Chapter 20
The Security Implications of Climate Change in the Arctic Ocean

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Abstract The dramatic changes currently taking place in and around the Arctic basin – ice melting, sea level rise, permafrost thaw, coastal erosion, etc. – are likely to have a major impact on the security situation of the Arctic coastal states, as well as that of outside actors, in the coming decades. The changes raise not only environmental security concerns, but also secondary concerns related to the dynamics of Arctic interstate relations. In some scenarios, climate change may serve as an "instability accelerator" and aggravate tensions between states over issues such as the access to offshore oil and gas resources, living marine resources, and shipping lanes. This is not to say that a "remilitarization" of the Arctic Ocean to be expected, or that the Arctic is more conflict-prone than other regions. The link between climate change and conflict is far from self-evident. There are many other intervening variables, such as the role of regional institutions, governments, and social actors in managing the process of environmental change, mitigating resource pressures, and containing potential tensions.

20.1 Introduction

The effects of global warming on the physical environment of the Arctic are already very much in evidence. The melting of the polar ice cap is opening up previously inaccessible parts of the region to ship traffic and resource exploration, and issues pertaining to boundaries and maritime jurisdiction in the Arctic Ocean and its adjacent seas are rapidly coming to the surface. The purpose of this chapter is to shed light on the multifaceted security implications of climate change in the Arctic

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Ocean. This is a topic that has received significant political and scholarly attention in recent years, particularly after the publication of the Fourth Assessment Report of the United Nations Intergovernmental Panel on Climate Change (IPCC) in early 2007. The issue of climate change, and its long-term implications for regional stability, has also been squarely placed on the policy agendas of NATO and the European Union.

The circumpolar coastline of the Arctic Ocean is 45,389 km long. Five states – Russia, the United States, Canada, Denmark, and Norway – have a direct coastline on the Arctic Ocean, whereas the remaining three Arctic states – Sweden, Finland, and Iceland – do not. None of the Arctic coastal states envisage a comprehensive, region-specific legal regime similar to that of Antarctica under the Antarctic Treaty [3]. Rather, they see the United Nations Convention on the Law of the Sea [25] as the basis of their policy towards the region. All of the Arctic coastal states have signed the Convention, and all but the United States have ratified it. They all emphasize the necessity of resolving jurisdictional disputes in a peaceful manner, through bilateral and multilateral negotiations and in correspondence with UNCLOS procedures.

This does not mean that there is no potential for tensions, disputes, and conflicts in the Arctic. In recent years, a number of observers have expressed concern that growing rivalry over access to natural resources and emerging new shipping lanes may lead to conflicts between two or more of the Arctic coastal states, or between Arctic and non-Arctic states. Others are more concerned with the formidable environmental security challenges that face the region and those who inhabit it. Seen from a conceptual standpoint, *environmental* insecurity is different from *military* insecurity. As pointed out by Daniel Deudney [9], Barry Buzan [6], and Richard Moss [20], there are many arguments against "securitizing" the issue of environmental degradation. Threats to the environment are usually unintended, and often transcend national boundaries. They have to be dealt with in a collective manner, and usually by non-military means. Placing environmental security challenges in the same category as military security challenges may complicate – rather than facilitate – their prevention. On the other hand, there is no denying that environmental change may be a driver of social destabilization and intra- and interstate tensions [18, 24]. The key question here is not whether the issue of environmental change deserves the attention of researchers and policy-makers, but whether it should be treated as a *security* issue.

A central but frequently neglected sub-question in this regard is whether the impact of climate change on global, regional, national, or human security is *direct* or *indirect*. Some tend to see climate change as a security issue in and of itself (because it threatens the nature environment, and ultimately the existence of the human race), whereas others are more concerned with the role of climate change as a potential driver of intra- and inter-state conflicts (because it may serve as a "multiplier" of other threats and lead to regional instability and violent conflicts).

The latter perspective, focusing on the *indirect* effects of climate change on regional security dynamics, seems to have gained in prominence in recent years, partly at the expense of the former, which is more general in orientation and inherently difficult to operationalize for security analysts and political decision-makers [17].

