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Melting Frontier: Great Power Competition in the Arctic From Polar Periphery to Geopolitical Epicenter

Saad Shaukat¹ Waseem Khokhar²

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Abstract

For most of the post-Cold War era, the Arctic was governed as an exception to great-power politics: a “zone of peace” in which scientific cooperation, not strategic rivalry, set the tone. That exception is closing. As Arctic Amplification strips away the ice that once made the region marginal, it is exposing a geography rich in shipping lanes, hydrocarbons, and critical minerals, and drawing the United States, Russia, and China into overlapping contests for military advantage, economic access, and legal control. This article traces how each power has translated the defrost into strategy: Russia’s fortification of its northern coastline, China’s patient construction of a “Near-Arctic State” identity, and Washington’s belated pivot from neglect to competition. Using a realist-geopolitical framework informed by securitization theory, it argues that the Arctic’s cooperative governance architecture is buckling under three overlapping rivalries: a U.S.-Russia military standoff, a U.S.-China contest over norms and access, and an uneasy Russia-China partnership shadowed by mutual suspicion. The article pondered upon the positive impact of 2026 US-Denmark-Greenland Security Agreement on western security and a valued addition by Trump Administration on successful US foreign Policy. The article closes with targeted recommendations for decoupling climate cooperation from security competition, before an accident in the ice becomes a crisis on the world stage.

Keywords: Arctic Geopolitics, Great Power Competition, Climate Security, Northern Sea Route, Polar Silk Road, Militarization, UNCLOS, Security Dilemma, Arctic Council.

¹ MPhil Scholar, Department of International Relations, MY University, Islamabad, Pakistan.

² Assistant Professor, Department of International Relations, MY University, Islamabad, Pakistan.

Email: waseemkhokhar22@gmail.com

Corresponding Author: Saad Shaukat, Correspondence through: saadikhan5252@gmail.com



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A Frontier in Fluctuation

The Arctic is warming nearly four times faster than the rest of the world (Arctic Amplification), a trend that is producing a dramatically changing landscape that has been an almost inconceivable absence of human activity throughout the span of human recorded history (Intergovernmental Panel on Climate Change, 2021). The reality of Arctic sea ice change is not straightforward and offers a less dire picture than a simple year-to-year decrease: the summer minimum extent has varied comparatively little between 2007 and the present, yet every one of the 18 lowest minimum extents over the 47 years since satellite records have been kept has occurred within that timeframe, and for the first time ever, the winter maximum extent, the platform for the sea ice's structural strength, has set consecutive record lows (National Snow and Ice Data Center, 2024, 2025; Alaska Climate Research Center, 2026). Even where the real extent appears to be stable, the sea ice is thinner, younger, more fragile, and more likely to melt. What these physical changes portend are even more significant. The Northern Sea Route along Russia's Arctic coast, which has been obscured by thick cover of ice too much for commercial traffic to traverse, is now navigable in certain areas at certain times of year, and the Arctic Ocean itself may be open for direct transpolar navigation in only a few decades. As the arctic region's map (Figure-1 below) And at the bottom of the melting, one finds 13 percent of the world's remaining, undiscovered oil (around 90 billion barrels) and 30 percent of its remaining, undiscovered natural gas (1,670 trillion cubic feet), as well as huge deposits of rare earths, nickel, and copper (U.S. Geological Survey, 2008). What was once thought to be worth nothing because it was all frozen over is suddenly worth something because it is not.

For much of the post-Cold War period, the Arctic was commonly described as a region in which cooperation could survive even when relations among major powers deteriorated elsewhere. Scientific research, environmental monitoring and practical coordination helped sustain that view. The Arctic Council, established in 1996, became a central forum for cooperation on environmental protection and sustainable development (Arctic Council, 1996), while agreements on search and rescue and oil-spill response created practical obligations among the Arctic states (Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, 2011; Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, 2013). This record did not mean that the Arctic was free of military competition. Nuclear deterrence, surveillance and strategic position of the North Atlantic remained important during and after the Cold War (Young, 1992).

Figure 1: Source: Arcticportal.org



The maintenance of balance between cooperation and competition has become even harder. Russia's invasion of Ukraine in February 2022 led to a pause in official cooperation between Russia and the seven other states of the Arctic Council. The Council later agreed to resume some working group meetings and project work, but high-level political meetings were still paused at that point (Arctic Council, 2024). In May 2025, the eight Arctic states and six Indigenous Permanent Participants met virtually to pass the chair of the council from Norway to Denmark and issued a joint statement reaffirming their commitment to cooperation (Arctic Council, 2025). This distinction matters, as the Council has faced serious constraints, but describing it as entirely defunct would overlook the continued work that has been possible.

