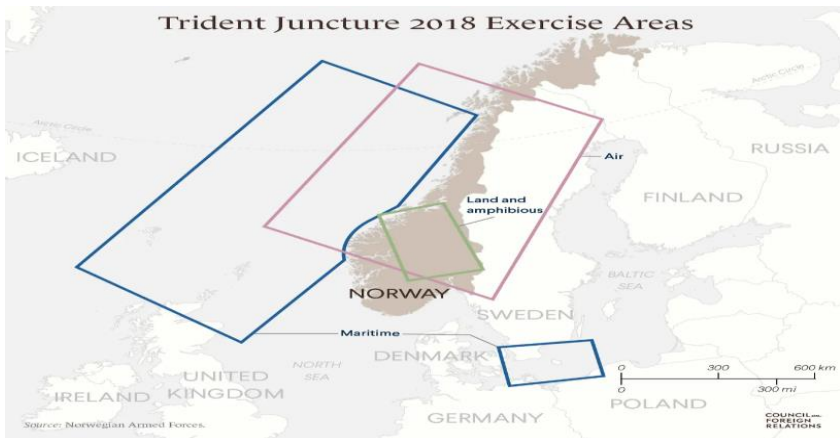
1. In challenging weather circumstances, Operation Trident Juncture reflects the capability to react to High northern threats with effectiveness.

²¹ Michael Meredith, Martin Sommerkorn, Sandra Cassotta, Chris Derksen, Alexey Ekaykin, Anne Hollowed, et al., “Polar Regions,” in *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*, ed. Hans-Otto Pörtner et al. (Geneva: Intergovernmental Panel on Climate Change, 2019), 203–320, <https://www.ipcc.ch/srocc/>.

2. Under Article 5 of the NATO charter which says "attack on one-member state is an attack on all". Russian presence against Norway pulls NATO to take action in support of Norway.
3. As Russia is expanding its military infrastructure via collaboration and competition in the region, this operation also plays a significant role in deterring Russian dominance in the Arctic.

To avoid future contention, this is to enable the view that no single power can overpower a region by becoming a regional hegemon.²²

Figure 6: Exercise Areas of Operation Trident Juncture



Source: Council on Foreign Relations (Masters, 2018)

²² U.S. Geological Survey, *Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle*, Fact Sheet 2008–3049 (Reston, VA: U.S. Geological Survey, 2008), <https://pubs.usgs.gov/fs/2008/3049/>.

The Polar Code was designed in 2017 to protect international waters from environmental issues under the umbrella of the International Maritime Organization. As an Arctic country, the United States has signed the Polar Code for the enforcement of its objectives. This code mainly covers the Safety of life at sea, known as SOLAS ships, and Marine pollution, known as MARPOL. The US Coast Guards (USCG) helps in enforcement of Polar Code and enhancing maritime security over there. For example, USCG deals with the Healy Coast Guard, which assists scientific research and a medium-range program to manage vessels. Also, the US started a Polar security cutter program for polar compliance and credibility.²³

Under Trump, the US had more mixed policy implementation towards Arctic dominance. Energy development and countering strategies were adopted wildly, for example, Alaska's Arctic in 1960, To prevent the wild ecology of Northeastern Alaska the Arctic National Wildlife Range was introduced, which consists of 19.6 million acres of land. The Fish and Wildlife Service also has significant input there in supporting biodiversity of the US. In 1980, after some time, it was renamed as the Arctic National Wildlife Refuge under the Alaska National Interest Lands Conservation Act (ANILCA). ANWR seeks to preserve fish, marine animals, mammals and other species that are being threatened by environmental risks. The coastal plain, also

²³ National Aeronautics and Space Administration, "Arctic Sea Ice Minimum," April 19, 2025, <https://climate.nasa.gov/vital-signs/arctic-sea-ice/>.

known as the "1002 Area" preserves caribou and migratory birds under the backdrop of breeding. According to a report by a US geological survey, approximately 4.3 to 11.8 billion barrels of oil are present in ANWR which opened the door for job opportunities and tax cuts through losing of oil and gas. In 2021, the Biden administration launched a moratorium through which oil and gas drilling was discontinued to reduce environmental risks. The 2023 action plan by President Joe Biden (U.S. Geological Survey., 2008) was done in the complete cancellation of leases.²⁴