Examples of indirect effects of climate change on international peace and security include alterations in regional and global patterns of migration, and disputes over access to natural resources in various parts of the world, including the "global commons", meaning areas outside national jurisdiction.

20.2 Rising Temperatures = Rising Tensions?

While recognizing the severity of the challenge and the need for adequate countermeasures, we should not jump to conclusions about the security implications of climate change, or the relationship between climate change and armed conflict. The German Advisory Council on Global Change (WBGU) has identified a number of potential "conflict constellations", induced or enforced by climate change through mechanisms such as degradation of freshwater resources, decline in food production, extreme weather events, environmentally induced migration, and so on [24]. Similar indirect causal connections between climate change and violent conflict have been identified in other recent studies [4, 21]. However, as pointed out by Idean Salehyan [23], there is no "consensus" among scholars that climate change causes conflict, regardless of other factors. The effect of climate change on armed conflict seems to be contingent on a number of political and social variables which, if ignored by analysts, can lead to poor predictions about when and where climate-induced conflict is most likely to occur, and how.

In order to obtain a better understanding of the relationship between climate change and conflict, we need to explore the interplay between climate change and other factors that may cause intra- or interstate tensions. Highly relevant in this regard are the political, economic, and social characteristics of the country or region in question, and the role of potentially "stabilizing" factors such as international law and multilateral governance and institutions. Statistically, societies that are economically developed and politically stable are better equipped to handle climate-induced environmental change than societies that are characterized by other conflict-prone features such as "bad governance, large and heterogeneous populations, social inequalities, bad neighborhood, and a history of violence" [5]. Thus, regions that are politically unstable to begin with, e.g. sub-Saharan Africa, may experience far more severe consequences from climate change than politically stable, sparsely populated, and generally well governed regions such as the Arctic.

That being said, it should be noted that climate change *under certain conditions* may lead to rising tensions also in the northernmost part of the globe. The region's growing economic significance, combined with the presence of a number of unresolved issues of international, and particularly maritime, law, adds to the long-term conflict potential in the region. Thus, climate change may act as a "threat multiplier" also in the Arctic [8, 10]. As the ice cover recedes, the region will become more accessible to state and non-state actors, and commercial activities such as fisheries, petroleum extraction, marine transportation, cruise traffic, and so on, are likely to increase. This may in turn place new demands on the ability of Arctic states to maintain regional stability.

Simply put, the long-term interstate conflict potential in the Arctic can be divided into three main categories: (i) conflicts over access to petroleum and mineral resources on the Arctic continental shelf; (ii) conflicts over access to renewable marine resources in the northern waters; and (iii) conflicts over access to Arctic shipping lanes. Dynamics within each of the conflict categories listed above are likely to be affected, directly or indirectly, by the process of climate change. They are therefore well worth a closer look.

20.3 Conflicts over Access to Petroleum Resources

In March 2008, the European Union published a report entitled *Climate Change and International Security*, which, inter alia, touches on the topic of climate-induced resource conflicts in the Arctic. In the report, the European Commission and its High Representative for Foreign and Security Policy argue that "the increased accessibility of the enormous hydrocarbon resources in the Arctic is changing the geo-strategic dynamics of the region with potential consequences for international stability and European security interests". This development is "illustrated by the recent planting of the Russian flag under the North Pole". The report calls attention to "the intensified competition over access to, and control over, energy resources", and maintains that "there is an increasing need to address the growing debate over territorial claims [in the Arctic]" [10].

The United States, on its part, has used the potential for resource-related conflicts in the Arctic as an argument in favor of strengthening the US Navy. In a "Cooperative Strategy for 21st Century Seapower", published in October 2007, it is argued that "climate change is gradually opening up the waters of the Arctic, not only to new resource development, but also to new shipping routes that may reshape the global transport system". These developments may offer new opportunities for economic growth, but they are also, in the words of the Strategy, "potential sources of competition and conflict for access and natural resources" [27].

