



# Metis

## Study

### The impact of climate change on the Arctic

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# Summary

The impact of climate change on the Arctic is of importance to Germany and the international community in geopolitical, geoeconomic and geocological terms. The freedom of sea routes, the use of maritime resources and the exploitation of these resources on the sea bed and the possible militarisation of the Arctic will affect German and European economic and security interests. Although the security

policy implications of climate change will emerge only gradually, Germany should prepare for political, legal, economic, ecological and military challenges in concert with its European and international partners. These include establishing capabilities for operations in the Arctic and conducting manoeuvres with partners in the region.

## The security problem in the Arctic

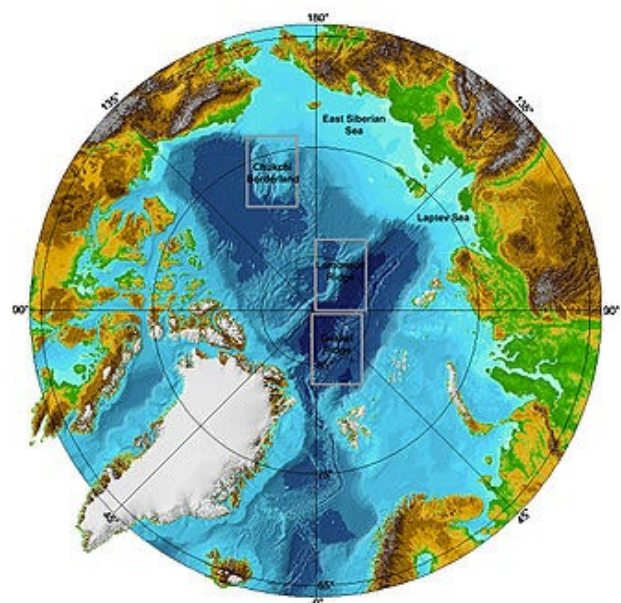
Scenarios illustrating the consequences of climate change and the potential conflicts between the *Arctic Five* (Russia, Canada, the United States, Norway and Denmark) regarding the utilisation of sea routes, territorial issues and the extraction of natural resources are a prominent feature of the debate on security in the Arctic. The implicit focus of this debate is the question, to which no conclusive answer has been given thus far, whether peaceful means such as confidence-building measures will suffice to prevent conflicts from escalating into violence between countries. Although a trend towards the intensification of conflicts, such as the projection of power by the armed forces of individual countries in order to secure strategic interests or goods, can be identified, no military action is to be expected at present. However, Germany and Europa should prepare for potential future challenges.

## The manifold effects of climate change on the Arctic and their consequences

A great number of significant consequences will arise from the climate-induced changes in the Arctic:

- (1) Natural resources which so far could hardly be exploited will become accessible for extraction in the Arctic. According to current studies and estimations, 13% of the world's oil reserves and approximately 30% of the world's natural gas deposits are located in the Arctic.

Where these resources are concerned, it should be noted that due to their accessibility, they are easy to extract when they occur on the mainland and in littoral waters. It should also be borne in mind that in large parts of the Arctic, no accurate bathymetric survey has yet been carried out and that at a price per barrel of



**Image 1** Bathymetric map of the Arctic

under USD 65, drilling to a depth of 2–5 kilometres for oil and natural gas is currently not economically viable.