Moreover, in 2020, Trump introduced the development of icebreakers to build a bridge with Russian icebreaker capabilities. For Arctic infrastructure, the US has committed to operating icebreakers, namely: the Polar Star, introduced in 1976 and the Healy, which was a medium level scientific based icebreaker. To counter Russia's 50 icebreakers including *Arktika* – a nuclear-powered vessel, the US has introduced six more icebreakers that are expected to be launched by 2027. Furthermore, alliances of NATO states and the Arctic council were made for strategy goals under President Joe Biden's administration.²⁵ Under the Biden administration ANWR oil and gas policy was adjusted to support climate goals and a radar system to

²⁴ World Meteorological Organization, *State of the Global Climate 2024* (Geneva: WMO, 2025), <https://library.wmo.int/records/item/69455-state-of-the-global-climate-2024>.

²⁵ Arctic Monitoring and Assessment Programme (AMAP), *Arctic Climate Change Update 2021: Key Trends and Impacts* (Oslo: AMAP, 2021), <https://www.amap.no/documents/download/3773/inline>.

monitor Russian presence was enhanced. Additionally, together with Canada and Norway, the US has conducted joint military exercises to counter Russian aggression in the region, for example, in 2021, the 2nd fleet was reactivated to focus on naval forces. Likewise, “Arctic Edge” is an Arctic specific training program exercise conducted in Alaska. It is a military exercise conducted by the United States Northern Command (USNORTHCOM) and the Alaskan Command (ALCOM). This operation is carried out by the Army, Air forces, Navy, Coast guards, and Marine corps. Arctic Edge 2020 involved around 1000 personnel while Arctic Edge 2022 included 15000 military personnel to deal with the evolving Arctic landscape and maintain security.²⁶

Russia and the Arctic Region

Russia being a state who owns 53% of the arctic ocean coastline plays a crucial role in developing infrastructure, energy programs, and militarization. Under the United Nations Commission on the Limits of the Continental Shelf (UNCLOS), 1.2 million square kilometers of the Arctic is claimed by Russia.²⁷ This area encloses the Lomonosov

²⁶ Geoffrey D. Dabelko, Lauren Herzer, Sylvia Null, Meaghan Parker, and Russell Sticklor, *Backdraft: The Conflict Potential of Climate Change Adaptation and Mitigation*, Environmental Change and Security Program Report 14 (Washington, DC: Woodrow Wilson International Center for Scholars, 2013), <https://www.wilsoncenter.org/publication/backdraft-the-conflict-potential-climate-change-adaptation-and-mitigation>.

²⁷ United Nations Convention on the Law of the Sea (UNCLOS), “Russia’s Submission to the Commission on the Limits of the Continental Shelf,” 2001, <https://www.un.org/Depts/los/>.

Ridge and Mendeleev Ridge. By pursuing this claim through UNCLOS rather than unilateral assertion, Russia signals it still values the legitimacy that international law confers, even while simultaneously building military capacity to enforce its interests regardless of the claim's outcome. The Russian claimed the Northern sea route is also vital for its trade and shipment because of its lesser time travel. These trades helped Russia to run its 20% of GDP via oil and gas and 22% of exports to the arctic. This dependence means Arctic access is not a peripheral interest for Russia but a structural component of its economy, raising the stakes of any dispute over NSR control well above what a purely territorial reading would suggest. Russia vends 80 million tons of cargo by 2024 Through NSR's economic strategy. Almost 50 icebreakers for military facilities have been developed by Russia. For instance, the icebreaker fleet which is considered as one of the largest icebreakers in the world. This icebreaker is being used for resource extraction and military operation. Moreover, Russia has also launched nuclear powered icebreakers, for instance, Arktika, Ural, and Sibir. These aircrafts consist of 173.3 meters and 168 feet of height. The fifty-to-six icebreaker disparity with the US is arguably Russia's single clearest source of Arctic leverage-it converts a geographic advantage (coastline length) into a durable operational one that is expensive for competitors to match quickly. Under 2020's Arctic policy, Russia has also introduced its infrastructure programs, for instance, Yamal LNG

and Arctic LNG 2. Arctic ports like Murmansk, Vladivostok, and Sabetta are being modernized due to its infrastructure projects.²⁸

