Energy, geopolitics and the dying arctic ice fields: an enviro-political perspective

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Energy, geopolitics and the dying arctic ice fields: an enviro-political perspective

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Abstract
In view of climate change's effects across the world and the present global escalation of conflicts it is important to assess potential future conflict zones in order to pre-emptively place measures to avoid damage and loss of life. It is identified that Arctic can be a potential future conflict zone, given its geopolitical complexities and abundance of energy resources. One of the several precursors of conflict at present is the rapid militarization of the region. Recent geopolitical instability due to Russian invasion on Ukraine and resulting sanction on Russia can accelerate the energy extraction process at Arctic's, if Russia wants to compensate its EU energy markets by connecting with hydrocarbon starved economies of East Asia. Arctic's biodiversity and abiotic environment is deteriorating rapidly. The recommendations thus put forth advocate for stronger cooperation between Arctic states as well as pushing for the ratification of international law specific to the Arctic region.

Keywords: Arctic; Geopolitics, Environment, UNCLOS; Energy, Russia-Ukraine war

1. Introduction
The Arctic has become a hot topic recently, with climate change transforming it from an icy no man's land to a piece of fresh real estate with plentiful resources beneath the ice. This paper will address three key factors in Arctic expansion:

- Resources and their viability
- The current laws and regulations concerning the Arctic
- The current evolving geopolitical state of the Arctic.

The Arctic has plentiful resources beneath the ice but their extraction, until recently, was economically unfeasible due to the difficult and challenging weather and landscape of the region. The Arctic's resources can be broadly classified into four groups:

- Living resources
- Oil and gas reserves
- Mineral resources

In terms of living resources fish are plentiful in the area and the "Arctic Five" (Russia, US, Denmark, Canada and Norway) have large communities dedicated to the exploitation of this resource. This has already resulted in environmental problems in the area and over fishing of several species has led to a depreciation of the catch in recent years. The Arctic fisheries working group (AFWG) has

published a report in 2020 [1], has shown that the catchment of several varieties of fish has been on a relatively steady decrease.

The problem in the Arctic arises from several countries' claims as to their 'continental shelf'. According to United Nations Convention on the Law of the Sea (UNCLOS), a country's Exclusive Economic Zone extends to 200 nautical miles off their baseline. The EEZ of a country allows them sovereign right over any resources in the water column and sea bed. There exists a provision in UNCLOS that a country's rights need not end at their EEZ by virtue of a geographic feature known as a continental shelf. A country has rights over exploitation over any and all resources on the *sea bed* till the extent of their continental shelf. This presents a problem in the Arctic in particular as demarcating the continental shelf in these icy areas is a problem of capability.

This becomes important when it comes to Natural gas resource exploitation due to their proximity to the sea bed. This is a strategic resource and conflicting claims are a driver for future conflict in the area. Overlapping territorial disputes in the Arctic region will be a driver for conflict in the near future. Oil and natural gas resources in the Arctic region are well documented and are the primary driver of tension in the area. According to present estimations, there are about 90 billion barrels of oil in the Arctic circle, equal to 110% of Russia's reserves, and 339% of US's reserves. In terms of natural gas, there are approximately 1669 trillion cubic feet of natural gas reserves, equal to 24.3% of the world's total natural gas reserves. The objective of this paper is to assess the policies governing the Arctic at present and thereby understand future energy, environment and security scenarios in the Arctic.

Table 1. Petroleum reserves by region [2]

Petroleum Province	Crude Oil (Billion Barrels)	Natural Gas (Trillion Cubic Feet)	Natural Gas Liquids (Billion Barrels)	Total (Oil Equivalent in Billions of Barrels)
West Siberian Basin	3.66	651.50	20.33	132.57
Arctic Alaska	29.96	221.40	5.90	72.77
East Barents Basin	7.41	317.56	1.42	61.76
East Greenland Rift Basin	8.90	86.18	8.12	31.39
Yenisey-Katanga Basin	5.58	99.96	2.68	24.92
Amerasian Basin	9.72	56.89	0.54	19.75
West Greenland-East Canada	7.27	51.82	1.15	17.06

2. Methodology

The author will be conducting an intensive literature review, primarily focusing on official policy papers published by government departments as well as resource reviews. The primary literatures considered for this study were policy papers published by governmental agencies. The author has refrained from considering opinion pieces or research papers instead focusing on official policy stances by governments in the Arctic region. Policy papers published by the US Army, *Regaining Arctic Dominance,* policy stances by Canada, security analysis by Denmark's Security and Intelligence Service, policy papers published by Norway's government and policy stances published by Russia are the main sources of information in the paper.