- (2) In addition, global warming will cause the permafrost zone to shift, thus opening up further areas for agricultural exploitation. However, the increase in agricultural land in the northern hemisphere brought about by global warming will nowhere near compensate for the loss of cultivation areas in other parts of the world.
- (3) Another factor which is often overlooked is the biomass deposited on land and on the sea bed as a result of the thawing process. The thawing of permafrost soil and oil drilling on the sea bed can cause bacteria and dormant viruses, such as the Pithovirus sibericum virus, to be released. Although the pathogens detected so far do not pose a threat to humans or animals, studies nevertheless suggest that climate change in the Arctic could cause pandemics.
- (4) Glacier melting and the reduction in the area of the Arctic covered by ice will contribute to further global warming, since less of the sun's rays will be reflected. Consequently, the earth's radiation balance will deteriorate because of the ice-albedo feedback.<sup>1</sup> The warming of the sea and the atmosphere will thus act as a catalyst for the progressive thawing process. The methane released will further exacerbate this trend. Rising sea levels as a result of glacier melting will lead to land in coastal areas being lost to the sea. Since approximately 75% of the world's population live within 100 km from the sea, future climate-related migration flows must be expected.
- (5) The reduction in the area covered by ice in the Arctic Ocean will open up new sea routes which in the future will be free of ice the whole year round. Specifically, these will comprise the Northeast Passage (NEP), which connects the North Atlantic with the North Pacific along Russia's northern coast and the Northwest Passage (NWP), which also connects the North Atlantic with the North Pacific through the Canadian Arctic Archipelago. Compared to the route through the Suez Canal and the Indian Ocean, these new sea routes will shorten the shipping route between Europe and Asia by 8,000 to 10,000 km. Compared to the route through the Panama Canal, the shipping route will decrease by some 4,000 km. However, most experts assume that because

of the need for investment in ports along the sea routes and to procure ships that are specially equipped to operate in the region, no more than 10–15% of maritime trade will pass through the Arctic in the next 30 years.

### Exclusive Economic Zone, continental shelf and the claims of neighbouring countries

Although there are currently a number of disputes regarding maritime jurisdiction, all Arctic states without exception have so far adhered to the international legal order based on the *United Nations Convention on the Law of the Sea* (UNCLOS) and the determinations of the *Commission on the Limits of the Continental Shelf* (CLCS). The extension of territorial waters surrounding the *Exclusive Economic Zone* (EEZ) and the redefinition of the continental shelf beyond 200 nautical miles have the potential for conflict.<sup>2</sup> Russia, Norway and Denmark have already made submissions to the CLCS. Norway's submission was the subject of CLCS recommendations in 2009 while Denmark's submission of 2014 and Russia's resubmission of 2015 are pending review by the CLCS. Canada and the United States are continuing to gather data in preparation for future submissions to the CLCS. However, the United States must first ratify UNCLOS before it can submit any application.



While the establishment of the EEZ on the basis of the equidistance rule has resulted in only very little

<sup>1</sup> Ice-albedo feedback is defined as the interaction between global climate and the earth's surface that is covered by snow and ice. Ice and snow reflect solar energy into outer space, with water and soil absorbing around 90% of the radiation.

<sup>2</sup> Article 76 of UNCLOS governs the extension of the continental shelf beyond 200 nautical miles by redefining the continental shelf. If a state intends to extend the continental shelf, such claims must be submitted to the CLCS no later than ten years after accession to UNCLOS. The CLCS will make recommendations regarding the establishment of the outer limit on the basis of a 2/3 majority. States can then establish the boundaries of the continental shelf with binding effect.

overlap between the claims submitted by neighbouring countries, the different applications for continental shelf extension have led to a greater number of competing territorial claims. In this context, mention should however be made of the fact that so far, the neighbouring countries have entrusted decision making on continental shelf extension to the CLCS and publicly declared their willingness to accept its determinations – even if unfavourable – as being in accordance with international law. So far Denmark, Canada and Norway have bilaterally delimited their maritime borders up to the 200 nautical mile limit. In addition, an agreement governing each country's sovereignty in the Bering Strait was concluded between the United States and the then Soviet Union in 1990.

Notwithstanding this, disputes between neighbouring countries still occur, such as that between the United States and Canada on the legal status of the Northwest Passage (NWP) located off Canada. The United States and the EU consider the waters of the Canadian Arctic Archipelago to be international waters, but Canada insists on them being granted recognition as Canadian sovereign territory. A further dispute between Canada and the United States concerns sovereignty over part of the Beaufort Sea, where oil reserves are believed to exist, and differences have arisen between Norway and the Russian Federation regarding utilisation rights in the Barents Sea. There are also unresolved issues regarding the continental shelf off Svalbard and the waters surrounding the small islands Hans Island, Jan Mayen Island and Wrangel Island.