Climate change is adding to the region's strategic significance. The Arctic has warmed nearly four times faster than the globe since 1979 (Rantanen et al., 2022) and this warming is affecting sea ice, coastlines, ecosystems and the conditions under which ships and resource projects operate. These changes may improve seasonal access to some areas, but do not remove the region's severe weather, limited infrastructure, high operating costs or environmental risks. The Northern Sea Route (NSR), which follows Russia's Arctic coast, is therefore better understood as a route whose use is changing rather than as a simple substitute for established global shipping corridors.

The evolving material setting in which Arctic powers pursue traditional security and economic interests is affecting their competition. It is not being caused by the loss of ice. It results from the interplay of geography, strategic interests, threat perceptions and a patchy capacity of regional bodies to help manage differences.

The article concentrates on the three interests that coincide in most decisive manner in the Arctic: Russia, which stands to lose the most as the principal Arctic coastal power in possession of much of the northern infrastructure; the United States, which is the single most important Arctic state, and a leading NATO member; and China, which even as a non-Arctic state has effectively sought to expand its role in research, shipping, investment and regional cooperation. The other Arctic states, including Canada, Denmark (including Greenland) and Norway, are important, but focusing on these three powers permits a finer analysis of the rivalries that underpins the article's key issue.

The paper considers three questions: How are environmental developments transforming the strategic significance of the Arctic? How are Russia, United States and China more generally balancing their interests in the Arctic? What do their interactions mean for cooperation and stability? This text relies on qualitative comparative analysis and document-based research. The data base comprises official Arctic strategies and policy positions, institutional material from the Arctic Council and NATO, the US Geological Survey's 2013 assessment of undiscovered Arctic oil and gas, and some selected academic and policy research. The discussion focuses on the period between the rise of Arctic strategic considerations in the late 2000s and the most recent developments available to date. Official statements are used to establish a government articulation rather than objectively verify that it is correct or had legitimacy.

Theoretical Framework: Realism, Geopolitics and Securitization

Realism helps explain why states attach importance to the Arctic even when commercial activity remains difficult. In an international system without a central authority able to guarantee their security, states pay attention to military access, strategic depth and the capabilities of other powers (Waltz, 1979). The Arctic matters to Russia because its northern coastline, energy projects and Northern Fleet are connected to national defense and economic planning (Russian Federation, 2020). It matters to the United States because the region is linked to North American warning systems, defense of Alaska and Greenland and the North Atlantic approaches (U.S. Department of Defense, 2024). China's interests are different: it has no Arctic coastline, but it seeks access to shipping routes, scientific activity, resources and the institutions that shape regional rules (State Council Information Office of the People's Republic of China [SCIO], 2018) apart from expansion of its trade and connectivity especially in the garb of blockades of other maritime chokepoints.

The security dilemma provides a useful way to interpret the interaction between Russia and NATO. A country may call new bases, patrols or military drills defensive, but other countries might interpret them as signs of offensiveness (Jervis, 1978). The analytical lesson is not so much that one side's explanation has to be taken at face value, but that things that are believed to be defensive can escalate into a spiral of similar actions followed by conflicts and increased global instability.

Geopolitics is concerned with the tie between geography and power. Mahan's (1890) studies of sea power are still valid to some extent in discussions about access to the seas and security of shipping lanes. But as the Arctic is concerned, geography is not decisive, since the freezing quality of the water, port conditions, availability of icebreakers, Search and Rescue capability, insurance, sanctions and the principles guiding navigation all influence whether a route is commercially viable. Russia's geographic dominance over the NSR is therefore significant, but does not readily turn into free traffic and assured commercial viability.

Securitization theory provides a much broader perspective. Securitization assesses whether political actors frame an issue as an existential or urgent threat and, by doing so, seek to justify policy measures and extraordinary attention (Buzan et al., 1998). Russian officials have portrayed the Arctic as vital to national security and economic development (Russian Federation, 2020). Official US strategy-related statements increasingly draw attention to Russian military maneuvers and China's growing presence and interests (U.S. Department of Defense, 2019, 2024; The White House, 2022). China states that its Arctic activities are in the interests of scientific research and environmental protection, shipping, and governance, but also refers to them in relation to national development (SCIO, 2018). These political statements do not establish the intent behind each activity as military; they illustrate how each government aims to justify its actions.