3. Why is the Arctic a Future Conflict?

The Arctic has been barreling towards conflict for a long time. As one of the only physical meeting points between three superpowers (USA, Russia and China) is could be argued that it was inevitable that it would be a geopolitical conflict zone, especially considering the long standing conflicts between these three countries. There have been conflicting claims on the Arctic for a long time but they have

been more or less resolved bilaterally (E.g. Russia-Norway dispute in the Barents Sea). It should be noted that the example of the Barents Sea took 40 years to reach a resolution, only settling in 2010. Even during the dispute collaboration in the Arctic, particularly scientific collaboration did not decrease but was strengthened. So the question arises as to why experts believe the Arctic is going to become a zone of conflict in the future. The answer is climate change.

According to the latest estimates [3] the Arctic will have an ice-free summer by 2050. This would remove a significant barrier to both oil exploration, drilling as well as shipping. This would prove to be a boon for any country that can exploit the resources of the Arctic. Here arises the problem, as we have seen in countless conflicts before, as superpowers prepare to exploit the ever more attainable Arctic there will be conflict as to who has the rights over such resources.

3.1 Who are the main agents in the Arctic?

To understand if there will be a conflict on Arctic we must understand the present policies and players in the Arctic. First, in a geophysical way there are the Arctic Five: United States of America, Canada, Norway, Denmark and Russia. This present situation is further complicated by China's unilateral declaration of being a 'Near Arctic State.' Then there is the Arctic Council, a high level intergovernmental multilateral body presiding over policies in the Arctic. The member states of the Arctic Council are as follows: US, Canada, Denmark (representing Greenland), Iceland, Finland, Russia, Sweden and Norway. Although full membership is limited to those countries geologically close to the Arctic observer status is open to countries that are vetted by the Arctic Council members. Present observers of the Arctic Council are: Germany, Netherlands, Poland, UK, France, Spain, China, India, Italy, Japan, South Korea, Singapore and Switzerland.

3.2 Current Laws in the Arctic

It must be understood that the Arctic is not as 'unclaimed' as most think it to be. In fact only a small portion of the Arctic is as yet unclaimed by one of the Arctic Five right at the pole. The problem arises due to conflicting claims and border disputes among the members, particularly Russia. Russia currently has the longest Arctic coastline and is the most dependent on Arctic resources for its economy. It must be understood that, at present, the most significant statute of 'law' in the Arctic is the United Nations Convention on the Law of the Sea (UNCLOS). But UNCLOS, unfortunately, does not have anything significant to say about the Arctic specifically (the word 'Arctic' is not mentioned anywhere in UNCLOS rather Arctic 234 alludes to 'Ice Covered Areas'). This has left the nature of Arctic policy up to the states that are stakeholders in the region.

First, we will analyze the present policies for the Arctic Five, both for brevity as well as that they are currently the most significant players in the Arctic.