In addition to the territorial disputes and EEZ disputes, the growing importance of rights of passage as a result of climate change also has the potential for conflict. These islands provide the neighbouring countries with a special means of exerting political pressure. Similarly to the conflict between the United States, the EU and Canada regarding the Northwest Passage, the prospect of Russia taking control can also be used as a political instrument. It is true that by signing the Ilulissat Declaration in 2008, all neighbouring countries affirmed that the rules of international law and bilateral cooperation should form the basis for the resolution of the disputes. At present, however, this notice of intent does not yet seem to apply to the clarification of issues regarding rights of utilisation of the sea routes.

Despite the disputes described, the multilateral and cooperative dimensions have prevailed for many years, especially in the Arctic Council. Hence, the current threat to international security from bilateral conflicts in the Arctic can be expected to be low or non-existent.

### **Russia – the Arctic power**

Although Russia has become active in the Arctic in recent years by carrying out military manoeuvres and weapons testing as well as investing in infrastructure, the operational readiness of the Russian capabilities provided so far

is nowhere near what it was during the Cold War. Rather, shows of military force in recent years with the deployment of troops, warships and submarines in manoeuvres and the development of bases are intended to clearly demonstrate that Russia's ability to take military action also extends to the Arctic. Above all, however, they are designed to remind the West that, unlike NATO, Russia is currently capable of conducting major military operations in the Arctic. In addition, Russia is pursuing significant economic interests with regard to reaping the maximum value from the Arctic's natural resources and by establishing a "northern silk route" along the Northeast Passage. However, the planned economisation of the Arctic will take decades and require investments running into billions to enable it to compete with today's main sea routes. For one thing, this is due to Russia's northern ports being underdeveloped and, for another, to the lack of infrastructure in the north of Russia.

### **China – the external power**

Non-neighbouring countries such as China have also indicated a strong interest in the Arctic in their official strategy papers (e.g. *China's Antarctic Activities White Paper*, 2017 or *China's Arctic Policy*, 2018). China considers itself a "near-Arctic state". Having conducted eight Arctic missions employing the *Polar Dragon* ice-breaking research vessel, China has been active in the Arctic for years and operates a number of research stations there. In addition, 2016 saw the start of construction of a state-of-the-art ice-breaking vessel (*Polar Snow*), which is due to be commissioned in 2019. Four fields of activity in the Arctic are of particular importance to China: (1) the use of the Arctic as a "polar silk road" for global trade, (2) the exploration of oil reserves, natural gas deposits, natural resources and renewable energies, (3) Arctic fishery and its development and (4) Arctic tourism. It can be inferred from China's strategy papers that China may underpin these primarily economic interests in the Arctic with civilian and, if necessary, military means. China's observer status in the Arctic Council, the first crossing of the Northeast Passage by a Chinese merchant in August 2013, the construction of permanent research stations and the regular presence of the *Polar Dragon* research vessel are all evidence of this. The billions that China has invested in the development of Russian ports coupled with the manoeuvres carried out by Chinese warships already provide an indication of the tremendous importance of China's future Arctic policy.

### **Germany – an outside spectator?**

Germany is located far away from the Arctic and is only indirectly affected by the impact of climate change on the Arctic, namely through economic and ecological developments. Hence, the emphasis of the Federal Foreign Office's guidelines on German Arctic policy is primarily on the freedom of the seas, environmental protection, Arctic

research, economic opportunities and security and stability. Germany has one ice-breaking vessel at present, the "Polarstern". Managed by the Alfred-Wegener-Institute, it is mainly used for research purposes and to bring supplies to the Neumayer Station III in the Antarctic. The tendering process for a modern successor vessel, the "Polarstern II", is now at a decisive stage, the vessel being scheduled for commissioning in 2020.