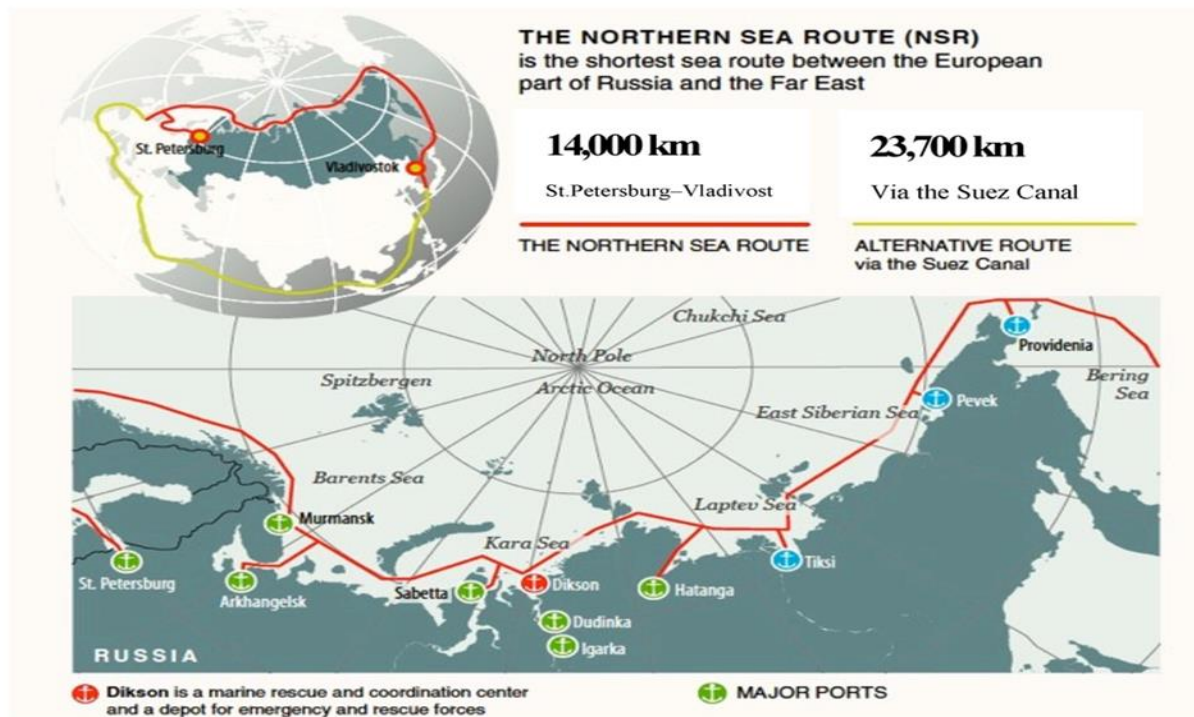
Hence, the article combines three key approaches, which are realism to interpret strategic interest, geopolitics to analyze the played out for locating such interests and securitization theory to identify those states that view such interests as security threats. However, they do not obviate the need to separate the evidence of capability from recommendations about intent.

Environmental Change and the Material Stakes

More complex than an annual decrease, the minimum extent is a feature of the year, but of course, the trend is decreasing, and all the 19 lowest September minimums recorded in the 47-year satellite record occurred from 2007 to 2025 (National Snow and Ice Data Center, 2025b). The winter maximum also reached a record low – in March 2025 and again in March 2026, when the maximum extent was 14.29 million km² on 15 March; statistically the two years are tied for the lowest maximum extent of the satellite record (National Snow and Ice Data Center, 2025a, 2026). The measure of extent is different to the measure of thickness so an extent record can't be equivalent to a record of ice thickness, but in combination they are showing that the Arctic is changing in ways relevant to both ecosystems and coastal communities and navigation.

The Northern Sea Route, as highlighted in *figure-2* has attracted special interest because it traces Russia's Arctic coastline and could shorten certain journeys between parts of Asia and northern Europe. But the route is both seasonal and operationally complex. Sea-ice levels, the weather, the need for escort ships, access to ports, a limited number of rescue ports and the potential for political risk determine how commercially viable the route is. Cargo traffic along the route was around 37.9 million tons in 2024, a record, but just over 3 million tons of that was transiting – the rest headed to or from Russian Arctic ports (Rosatom, 2025). The total was well below the 80 million tons that President Vladimir Putin had predicted in 2024 (The Moscow Times, 2025). This distinction moderates claims that the NSR is about to challenge the Suez Canal for the mantle of global major highway.

Figure 2: Source: *The NSR administration website*



Resource assessments also should be interpreted with caution. The USGS undertook a resource assessment of undiscovered conventional petroleum resources in regions of the Arctic north of the Arctic Circle and produced mean estimates of 90 billion barrels of oil and 1,669 trillion cubic feet of natural gas (Bird et al., 2008). These are undiscovered resource estimates, not proven reserves or a projection of economic viability. Extraction depends on prices, technology, infrastructure, sanctions, financing and environmental constraints. The figures nonetheless help explain why Arctic energy projects feature in Russian development plans and in wider debates about energy security.