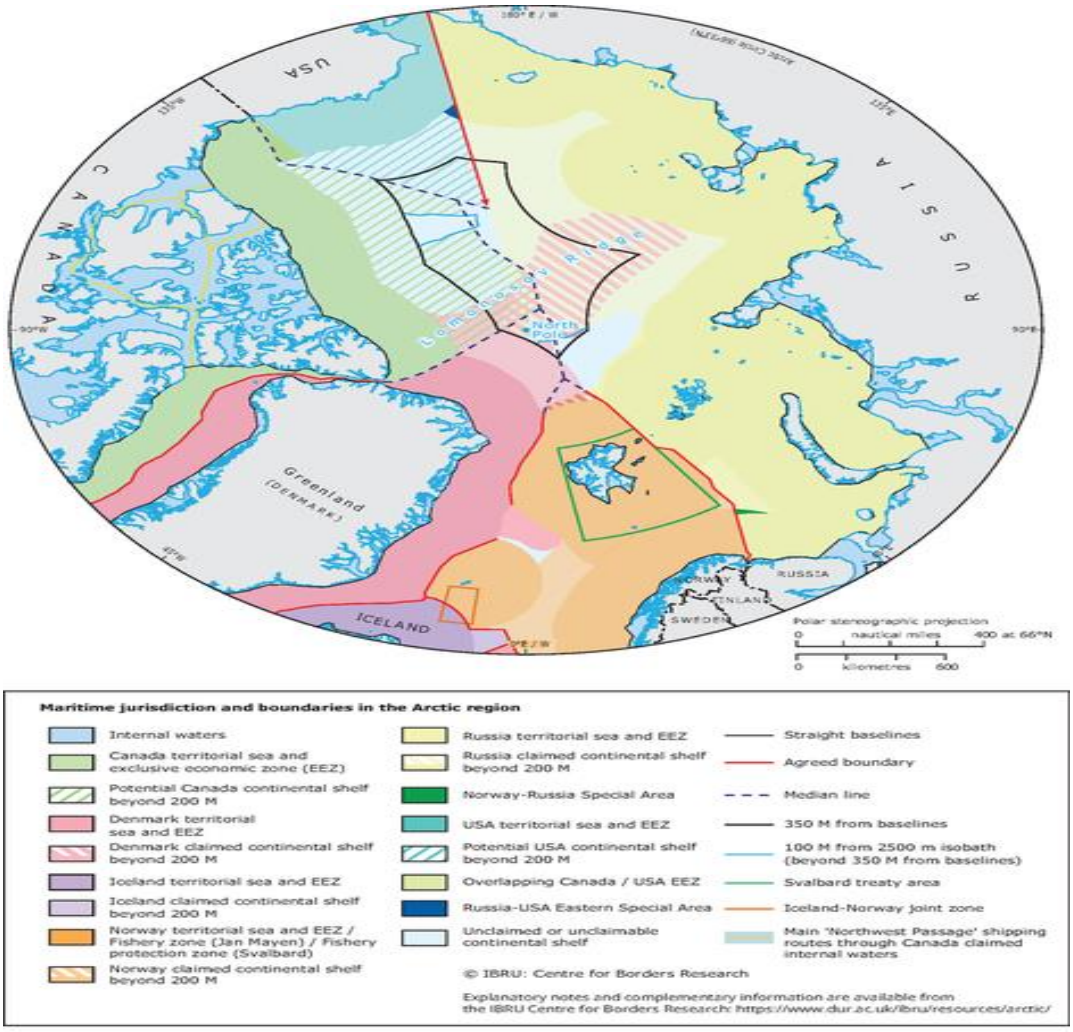

Figure 1. Conflicting Claims on Arctic [4]

3.2.1 United States of America

Since 2021 US has viewed the Arctic as a realm of increasing geostrategic importance, with a particular emphasis on the militarization of the Arctic. In the policy paper published by the US army Regaining Arctic Dominance [5] the US has laid out in an official capacity that the Arctic is going to be a focal point for conflict as well as the fact, through the implication of the title itself it shows that the US perceives that it has 'lost' dominance in the Arctic as well as the fact that they intend to regain it. The report details that Washington is pushing for a larger military presence in the Arctic. One of the main reasons for this push is the present thaw of the permafrost in the Arctic making the race for control of the Northern Sea Route, amongst other routes that are becoming more viable due to climate change more and more important. In this way US is pushing for more and more infrastructure building in the Arctic shipping thermally durable materials, long term durability and resistance to freeze-thaw cycles.