Concerns that rivalry over access to Arctic petroleum resources may lead to increasing interstate tensions are also common in the Russian political discourse. For instance, in July 2007, shortly before the Russian North Pole expedition, the former director of a Moscow-based foreign policy think tank, Dr. Vladimir Frolov, published an article in the *Russia Profile* magazine entitled "The Coming Conflict in the Arctic". In this article, he argues that "Russia needs to find new sources of fuel" and that "the Arctic seems like the only place to go". The fact that international law does not recognize Russia's right to the entire Arctic seabed north of the Russian coastline is described as a "problem", and the United Nations' non-acceptance of previous Russian claims in the region is largely blamed on the United States. The United States is, in Frolov's terminology, "jealous of Russia's attempts to project its dominance in the energy sector", and potentially disposed "to intrude on Russia's home turf" [11].

Statements such as these may indicate that there is a tendency among several of the Arctic states to regard their northern neighbors as potential "rivals" and "competitors" in the quest for oil and gas resources on the Arctic continental shelf. It is also possible that current legal disputes in the region may acquire increasing significance in the period

up to 2030, possibly leading to an increase in the coastal states' military presence in the region. But to suggest that interstate "resource wars" are looming in the horizon seems somewhat far-fetched. In all of the states concerned, the use of military force is seen as a last-resort option, and even though the stakes are high, most international powers would prefer to play by the rules of international law, since failure to do so would alienate the sympathy of foreign investors.

As Barry Zellen points out in his latest book, military power will continue to have its place in the region, and to some extent determine the availability of resources. But in the most likely scenario, "it is science that will define the new boundaries" [29]. Uncertainty and disagreements over borders and jurisdiction on the Arctic continental shelf may be gradually replaced by certainty and agreement, as the outer limits of each Arctic state's offshore domain are clarified through undersea mapping, agreed-upon legal procedures, and bilateral agreements. The Norwegian-Russian treaty on delimitation and cooperation in the Barents Sea and the Arctic Ocean [19], signed in Murmansk on 15 September 2010, may serve as a model for other delimitations in the Arctic region.

Some of the disputes may be more difficult to resolve than others, or just take a longer time to settle, but there seems to be more patience among the involved stakeholders than is generally recognized. One of the reasons for this is that most of the currently known and extractable oil and gas resources on the Arctic shelf are located in areas of *unchallenged national jurisdiction*. Economically as well as politically, it would make little sense for a country that has access to unexploited fields on land or in undisputed waters close to the shore to embark on costly offshore projects in disputed, and possibly ice-infested, waters far from the coast. Four of the five Arctic coastal states are UNCLOS signatories, and all of them take their legal commitments seriously, as stated in the 2008 Ilulissat Declaration [14]. The same goes for their collective "stewardship" responsibilities in the region.

However, when discussing the long-term conflict potential in the Arctic, one should also be aware of the potential for disagreements between the Arctic coastal states and the remaining three members of the Arctic Council (Iceland, Sweden, and Finland), and, perhaps more problematically, between Arctic and non-Arctic states. Should an "outside" actor such as China suddenly establish a significant presence in the region, for commercial, military, or other purposes, this could potentially lead to frictions with the established community of Arctic states [12]. The involvement of third-party actors in the exploration or exploitation of resources in disputed areas could also have a destabilizing effect on interstate relationships.

20.4 Conflicts over Access to Marine Resources

The Arctic seas contain some of the world's oldest and richest commercial fishing grounds, and fisheries constitute an important part of the economies of many, if not all, Arctic states. As documented in the Arctic Marine Shipping Assessment [2], fisheries are particularly extensive in the Norwegian and Barents Seas, and the eastern part of the Bering Sea. The long-term impact of climate change on fish

stocks in these and other waters adjacent to the Arctic Ocean is hard to predict, but the most likely scenario is that the stocks will gradually move northwards as sea temperatures heat up. A study conducted by the U.S. Arctic Research Commission in 2002 concluded that "climate change is likely to bring extensive fishing activity to the Arctic, particularly in the Barents Sea and Beaufort-Chukchi region…", and that "Bering Sea fishery opportunities will increase as sea ice cover begins later and ends sooner in the year" [26].