As an economic power and seafaring nation, Germany would be directly affected if the freedom of the seas could not be ensured or if Germany's EU/NATO commitments required it to play a more active role in the Arctic. In security policy terms, the guidelines already anticipate a possible "geopolitical race for sovereign rights or rights to exploit the sea bed and its natural resources". Germany is thus pursuing the aim of "integrating the Arctic region into a system that ensures multilateral stability" in order to avoid conflicts before they arise through preventive confidence building, cooperation and coordination. However, there are no alternative plans should this approach fail. No mention whatsoever was made of the Arctic in the 2016 German Defence White Paper despite the fact that besides the Federal Foreign Office, which represents Germany in the Arctic Council, and the Federal Ministry of Education and Research, which is responsible for Arctic research, the current developments in the Arctic are also of relevance to the remit of further ministries: Federal Ministry of Food and Agriculture (BMEL): fishery; Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU): environmental protection; Federal Ministry of Transport and Digital Infrastructure (BMVI): shipping; Federal Ministry for Economic Affairs and Energy (BMWi): industry and commerce; Federal Ministry of Defence (FMoD): security policy.

In Germany, a maritime economic power, several ministries have thus recognised the major importance of the Arctic for numerous fields of policy. However, an inter-ministerial Arctic policy that is geared to the future and which addresses all possible and probable future scenarios in a concerted approach still seems to be lacking.

### **Recommendations: Fields of action for inclusion in German and European Arctic policy**

To be able to counter future security challenges in the Arctic, Germany should continue to play an active role in the Arctic Council, where it should act as a mediator and contribute more in the way of security policy issues. This would make it possible to mitigate, or even completely avoid, conflicts at an early stage through multilateral cooperation and political coordination. But Germany, together with its European and transatlantic partners, can only sustainably ensure security, peace and economic prosperity in the Arctic if the focus is on multilateralism.

The shows of military force by the Chinese and above all the Russians, should not be given too much importance

in the debate at present. Rather, they should be regarded as a warning that the freedom of the sea routes in the Arctic cannot be guaranteed without a body of international law, bilateral cooperation and, in the long term, without the establishment of own capabilities at the national and Alliance levels. Hence, in foreign policy terms, the so far prevailing consensus among neighbouring countries that disputes should be settled on the basis of international law and multilateral cooperation should continue to be sustainably supported and promoted.

However, pragmatic security considerations have given rise to a number of future-oriented measures at the national and European levels which take account of the security implications of climate change and thus contribute to maintaining a stable security order. The primary objective is to contain or deter non-conforming actors or unilateral activities.

- In the long term, the necessary capabilities for conceivable operations in the Arctic should be established at the national level. These measures in particular cover the deployment and supply capability of units in the Arctic regions and the establishment of an Arctic brigade and maritime task groups in close cooperation with Denmark and Norway. The same applies to joint *search and rescue* operations. In addition, the aim should be to develop Germany's position on coordination mechanisms between the EU and NATO in the Arctic taking into account the interests of the German maritime economy. Furthermore, bilateral cooperation between Denmark, Norway, Sweden and Finland should be intensified by joint manoeuvres, thus demonstrating that European cooperation also extends to the polar circle.
- At the European level, an *EU Arctic maritime domain awareness and surveillance* centre which enables the holistic monitoring of rapid ecological, economic and military changes should be established. In addition, to safeguard the EU's scientific interests in the region, the joint development and construction of one or several EU ice-breaking vessels for escort tasks or research purposes should be commissioned or, alternatively, the procurement of such a vessel/vessels facilitated. Taking the existing *EU-Battlegroups*, two or three Battlegroups in their current or new form could be tailored to operations in the Arctic.
- Finally, consideration should be given to establishing a *European Arctic Command* in the framework of CSDP or a *NATO Arctic Command* (or alternatively, *Regional Command High North*) to thus enable the safeguarding of European and transatlantic interests in the north in the event of conflict. 

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