Russia had developed its military and expanded its power all over the Arctic just before the war with Crimea and Ukraine. To spread massive influence, new professional and trained forces along with military personnel have been settled. Russia does not hesitate to do it to negate its adversaries, when it thinks of its cause of war and use of force. For instance, in the Ukraine war, armed forces in the Arctic led to an undersupply of soldiers. because once the polar ice was protected in the northern part - not so anymore. With other Arctic states, the pristine susceptibility in the Arctic has led Russia to engage in military thinking and expansion through aggression or cooperation.

More than 50 military bases of Russia have opened on the northern border. For search and rescue purposes, 0 radar systems have been updated and modernized with various stations. With respect to air and naval power, Russia adopted 360-degree security alarms for their defense mechanism. At Nagurskoye on Alexandra Land Island towards the Arctic, Russia has also expanded its northern military base. It has modernized its fighter jets named MiG-31 which is a long-range fighter jet. To emphasize the Arctic's water importance, the Russian Navy also modernized 1 of 5 naval districts in 2021. Russia

²⁸ United Nations Convention on the Law of the Sea (UNCLOS), "Russia's Submission to the Commission on the Limits of the Continental Shelf," 2001, <https://www.un.org/Depts/los/>.

settled 13 ships in its fleet, for instance, the kinzhal which is for arms and naval supplies. For dominance of ports against mythical adversaries, the naval submarines and personnel run training on the northern coastline.²⁹

Figure 7: Russian Military settlements in the Arctic



Source: Arctic Institute

Nexus between Climate Change and Power Politics in the Region

Having established both the empirical trajectory of Arctic climate change and the distinct strategic postures of the United States and Russia, this section turns to the paper's central claim: that climate change and power politics in the Arctic are not parallel developments

²⁹ Michael Meredith, Martin Sommerkorn, Sandra Cassotta, Chris Derksen, Alexey Ekaykin, Anne Hollowed, et al., "Polar Regions," in *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*, ed. Hans-Otto Pörtner et al. (Geneva: Intergovernmental Panel on Climate Change, 2019), 203–320, <https://www.ipcc.ch/srocc/>.

but mutually reinforcing processes, each accelerating the other in ways that existing governance frameworks have failed to contain.

The mechanism runs in two directions. First, climate change functions as what EST scholars term a resource-access enabler: melting ice does not create new Russian or American interests in the Arctic so much as it removes the physical barrier that previously made those interests uneconomical to pursue. The Northern Sea Route's 40 percent time advantage over the Suez Canal, or the estimated 90 billion barrels of oil beneath Arctic waters, existed as theoretical assets for decades; what changed after 2010 was the feasibility of extracting and shipping them. In this sense, climate change did not create Russo-US competition in the Arctic, it activated a latent competition that geography and ice had previously suppressed. This distinction matters because it reframes the causal story: rather than "climate change causing conflict," the more accurate account is that climate change removed a natural constraint on a competition whose underlying logic (control of resources, sea lanes, and strategic depth) is much older than the environmental crisis itself.³⁰

Second, and in the opposite direction, power politics actively degrades the region's environmental prospects. Militarization, Russia's Arctic garrison expansion, US F-35 deployments to Eielson, NATO's Trident Juncture and Dynamic Mongoose exercises carries,

³⁰ National Oceanic and Atmospheric Administration, *Arctic Report Card 2023* (Washington, DC: NOAA, 2023), <https://www.arctic.noaa.gov/Report-Card>.

a direct environmental cost through fuel consumption, black carbon emissions, and infrastructure development in fragile permafrost zones. More significantly, it carries an indirect cost: it forecloses the kind of sustained multilateral cooperation that effective climate governance requires. The Arctic Council's collapse into near-paralysis after Russia's 2022 invasion of Ukraine is the clearest evidence of this. An institution explicitly designed to keep environmental cooperation insulated from geopolitical rivalry proved unable to survive contact with a major geopolitical rupture, suggesting that the insulation EST theorists hoped for between "low politics" (environment) and "high politics" (security) does not hold under conditions of acute great-power tension.³¹