A relevant question in this regard is how the northwards movement of fish stocks, possibly accompanied by a decline in stocks further south, will impact on interstate relations in the region and the relationship between Arctic and non-Arctic states. Fishery disputes may arise not only between neighboring coastal states, such as Norway and Russia in the Barents Sea (including the Svalbard Zone), but also when coast guard vessels act to protect the region's marine resources from extensive harvesting by boats from distant regions. Tensions may also arise when stocks migrate from the waters of one country into those of another, cf. the migration of Alaska snow crabs from traditional locations off the coast of Alaska towards Russia's northeastern coastline. A third category of challenges relates to the northward movement of fish stocks into areas of the High Seas that are unregulated by fishing quotas.

Historically, interstate disputes over access to marine resources in contested areas of the ocean are not a new phenomenon. Frequently cited examples of so-called "fish wars" are the British-Icelandic "cod wars" in the North Atlantic (1958–1961, 1972–1973, and 1975–1976), the Norwegian-Icelandic dispute over fisheries in the Svalbard Fisheries Protection Zone (1994), and the Canadian-Spanish/EU "turbot war" on the Grand Banks off Newfoundland (1995). In the North Pacific, Russia and Japan have had a long-standing dispute over fishing rights in the waters around the disputed Kurile Islands, occasionally leading to the use of military force. All of the clashes listed above included various forms of "extraordinary" measures being undertaken in the name of a state against one or more fishing vessels of another state. The list of measures that were taken includes the firing of warning shots, trawls cuttings, seizure of ships and/or crews, deliberate rammings, and live fire aimed at the hull of fishing vessels.

It should be noted, however, that fishery disputes rarely escalate to the level of sinking of ships and loss of life. Statistically, the use of military force in fishery disputes is rare, and when force is used, it is rarely reciprocated. In other words: Interstate fishery disputes rarely get "militarized", in the sense of leading to the exchange of fire between naval forces, and it can therefore be claimed that they in most cases do not "carry the implications of war" [28]. This is not to say that there is no potential for escalation of such disputes. Regulatory measures undertaken by one state, particularly in areas of unclear or disputed jurisdiction, may be interpreted by another state as biased and unjustified, and trigger countermeasures. As observed in other disputed maritime areas, such as the East and South China Seas, paramilitary or maritime constabulary forces may be more likely to experience force-on-force encounters than regular naval forces. Civilian vessels may also be more likely to attempt to evade arrest if confronted by paramilitary maritime forces [16].

The pressure against the renewable marine resources of the Arctic is likely to increase, partly as the result of global climate changes and resource scarcities in other parts of the world. This may lead to frictions not only between neighboring coastal states, but also between regional and outside actors. As water temperatures rise and the ice edge moves further and further north, the feeding areas of commercially important fish stocks are likely to follow suit, and so are the fishing fleets of Arctic as well as non-Arctic states. This will place heavy demands on the coastal states' ability to regulate the harvesting, hinder illegal, unreported, and unregulated (IUU) fishing, and prevent the escalation of interstate fishery disputes.

20.5 Conflicts over Access to Shipping Lanes

There are also a number of lingering disagreements between at least some Arctic states when it comes to the legal status of the two main maritime transport corridors through the Arctic – the Northwest Passage (through the Canadian archipelago) and the Northern Sea Route (north of Russia). The disagreements relate to issues such as the drawing of baselines, the outer borders of internal waters, the status of straits, and the right of transit passage.

According to the Arctic Marine Shipping Assessment [2], some 6,000 vessels of various categories visit the Arctic marine area annually. All but a few voyages take place on the periphery of the Arctic Ocean, where ice conditions are the most accommodating. Traffic is particularly extensive along the Norwegian west coast and in the Barents Sea, in the waters around Iceland and the Faroe Islands, southwest of Greenland, and in the Bering Sea. Ships travelling the Norwegian and Barents Seas include oil and LNG tankers, bulk ships, coastal ferries, fishing vessels, and cruise ships. There is also a sizeable traffic of ice-enforced tankers and bulk cargo carriers between Murmansk and Varandey on the Pechora Sea, and between Murmansk and Dudinka in Siberia.