Mineral deposits are another part of the region's economic importance, particularly as governments seek secure supplies for advanced manufacturing and energy technologies. Yet mineral potential is not the same as commercially viable reserves. Greenland, for example, ranks eighth in the world for rare earth reserves, yet no rare earth mining has taken place there to date (Center for Strategic and International Studies, 2026). Deposit quality, infrastructure, processing capacity, indigenous rights, environmental effects and investment conditions vary considerably across the Arctic (Belfer Center for Science and International Affairs, 2026). The analysis therefore treats critical minerals as a potential source of strategic interest rather than assuming that the presence of deposits will inevitably produce large scale extraction.

The Arctic's material transformation changes the opportunities available to states, but it does not dictate their response. Commercial access might rise but restrictions caused by infrastructure and safety could be constraining. This disconnect between strategic expectations and practical constraints is significant because competition could become more intense even where the economic returns are uncertain if governments expect future gains.

Regional Governance and Law

Arctic policy relies on a layered governance structure - national jurisdictions, international law, sector specific conventions, regional institutions. The 1982 UNCLOS (United Nations Convention on the Law of the Sea) established minimum standards for: coastal state sovereign rights over an exclusive economic zone extending 200 nautical miles from the coast; and evidence that coastal states may submit in support of a claim to extend the continental shelf beyond 200 miles (United Nations Convention on the Law of the Sea, 1982). Submission alone does not preclude other state overlapping claims; UNCLOS is a legal body rather than a political ownership framework (United Nations Convention on the Law of the Sea, 1982, art. 76; Annex II, arts. 9).

A portion of the NSR is in dispute. Russia uses domestic regulation and UNCLOS Article 234, pollutions upon ice covered areas, to defend the route. The US and other maritime powers object to certain elements of Russian navigation claims which they perceive as limiting the ability to navigate (Byers & Baker, 2013). Neither interpretation is definitive since the route is not an international strait with no dispute and arguably subject to Russian sovereignty (David, 2008). This debate is important because it combines commercial navigation issues with those surrounding the authority of a coastal state and the concept of freedom of navigation.

The treaty establishes the Arctic Council in order to facilitate co-operation on environmental protection and sustainable development. The treaty deliberately did not include military security interests in the ARCTIC Council's agenda - this was not an oversight (Arctic Council, 1996). That design helped the Council focus on areas where cooperation was possible, but Ukraine war exposed the limits of a forum that depends on consensus among states in deep political conflict. The pause in official cooperation in 2022 and the later resumption of some working level activity

shows both the damage caused by geopolitical conflict and the value of preserving technical channels where possible (Arctic Council, 2024). It will be more accurate to describe the Council as constrained and politically divided than simply paralyzed in every respect.

The Central Arctic Ocean fisheries agreement provides an example of preventive cooperation. Ten parties signed the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean in October 2018 and it entered into force on 25 June 2021 and established a precautionary approach while scientific knowledge and management arrangements are developed (U.S. Department of State, 2021). The agreement does not prohibit every possible form of fishing throughout the entire Arctic rather its scope is the high seas portion of the central Arctic Ocean and core purpose is to prevent unregulated commercial fishing there. It demonstrates that states can cooperate on a shared environmental risk even when the region's broader strategic climate is difficult.

Russia: Security, Infrastructure and Northern Sea Route

It has the Arctic's longest coastline and strongest institutional and economic footprint. Its Arctic policy notes the Arctic's relevance to national development, resource extraction, transportation, and security (Russian Federation, 2020). Much of Russia's northern infrastructure, in addition to being built by Soviet planners, remains connected to the Northern Fleet, nuclear deterrence, and large energy projects.

These priorities partly explain why Moscow treats the Arctic as a strategic priority, not a frontier.

It has also built up air, sea, missile, and missile defense capabilities in the Arctic (Wall & Wegge, 2023). These investments support strategic forces and strategic deterrence, but they also influence how other Arctic states interpret Russian motives. Moscow argues that it needs the defense systems to ensure its sovereignty and sovereignty; others, especially NATO members in the context of Russia's war against Ukraine, see them as a form of strategic coercion (U.S. Department of Defense, 2024).

A security dilemma does not mean the parties actions are identical, or would not occur in the absence of the other, nor does it deny the broader context of the war; what it does mean is that such actions generate uncertainty, increasing the risks of miscalculation given the importance of early warning and nuclear stability.

The Northern Sea Route is the most extreme case of the conflation of Russia's economic and strategic interests. Moscow has set up a legal-administrative regime and invested in icebreakers and infrastructure (Rosatom, 2025; Russian Federation, 2020). The Russian government views the route as a commercial opportunity and as part of the maritime domain it needs to control.

Other states are worried that Moscow may use this authority to constrain shipping rights in the region. The real dispute is not whether ships have the right to traverse the Arctic, but whether Russia writes the rules and whether they are consistent with international law. Sanctions, money-squeeze, infrastructure deficits, and the costs of operating in extreme conditions temper Moscow's intentions.

In Russian Arctic policy, strategic interests and the real commercial viability of the route remain mutually exclusive questions.