This bidirectional relationship produces a structural trap: the more accessible the Arctic becomes environmentally, the more strategically valuable it becomes, and the more strategically valuable it becomes, the harder it is to govern cooperatively, which in turn allows environmental degradation to proceed with less institutional check. Rob Huebert's observation that states default to hard power over cooperation when sovereignty and resource access are at stake describes not an occasional failure of Arctic governance but its predictable equilibrium under current conditions. Where earlier Arctic scholarship (e.g., Oran Young's account of the region's post-

³¹ "Arctic Competition – Part One," *Foreign Policy*, October 13, 2020, <https://foreignpolicy.com/2020/10/13/arctic-competition-resources-governance-critical-minerals-shipping-climate-change-power-map/>.

Cold War transition to a "mosaic of cooperation") treated institutionalized cooperation as durable, the 2010–2025 period suggests that durability was contingent on a relatively benign Russo-US relationship rather than on the strength of Arctic governance structures themselves. When that relationship deteriorated, cooperation did not adapt, it broke.³²

The policy implication of this trap is significant: proposals that treat climate governance and security governance as separable tracks, addressable through, for instance, a climate-focused forum that avoids security topics, likely underestimate how tightly the two are now fused in Arctic decision-making. Any durable solution must instead treat the environmental and security dimensions as a single negotiating space, an argument developed further in the policy recommendations below.

An Alternative Interpretation

It is worth noting that not all scholars accept the premise that climate change is a primary driver of Arctic strategic competition. Some argue that the "new Cold War" framing overstates the case: Arctic militarization, on this reading, is better explained by conventional great-power rivalry that would exist with or without climate change, Russia's interest in the Northern Sea Route and US countering of Russian naval capability track long-standing Cold War-era patterns of

³² "Arctic Competition – Part One," *Foreign Policy*.

NATO-Russia competition rather than a climate-specific phenomenon. Under this interpretation, climate change is less a cause of competition than a convenient stage on which older rivalries are replayed.

There is also a body of scholarship more optimistic about Arctic governance resilience than this paper assumes. Proponents of the "Arctic exceptionalism" thesis point to decades of functional cooperation, joint search-and-rescue agreements, the 2018 Central Arctic Ocean Fisheries Agreement, scientific data-sharing that persisted even through periods of Russia-West tension elsewhere, as evidence that the region has institutional mechanisms robust enough to outlast any single geopolitical rupture, including the post-2022 freeze.

This paper does not fully accept either counter-position, but engaging them sharpens the argument. On the first point, this paper maintains that even if underlying rivalry predates climate change, the pace, feasibility, and specific flashpoints of that rivalry, where forces are deployed, which routes are contested, are climate-dependent in ways that make the environmental dimension analytically inseparable from the security one, even if not causally primary. On the second point, the Arctic Council's post-2022 paralysis is treated here as evidence against exceptionalism specifically because it is the hardest case: if cooperation collapses even in the Arctic's carefully insulated

institutional environment, that suggests the insulation was weaker than optimists assumed, not that this instance is an aberration.

Conclusion

The study explains in depth the environmental situation and changing climate through the use of 'Environmental Security Theory'. Environment related challenges are not limited to one localized area, but have spread across the globe, becoming an important aspect in the Arctic discussions. Global warming and climate change not only affect the environment, but have everlasting impacts on human activities and biodiversity, even though industrialized human activities are often to be blamed alone for these drastic changes. The second aspect of theory talks about threats of military and both state as well as non-state actors, making non-traditional threats a great challenge in the modern era.

From now, institutions like the Arctic Council and NATO along with other regulatory doctrines like the UNCLOS should play role in shaping the geopolitical scenario and evading the developing power politics and relating conflicts. Thus, in a situation where power politics between two major powers might escalate with the level of military mobilization that is taking place, institutions are of great importance for keeping peace in the present as well as maintaining peace in the future.