Despite significant reductions in the summer sea ice extent, traffic volumes along these routes are still fairly modest, and the traffic is mostly destinational, rather than trans-Arctic. According to the Arctic Marine Shipping Assessment, this is likely to remain the situation in the foreseeable future [2]. But it is also possible to imagine scenarios under which trans-Arctic shipping becomes more attractive. In the coming decades, the sailing routes in question are likely to become ice-free for considerable parts of the year, especially north of Siberia and in the Russian Far East. This may lead to an increase in traffic volumes in the Arctic, particularly in the event of a destabilization of regions surrounding other strategic transit points such as the Suez and Panama Canals. Temporary or permanent increases in ship traffic in the northern waters may potentially heighten the risk of interstate conflicts related to the use of major Arctic marine transport routes, regional as well as trans-Arctic.

The Northwest Passage goes along the northern coast of North America, through the waters of the Canadian Arctic archipelago, around which Canada in 1985 drew

straight baselines and simultaneously declared to be "internal waters" [13,22]. This view is not shared by the United States, which considers the passages in question to be "international straits" and subject to the freedom of navigation, for commercial as well as state vessels. The European Union seems to take a similar view. While not explicitly addressing the status of the waters of the Northwest Passage, the 1988 Arctic Cooperation Agreement between Canada and the U.S. stated that navigation by U.S. icebreakers in the waters claimed internal by Canada would take place with Canadian consent. As pointed out by Jessie Carman [7], the 1988 agreement temporarily stabilized the situation, but applied only to *icebreakers*, assuming that any commercial vessel operating in these waters would require icebreaker assistance. This assumption may not necessarily be true in the future. Climate change may at some point turn the Northwest Passage into a commercially viable route for non-supported transits, seasonal or year-round, and this may potentially lead to heightened tensions between Canada and the U.S., and/or between Canada and the EU. Additional sources of concern for the Canadians are the allegations that U.S. nuclear submarines may have transited unannounced through Canadian Arctic waters. In recent years, Canada has taken steps to strengthen its military and coast guard presence in the region, and in December 2009, the Canadian parliament voted almost unanimously in favor of a bid to rename the country's Arctic seaway "the *Canadian* Northwest Passage."

On the other side of the Arctic, Russia's position resembles that of Canada. Russia has drawn straight baselines around Novaya Zemlya, Severnaya Zemlya, and the East Siberian Islands, rendering the waters between the Russian mainland and said islands to be internal waters. In fact, the entire "sector" between the Russian coastline and the North Pole is frequently described as Russian. Russian and Soviet legal experts have long claimed that the straits along the Northern Sea Route "cannot be regarded as being used for international navigation, since the entire history of Arctic exploitation knows only extremely rare individual instances of passage through them by non-Russian ships" [15]. They further note that straits that connect the Barents, Kara, Laptev, and East Siberian Seas are seen as part of "a special legal regime [that precludes] their uncontrolled used by foreign seafarers." Other countries, most notably the United States, have questioned the Russian position and claim that the straits are international, and that the right of transit passage for foreign vessels exists.

In terms of distance, the Northern Sea Route offers significant savings compared to alternative routes between ports in Northwest Europe (e.g., Hamburg) and Northeast Asia/Northwest America (e.g., Yokohama, Hong Kong, Singapore, and Vancouver). For some destinations distance savings can be as high as 50 %. Distance savings would be even greater for traffic between Northern Europe (e.g., Northern Norway and the Kola Peninsula) and the Northern Pacific area (e.g., Alaska). For international shipping companies, savings in distance may lead to savings in time and money. An increase in traffic along the trans-Arctic sailing routes north of the Eurasian continent may not be good news for ports located in Southeast Asia or the Middle East, which would risk reductions in trade volume.

Still, as of today, there is considerable reluctance among foreign as well as Russian shipping companies to make use of Russia's northern waterway, particularly

as an inter-ocean route. As a rare exception, two German cargo ships from the Bremen-based Beluga Group, assisted by a Russian icebreaker, conducted a successful journey along the entire length of the Northern Sea Route in the summer of 2009. The journey went from east to west, and the vessels encountered very little ice throughout the transit. However, neither this nor other shipping companies have plans to start regular or year-round trans-Arctic operations. There is still too much uncertainty, which relates to factors such as the generally unpredictable ice conditions, the lack of infrastructure, lacking availability of search and rescue services, inter-state disagreements over the legal status of the waters and straits along the Route, insurance-related issues, and the terms and fees set by the Russian Northern Sea Route Administration.