Russia's Arctic policy is only half of the story. Its relationship with China is more fragile than it appears at first glance. Chinese investment and demand could bolster Russian energy exports and mitigate the economic pain of Western sanctions (U.S. Department of Defense, 2024). Yet

Moscow has incentives to retain control of its infrastructure and regulatory decisions in the Arctic. The China-Russia Arctic partnership is best characterized as the joint pursuit of shared interests, with occasional disagreements over how access and authority should be allocated.

China: Recognition, Research and Economic Access

Seeking a bigger footprint for a country without an Arctic coast. On 4 January 2018, Beijing announced its own Arctic policy white paper in which it said China was a near Arctic state and named scientific research, shipping, resource development, environmental protection and governance as key areas of involvement (SCIO, 2018). There is no such thing as an Arctic state but this statement is a political label and is not entitled under international law to the designation of a coastal state.

But it is significant because it bolsters Beijing's line that the profound changes in the Arctic have implications for all nations.

The Polar Silk Road is part of Beijing's larger scheme of international economic and political development, the Belt and Road Initiative. China's policy document allows for commercial experiments and infrastructure collaboration, although stipulates the commitment to abide by international law for Arctic navigation (SCIO, 2018). Outcomes so far have been mixed as developments can be complicated by political barriers, security checks, technical uncertainties and local hostility. It is more accurate therefore to say that Beijing is trying to diversify options and influence rather than trying to bring about Arctic control. Science is a significant element in Beijing's regional profile. In 2013 it gained status as an Arctic Council observer and established the Yellow River Station in Svalbard in 2004 (SCIO, 2018). In October 2018, the China Iceland Arctic Science Observatory at Krhll in north Iceland was opened by the Polar Research Institute of China and the Icelandic Centre for Research (Arctic Portal, 2018). Scientific activity is valuable for weather, environment and maritime monitoring and may have potential dual use capabilities that are relevant for national security, but it does not automatically make each project into a military operation.

China's lack of geographic proximity and logistics capability means that it can only have a limited military presence in the Arctic, where its aims are primarily executed through diplomacy, research and economic partnership as well as co-operation with Russia. The activities can still evoke concern in Washington, particularly where the infrastructure or data could serve a military purpose. Securitization theory helps explain the resulting dispute. China presents its role as legitimate participation in global affairs, while US policy increasingly treats some Chinese investments and research capabilities as potential security risks. Both descriptions are part of the political contest, and each needs to be tested against the details of individual cases. However, Chinese posture has so far remained limited to "statements only" as seen during and after the recent US actions in Venezuela and Iran. China does not indulge into military confrontation with US and remains focused so far on increasing its economic prowess which seems directly linked with its BRI at the moment.

United States: Deterrence, Alliances and Rules

US Arctic policy has placed greater emphasis on strategic competition in recent years. The Department of Defense's 2019 Arctic Strategy identified the region's military significance, while the White House's 2022 National Strategy for the Arctic Region addressed competition with Russia and China alongside climate resilience, sustainable development and cooperation with Alaska Native communities (U.S. Department of Defense, 2019; The White House, 2022). The

Department's 2024 Arctic Strategy, which replaced the 2019 document, cited Russia's invasion of Ukraine, the NATO accession of Finland and Sweden and growing Russia China cooperation as reasons for a new approach (U.S. Department of Defense, 2024). These documents show a more explicit security focus, although they do not mean that environmental or community priorities have disappeared from US policy altogether.