The Arctic provides the US (and others) an opportunity for power projection and the aforementioned report detailed the placement of bases and weaponry. Fort Wainwright, Joint Base Elmendorf-Richardson and Fort Greenly are the US's main encampments in the Arctic. These forces participate in several missions most importantly the Army Space and Missile Defence which provide space and ballistic missile capabilities. The US, under the Obama administration has since placed anti-ballistic missile systems in the Arctic supposedly to counter 'rouge' states like North Korea and Iran but Russia has been wary of this military expansion, enhancing its own capabilities in the region. This is a particular concern in the Arctic given its fragile ecosystem.

The report clearly details the requirement for Arctic-capable soldiers, trained for the extreme cold of the region, with appropriate equipment and capacity behind them. This is very important not just to US but to India as well as these extreme-cold conditions would allow the US to assess the requirements of Indian troops fighting in the Himalayan regions. The report details the need for military presence to secure the resources in the Arctic region, as it is a treasure-trove of natural resources, particularly Liquid Natural Gas which is a fossil fuel with a much smaller carbon footprint than petroleum. The US is also committed to 'cooperation' in the Arctic in terms of preservation of the ecosystem, scientific research and climate action.

3.2.2 Canada

Canada's policy on the Arctic has been historically aligned with the US, pushing for the self reliance of the native peoples of the Arctic (the Inuit People), respect for the land and environment of the Arctic regions, economic and social development and mainly, the "protection of Canada's Sovereignty over its Northern Regions was its first and 'Non-negotiable priority' in Arctic policy [6]." Canada also has extended continental shelf claims over the Arctic which may incur future conflict with other countries.

The main crux of Canada's claim on the Arctic at the international level is their claims over sovereignty over the Northwest Passage, the second most important trade route after the Northern Sea Route. Canada does not seek to interfere with international trade in the region but only states that all vessels travelling the Northwest Passage to comply with Canadian laws. US has disputed this claim, saying that the Northwest Passage is part of international waters and thus Canada has no right to claim sovereignty or jurisdiction over these waters.

3.2.3 Denmark

Denmark has historically stressed 'low tension in the Arctic' as a goal and a philosophy. Historically wary of NATO presence in the region, after the Russia-Ukraine war, Denmark is now welcoming NATO presence especially given a report on alleged Russian cyberattacks on Danish intelligence services [7]. Denmark has recently allocated 235 Million USD for drone and satellite surveillance in the Arctic region.

Denmark has been wary of Chinese interests in the area, strategically declining an offer from China for the establishment of a Port and mine in the Arctic region as early as 2018. Denmark has not increased its 'boots on the ground' in the Arctic instead trying to deescalate tensions by placing drones and satellites over the region.

3.2.4 Norway

Norway, like Denmark, is wary of increased Russian involvement in the Arctic. A recent report published by the Norwegian Government cites Russia's increased military capabilities in the Arctic region [8]. Since the days of the Soviet Union, Norway's security policy has been based on the maintenance of sovereignty through their domestic military as well as assurances of military reinforcements from Allies in the case of a conflict. After the violation of international law that was the Ukraine war, Norway has suspended all bilateral military ties with Russia.

To add to this they have participated in Operation Cold Response, a multilateral military exercise by NATO and allies testing their military capacity in extreme cold weather on land, sea and air [9]. Norway's military has also become more closely allied with US as their keep Russia on an even ground diplomatically. Recently Norway acquired five ice capable frigates outfitted with the US Aegis Combat System. Norway has also tried and failed to convince NATO to make the Arctic a priority but this would again prove to be a flashpoint with Russia and hence NATO has refused to do this [10].

3.2.5 Russia

Russia's claims over the Arctic are both historic and ambitious. Especially considering the Ukraine war and its devastating effects on the Russian natural resource-dependent economy, Russia has strengthened its claims over the Arctic regions, boosting exploration as well as mining in the region. Losmonov ridge in particular is of high geostrategic and economic importance to Russia as petroleum prices increase day by day. Russia's wariness of NATO will also lead to a security dilemma in the region, especially given Washington's ambitions of Arctic dominance. Russia has a particular advantage over the rest of

the countries as they have a larger coastline, a more trained military force adapted to the region as well as a deeper understanding of the region. Russia also has a great technological advantage over the region, as one of the largest producers of ice-breaker hulled ships capable of traversing the Arctic. Russia's main source of insecurity in the Arctic is the presence of US military capabilities in the region. US's strategic placement of anti-ballistic missile systems with the capacity to intercept Russian ICBMs as well as US's own ICBM systems in the Arctic are leading to a security dilemma and arms race in the region.