In a more distant future, transits along sailing routes further from the coastline – north of the Russian islands and north of the Canadian archipelago – could become a reality. Such a turn of events could create a variety of new legal and safety concerns, very different from those that are associated with the current sailing routes. It could deprive Russia and Canada of much of their prestige and regulatory power, not to mention potential sources of income.

20.6 Meeting the New Security Challenges

Obviously, there are many uncertainties when it comes to how, how much, and how soon the process of climate change will alter security dynamics and security politics in the Arctic. What is clear, however, is that changes in the region's physical environment are likely to present policy planners and political decision-makers with a wide array of challenges that will require extraordinary measures at the national as well as at the regional and international levels.

At the *national level*, all of the states that surround the Arctic Ocean will work to secure their short-, medium- and long-term strategic and economic interests in the region. The region's new role as a potential energy province and transport corridor implies that the stakes are high for all of the involved parties. This may point towards an increase in the level of interstate tension. On the other hand, all of the Arctic states recognize the crucial role of international law, including UNCLOS, in the settlement of current and future interstate disputes over access to maritime and shelf areas in the region. Thus, even though the effects of climate change on ecosystems are likely to be more extensive in the Arctic than in many other places, the consequences for regional peace and stability may turn out to be less severe here than in many other parts of the world, such as sub-Saharan Africa.

At the *regional level*, institutionalized cooperation arrangements such as the Arctic Council and the Barents Euro-Arctic Council can play an important role in the maintenance of regional stability. These and other components of the multifaceted system of Arctic governance do not have the authority to make formally binding decisions on legal or other matters, but they are important arenas for interaction and cooperation among Arctic states on issues of common concern. For instance, by

initiating regionally oriented academic studies such as the Arctic Climate Impact Assessment [1] and the Arctic Marine Shipping Assessment [2], the Arctic Council has drawn the attention of its member states and the outside world to emerging security and other concerns in the region, and created common understandings of possible ways to meet them.

Furthermore, it should be pointed out that the issue of climate change, and its security implications for the Arctic region, are to be dealt with also at the *international level*. The observed increases in air and water temperature in the Arctic and the melting of sea and glacial ice are not only regional, but also global security concerns. Processes taking place in the northern part of the globe are likely to affect the rest of the world in a number of ways, most notably through sea-level rise. The driving forces behind the process of global climate change will have to be addressed in a collective manner, and few organs are better equipped to coordinate the effort than the United Nations. The UN system can also assist the Arctic states in settling disputes. Most importantly, the Arctic states can draw on tools such as the Law of the Sea Convention, and increasingly relevant UN organs such as the Commission on the Limits of the Continental Shelf (CLCS) and the International Maritime Organization (IMO).

20.7 Concluding Remarks

This chapter has sought to shed light on various aspects of the process of climate change and its security implications in and around the Arctic Ocean. The direct and indirect impacts of climate change, and their consequences for political and military planning, are still not fully understood. Further research is needed. The dialogue between natural scientists and social scientists on the topic of climate change is still fragmented, and few social scientists have began to explore the vast amounts of data that natural scientist have provided for us in recent years. Similarly, natural scientists are not always aware of the aspects of the topic that social (e.g., political) scientists are most interested in, such as the "peace and conflict" dimension.

In recent years, it has become fashionable to talk about the Arctic in conflictual terms. The region is often described as an arena where states are preparing for a future "resource race". However, as pointed out in the introduction, the link between climate change and conflict is far from self-evident, and there are many other factors that need to be taken into account, such as the role of governments, regional and international institutions, and international law. Even though there are a number of unresolved issues pertaining to borders and jurisdiction in the northern waters, they are not necessarily more complex or numerous than those in maritime areas of comparable size elsewhere in the world. By settling maritime disputes, strengthening regional cooperation arrangements such as the Arctic Council, and establishing "rules of the road" for shipping and offshore petroleum activities, the Arctic rim states can improve the prospects for a peaceful and politically stable Arctic, even in an era of environmental change.

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