The United States relies on Alaska, Greenland, surveillance systems, submarines, air power and allied cooperation to protect North American and North Atlantic security. The entry of Finland into NATO in April 2023 and Sweden in March 2024 changed the alliance's northern geography and meant that seven of the eight Arctic states are now NATO members (NATO, 2023, 2024). This strengthens coordination among allies but also reinforces Russia's perception of a more consolidated NATO presence around its northern approaches. The effect is strategically important, although geography alone does not determine the balance of power. Washington also faces a legal and diplomatic difficulty in promoting a maritime order based on UNCLOS. The United States has not ratified the Convention, it signed the 1994 Agreement relating to the implementation of Part XI but has not acceded to UNCLOS itself. US officials maintain that many of its navigation provisions reflect customary international law (Reagan, 1983), but non ratification remains a point that other states can raise when Washington criticizes their maritime interpretations. This does not undermine all the US legal arguments but it does add a drag to the US claim to lead on the legal framework of the oceans. The US has very limited icebreaking capacity and infrastructure and this limit is the practical limit for the US ambitions. The USCG's Polar Security Cutter program has been delayed repeatedly and although the original first ship was slated to deliver in 2024 that now appears unlikely until 2030 and 2031 (O'Rourke, 2026) showing both the time and cost of building heavy polar vessels. More broadly however operating in the Arctic requires ports, communications, search and rescue arrangements and people trained for the conditions. These constraints mean that US strategy depends not only on declarations of intent but also on sustained investment and cooperation with Canada, Denmark (including Greenland), Norway and other allies. Although, recent past showed quite strained diplomatic relations between US and Denmark owing US leadership's bold statements concerning Greenland, which has become a particularly sensitive point. A most recent development occurred on 22 September 2026, when the United States, Denmark and Greenland signed an agreement amending and supplementing the 1951 Greenland defense arrangement. The text expands provisions for US military access and defense cooperation, restricts the establishment of military installations or a persistent military presence by non-NATO states unless the parties agree otherwise and sets out investment screening provisions for particularly sensitive sectors. It also states that the agreement has no end date and may be amended only by mutual consent. The agreement had not yet entered into force at the time of writing because it remained subject to the required parliamentary procedures (Agreement to Amend and Supplement the Agreement of 27 April 1951, 2026; Statsministeriet, 2026). The agreement does not transfer sovereignty. Its provisions instead formalize and extend defense cooperation while attempting to limit strategic presence of states outside NATO framework. It recognizes Greenland's right to self-determination and calls for respect for Greenlandic society and traditional activities (Agreement to Amend and Supplement the Agreement of 27 April 1951, 2026). With regards to provisions on future independence and investment screening, the agreement prompts the question of how it will shape the relationship between security commitments and local democratic choice and control over economic development. As the agreement is very recent and has yet to be implemented, its possible long-term impact is yet to be seen but most importantly it will be of great advantage with regards to US/ western security calculus and can be termed as a valued and long term addition by present Trump Administration to successful US foreign policy.

Three Interacting Rivalries

The relationship between the US and Russia is the most immediate military aspect of competition. Both states are dependent on the Arctic for early warning, nuclear deterrence and access between the Arctic and the North Atlantic. US and Russian military exercises and patrols are presumably meant to demonstrate resolve or provide reassurance to allies, but they also risk misinterpretation and miscalculation in a context of limited communication. It is unlikely that there will be any incidents rising to the level of escalation, but it remains possible that an accident, ambiguous warning or misjudged interaction may occur, given the low levels of trust and high stakes of strategic competition.

The US and China's Arctic relationship is more about access, influence, technology and rules than about the prospect of direct military conflict. Washington has expressed concern that Chinese investment, research or infrastructure links may lead to strategic dependencies or military use of capabilities. Beijing defends the interest in scientific research, environmental management, shipping and commercial investments. The 2026 Greenland agreement demonstrates how security issues can be addressed within formal arrangements, through restrictions on military presence and investment. The implications for China depend on implementation and how widely the restrictions on screens are applied (Agreement to amend and supplement the Agreement of 27 April 1951, 2026). The relationship between Russia and China involves co-operation in some areas, but also unresolved differences. Russia derives benefit from Chinese market access, investment and diplomatic support. China derives benefit from Russian energy supplies and possibilities for Arctic cooperation.

However, as discussed above, the two are by no means aligned in their understanding of how Arctic shipping and navigation governance should be organized. Their relationship is thus characterized by strategic co-operation in certain sectors and the potential for competing interests in others. These three types of relationship exert different forms of pressure on regional governance.

The rivalry between the US and Russia makes military building confidence difficult.

While the competition between the US and China motivates screening and restrictions on scientific research, infrastructure projects and investments. The cooperation between Russia and China risks undermining Western leverage while also resulting in new dependencies. But none of these three dynamics make the collapse of Arctic co-operation inevitable. The thawing of individual Arctic co-operation processes, such as the re-start of the work of the Arctic Council working groups, and the conclusion of the Central Arctic Ocean fisheries agreement, show that practical arrangements can endure for some time despite political tensions, so long as the states involved see value in maintaining them (Arctic Council, 2024; U.S. Department of State, 2021).

Implications for Regional and Global Order

The short-term regional risk is that due to a confluence of highly constricted short and long-range reach, hazardous weather and limited search-and-rescue capacity, a collision, interdiction failure or mishap of a commercial vessel could become highly politicized. The governments might over-interpret accident signals or fail to coordinate properly such that effective search-and-rescue communications and hotlines are relevant even in times of icy pause. Indigenous and local peoples in Arctic communities have direct investments in security, extraction, shipping and conservation decisions. They should not be discussed as populations near areas of strategic interest. The Greenland climate and Canada-centric gloss on the Agreement to Amend and Supplement the

Agreement of 27 April 1951 is instructive: "In the Greenlandic context, overflights mean risk to the Greenlandic ecology and ecosystems, and for Greenlandic home rule governance" (2026). Environmental impact assessments and consultations need to happen as part of project planning rather than at the end as sign-offs. Arctic insights also echo back to global policy issues: access to new hydrocarbon reserves can be extremely valuable, but inventories do not tell us about possible future production levels, nor is the environment unaffected by shipping, black carbon (Arctic Monitoring and Assessment Programme, 2015), noise and accidental spills. The ecological and strategic risks, the costs to the environment, all need weighing against the strategic and commercial benefits.