4. Environmental impact

To understand the relevance of such a study there must be an understanding of the ecological impact of any anthropogenic activity particularly as it comes to resource extraction, shipping and military activity. Already there is documentation of the impact of shipping in the Canadian Arctic as it increases the concentration of pollutants like $PM_{2.5}$ and increases the mixing ratio of O_3 [11]. This increase in O_3 increases the effects of climate change and therefore pushes the already fragile ecosystem to the brink. Natural gas extraction as well is known to pollute water resources and resuspend sediment through the laying of pipes [12]. This would devastate the unique marine ecosystem of the Arctic. Cod (*Gordus morhua*) catch as measures in tonnes peaked in 2008 with 9889 tonnes and reached its lowest point in 30 years by 2019 with a meager 2965 tonnes caught [13]. There have been studies indicating that these fish are moving away from the Arctic due to climate change and increased anthropogenic activity and this will only get worse with warmer temperatures making it easier for humans to conduct various activities in the area.

The melting of the Arctic ice is not an easily reversible process and most of the plant and animal life there is dependent on the temperatures. Recent studies have highlighted that local species extinctions have direct relation with the rising temperature in the Arctic's [14]. The freshwater quality and chemistry is also changing rapidly across the regions that can destabilize the functionality of the ecosystem [14]. There is a projection that infers that the temperate boreal ecosystems will advance poleward if the current trend of climate change continues, reducing the tundra biodiversity [15]. Arctic plants are going to suffer local extinction with loss of snow cover in the region [16]. With rapid changes in abiotic environment, invasive species are more likely to show up in the melting Arctic region causing immense pressure to the endemic species [17]. There is a need for cooperation between the countries to conduct regular monitoring or abiotic as well as biotic components of Arctic ecosystem to formulate a plan to save the endemic species from locale extinction [18].

5. Recent international developments and the Arctic's future

The international arena and global geopolitics have shifted significantly in the recent months. At 24th February 2022, Russia, the great energy giant, with 167 billion U.S. dollars' worth of energy exports in 2020, invaded Ukraine [19,20]. This destabilized the entire geopolitics in the region with sanctions hitting the country's exports. Russia have the highest share in the Arctic which is also known for its hidden hydrocarbon reserves. EU economic giants such as Germany is heavily dependent on Russian oil and gas supplies accounting for 40% of Berlin's total gas and 25% of its total oil imports. Russia have immense reserves of hydrocarbons in their Caspian- Volga, Yenisey-Khatanga, Western Siberia, Pechora, Vilyuy- Angara- Lena (Eastern siberia), Anadyr – Shakhalin (Far eastern gas fields) basins. They export these reserve through soviet era pipeline networks to EU- Ukraine route, Yamal-Europe pipelines crossing Belarus and Poland to Germany, and the Nord Stream 1 pipeline passing below the Baltics. With sanction hitting hard and EU nations looking for alternative hydrocarbon supplies from Azerbaizan via Trans-Anatolian Natural Gas Pipeline (TANAP) through Turkey, African nations via Trans Adriatic Pipeline, supplies from the vast Dutch Groningen gas reserves; Russia's business with EU can vaporize within 2030. So the next market alternative will be in the eastern Asiatic economic hydrocarbon starved giants, such as China and India. For which the Arctic reserves will be nearer and easy to transport. The Russian energy companies- Gazprom and Novatek is already exploring the gas reserves at Arctic [21]. The Russian gas transport networks at Arctic are depicted in Figure-2.