Plausible Trajectories

Three trajectories seem feasible. In the short term, managed competition, with friction remaining along current red lines, incidents avoided by existing protocols as the Arctic Council remains ineffectual with the A7 and Russia–China coordination replacing it. In the medium term, a failed cold peace, following a shipping collision or abortive air intercept, leading to reciprocated sanctions, crystallized bloc politics and the failure of residual scientific cooperation. In the longer term, a life-threatening environmental catastrophe, such as an ice-sheet collapse or similar disaster, leading to a crisis-driven reset and emerging governance system that finally addresses security issues along with environmental issues, along the lines of the Antarctic Treaty System.

Conclusion and Recommendation

The melting Arctic raises a question that goes far beyond the High North: Can great powers admit that this fragile, interconnected world leaves little room for rivalry? This emerging competition has many levels. At its heart is a US-Russian military competition; a US-China battle for economic and normative leadership over the High North overlays it; and the whole is complicated by a spurious Syria-like affiance of convenience between Moscow and Beijing. Never forget that the High North has been suffering from Arctic exceptionalism: this is a structural feature of twenty-first-century geopolitics, caused by the combination of climate change as a threat multiplier and great power competition as the response to it. It can either serve as a warning of a fracturing world retreating into old, low-stakes rivalries, or provide an example of how to contain conflict amidst planetary change – but only if we make the right decisions, and now. Because the physical process of the Arctic's melting is actually proceeding, but a political one isn't, and the golden hour for getting it right is actually shortening just as surely as the polar pack is disappearing. Moreover, the recent US-Denmark- Greenland Security Agreement is a positive step not only for Western Defence but can also be called a win-win foreign policy achievement of the current Trump administration.

There could be five ways that may tilt the scales of the Arctic region for the better outcomes: First, Arctic states should seek to isolate their technical cooperation from the wider strategic rivalry wherever possible. The Arctic Council's working groups and strong scientific networks provide a good starting point. Governments should focus on sharing data openly about sea ice, pollution, biodiversity and search-and-rescue risk, and ensuring that security concerns are spelled out clearly as restrictions on access. The impediments are likely to be political, however, so a narrower, project-specific approach might be more successful than a wholesale return to comprehensive cooperation.

Second, the United States, Russia and other regional operators should try to build incident-prevention measures into their planning. These might include notification of large military

exercises, more explicit procedures for unsafe encounters at sea and air, and clearly accessible channels for secure military communication. Such measures won't solve the problem of the conflict over Ukraine, let alone of broader strategic competition, but they would serve a narrower purpose: avoiding the escalation of an encounter from a safe, routine exchange to a crisis because the parties cannot establish what happened or communicate with each other.

Third, states should manage differences over navigation through existing means. Much is to be gained from navigating the UNCLOS framework carefully, including the Article 234 provisions for polar navigation and the rights asserted by coastal and maritime states, and from diplomacy. Greater clarity over the requirements of navigation, the state of the ice, the emergency response capacity, and the rationale for regulation would be a more achievable goal than one that overlooks the ongoing legal dispute.

Fourth, investment screening should be narrower and data-driven. The governments might need to review some projects involving critical infrastructure, sensitive data, or defence installations, but blanket restrictions based on nationality can stymie scientific research and commercial cooperation without necessarily serving the national interest. Clear standards, assessment processes, and consultation with local and Indigenous peoples would help ensure that such restrictions are predictable, fair, and justifiable.

Finally, Arctic states should seek to keep environmental cooperation free from the brinkmanship of military competition. Precautionary rules of the sort included in the Central Arctic Ocean fisheries agreement can be arrived at before extensive commercial fishing ventures take root. Similar measures in the fields of pollution, monitoring, and ecosystem protection can be valuable even when relations between states are tense. A proposal to bar military activities from large areas of the high seas might raise complicated UNCLOS issues; trying to ban military operations, however, would be more likely to deflect than defuse a geopolitical crisis. Less challenging and still worthwhile steps could involve enhancing existing commitments on pollution response, emissions monitoring, and protecting marine ecosystems; increasing incident-awareness and -management training; and consulting with the affected Indigenous communities.

Conflict of Interest

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References

- Agreement to Amend and Supplement the Agreement of 27 April 1951 Pursuant to the North Atlantic Treaty on the Defense of Greenland, Den.–Greenl–U.S., September 22, 2026. <https://www.whitehouse.gov/briefings-statements/2026/09/agreement-between-the-government-of-the-united-states-of-america-and-the-government-of-the-kingdom-of-denmark-together-with-the-government-of-greenland-to-amend-and-supplement-the-agreement-of-27-apri/>
- Alaska Climate Research Center. (2026). *Arctic sea ice extent* [Data set].
- Arctic Council. (2011). *Agreement on cooperation on aeronautical and maritime search and rescue in the Arctic*.
- Belfer Center for Science and International Affairs. (2026, July). *Mining rare earth elements in the Arctic: Reality versus potential*. Harvard Kennedy School. <https://www.belfercenter.org/research-analysis/mining-rare-earth-elements-arctic-reality-versus-potential>
- Bloomberg. (2026, July 8). Trump's Greenland obsession is back. *Bloomberg*.
- Borgerson, S. G. (2008). Arctic meltdown: The economic and security implications of global warming. *Foreign Affairs*, 87(2), 63–77.
- Buzan, B., Wæver, O., & de Wilde, J. (1998). *Security: A new framework for analysis*. Lynne Rienner.
- Byers, M., & Baker, J. (2013). *International law and the Arctic*. Cambridge University Press.
- Center for Strategic and International Studies. (2026, January 28). *Greenland, rare earths, and Arctic security*. <https://www.csis.org/analysis/greenland-rare-earths-and-arctic-security>
- CNBC. (2026, July 8). Trump doubles down on push for control over Greenland as Denmark vows to defend it. *CNBC*.
- Doshi, R. (2021). *The long game: China's grand strategy to displace American order*. Oxford University Press.
- Forbes. (2026, July 7). Trump again calls for U.S. control over Greenland. *Forbes*.
- Heininen, L., Olsvig, S., Barnes, J., & Exner-Pirot, H. (Eds.). (2023). *Arctic yearbook 2023: Arctic Indigenous Peoples: Climate, science, knowledge and governance*. Arctic Portal.
- House of Commons Library. (2026). *President Trump and Greenland: Frequently asked questions*.
- Intergovernmental Panel on Climate Change. (2021). *Climate change 2021: The physical science basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.
- Lanteigne, M. (2014). *China's emerging Arctic strategies: Economics and institutions*. Institute of International Affairs, University of Iceland.
- Mahan, A. T. (1890). *The influence of sea power upon history, 1660–1783*. Little, Brown.
- Mearsheimer, J. J. (2014). *The tragedy of great power politics* (Updated ed.). W. W. Norton.

- The Moscow Times. (2025, January 10). Northern Sea Route shipping falls short of Russia's 2024 target. *The Moscow Times*. <https://www.themoscowtimes.com/2025/01/10/northern-sea-route-shipping-falls-short-of-russias-2024-target-a87558>
- National Public Radio. (2026, September 19). U.S. and Denmark reach deal to build U.S. military presence in Greenland. *NPR*. <https://www.npr.org/2026/09/19/g-s1-144158/us-and-denmark-reach-deal>
- National Snow and Ice Data Center. (2024). *Arctic sea ice extent levels off; 2024 minimum set*.
- National Snow and Ice Data Center. (2025). *2025 Arctic sea ice minimum squeezes into the ten lowest minimums*.
- Østhagen, A. (2019). The new geopolitics of the Arctic: Russia, China and the EU. *European View*, 18(2). <https://doi.org/10.1177/1781685819883140>
- Rosatom. (2025, January 9). *Record volume of cargo shipped along the Northern Sea Route* [Press release].
- Russian Federation. (2020). *Foundations of state policy of the Russian Federation in the Arctic for the period up to 2035*.
- State Council Information Office of the People's Republic of China. (2018). *China's Arctic policy*. https://english.www.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm
- Statsministeriet. (2026, September 22). *Aftale mellem Grønland, Danmark og USA* [Agreement between Greenland, Denmark and the USA] [Press release]. <https://stm.dk/presse/pressemeddelelser/2026/aftale-mellem-groenland-danmark-og-usa/>
- The transparent ocean: China's vision for a digitized battlespace. (2026, March). *Proceedings*, 152(3). <https://www.usni.org/magazines/proceedings/2026/march/transparent-ocean-chinas-vision-digitized-battlespace>
- U.S. Department of Defense. (2019). *Report to Congress: Department of Defense Arctic strategy*.
- U.S. Geological Survey. (2008). *Circum-Arctic resource appraisal: Estimates of undiscovered oil and gas north of the Arctic Circle* (Fact Sheet 2008-3049).
- The White House. (2022). *National strategy for the Arctic region*.
- The White House. (2026, September 22). *President Trump inks historic Arctic security agreement*. <https://www.whitehouse.gov/releases/2026/09/president-trump-inks-historic-arctic-security-agreement/>
- Young, O. R. (1992). *Arctic politics: Conflict and cooperation in the circumpolar North*. University Press of New England.