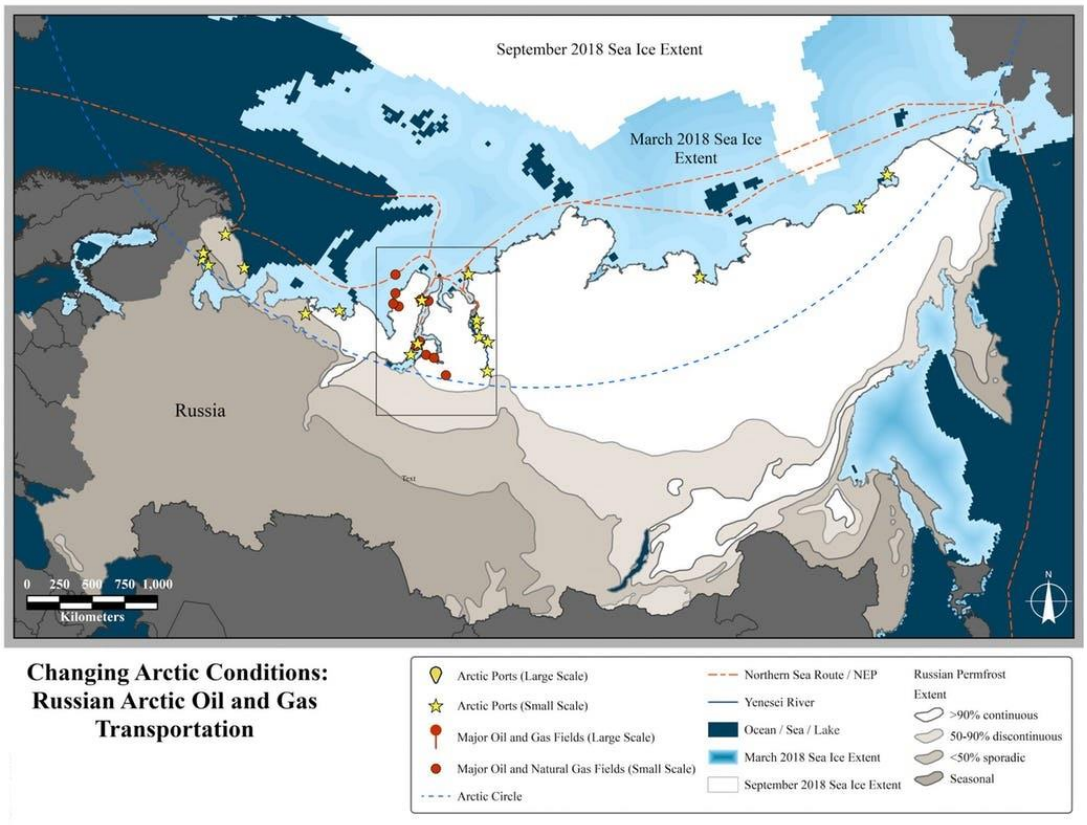

Figure 2. Russian hydrocarbon field and transport routes at the Arctic. (Adapted from McGee, 2020 [21])

If sanction made EU look elsewhere for their energy needs, Russia may lose market worth of 108 billion dollars as per estimates of 2021, and it will make the situation of Arctic even bleak. With tensions running all time high between Russia and the west, since the invasion of Ukraine, soft power may not be work to dissuade Russia from exploring the dying Arctic ice fields, which can signal the doom's day for the dying Arctic.

6. Conclusion and Recommendations

Ratification of UNCLOS is needed in the Arctic's to better govern the region with special provisions for exploration and exploitation in the region. These ratifications should include, but not be limited to, strict time frames for continental shelf claims, delimitation of conflicting claims with a legally binding resolution between the countries. The overlapping claims must not be zones of conflict but of joint cooperation between the countries [22] (Kadir, 2014). Enforcement of Canadian sovereignty over the Northwest Passage and its waters need to be discussed with all parties. A treaty similar to the Milan Protocol need to be implemented to avoid an ecological disaster in the Arctic with increased resource mining. Any future protocol over the Arctic must mandate strictly limiting security forces and capabilities, determined by an external geopolitically neutral agency. Increased Climate Change mitigation action is required to achieve the UN Sustainable Developmental Goal-13 (Climate action), to slow the thawing of Arctic and deescalate growing security tensions in the region. In view of recent geopolitical instability in the backyard of the Arctic's, a consolidated global efforts and soft power diplomacy are required to manage the looming threat over the region.

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