

Chapter 11

Climate Impacts of Black Carbon and Methane Emissions in the Arctic and Current Frameworks for Prevention



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Abstract Rapid environmental changes in the Arctic have brought increasing attention from the international community toward the region. Considering these circumstances, the Arctic Council (AC) provides an important vehicle for addressing Arctic issues. This paper first provides a basic overview on the Arctic Council and discusses recent organizational reforms. It also addresses how Japan is involved in the Arctic. Finally, this paper discusses what the Arctic Council, as well as other concerned countries, are doing to control black carbon emissions, which are a current problem in the Arctic.

Keywords Arctic Council · Black carbon · Japan's Arctic Policy

11.1 Recent Trends in the Arctic

The Arctic has warmed three times faster than the world as a whole, causing rapid and widespread changes in sea ice, land ice (glaciers and ice sheets), permafrost, snow cover, and other physical environmental features. The increasing impact of warmer waters and reduced sea ice in the Arctic Ocean from the Atlantic and Pacific Oceans has been associated with the northern expansion of subarctic fish and marine mammal species (Arctic Monitoring and Assessment Programme 2021). These rapid environmental changes in the Arctic have also led to the practical application of sea routes and the development of Arctic Ocean resources, which has piqued interest in the Arctic from the international community. The Arctic Council (AC) (Arctic Council 2022) is a high-level forum that provides a means to promote cooperation, coordination, and interaction among Arctic States regarding common issues.

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11.2 The Arctic Council

The Arctic Council was established by the so-called Ottawa Declaration as a “high-level forum” to provide a means for promoting cooperation, coordination, and interaction on Arctic issues by the members of the eight Arctic nations of Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States (Ottawa Declaration, Article 1). In addition to the functions mentioned above, the Council also oversee and coordinate the programs established under the Arctic Environmental Protection Strategy (AEPS) (The Arctic Monitoring and Assessment Program). In addition, the Council was established to adopt terms of reference for and oversee and coordinate a sustainable development program and disseminate information, encourage education, and promote interest in Arctic related issues (Ottawa Declaration, Article 1). A unique feature of the Arctic Council is that it grants the status of “permanent participant” to Arctic indigenous peoples’ organizations (Aleut International Association, Arctic Athabaskan Council, Gwich’in Council International), and the category of permanent participation is created to provide for active participation and full consultation with the Arctic indigenous representatives within the Arctic Council (Ottawa Declaration, Article 2). Non-Arctic States, intergovernmental organizations, and non-governmental organizations that have been identified as having the ability to contribute to the work of the Council may participate in meetings as observers (Ottawa Declaration, Article 3).

The Arctic Council is a consultative forum for the eight Arctic States and usually meets every other year, although senior official meetings are held more frequently (Ottawa Declaration, Article 4). According to the Rules of Procedure of the Arctic Council (Arctic Council of Rules and of Procedure 1998), adopted at the first Arctic Council meeting in Iqaluit, Canada in 2006, the biennial meeting of the Council is named the “Ministerial Meeting,” while the more frequent meetings are termed the “Senior Arctic Official (SAO)” Meetings. According to subsequent practice, SAO meetings are held approximately once a year. Article 7 of the Ottawa Declaration states that Arctic Council decisions are determined by a consensus of the member States. The Ottawa Declaration does not include the phrase “subordinate bodies” of the Arctic Council, but the 1998 Rules of Procedure explicitly States that “the Arctic Council may establish working groups, task forces or other subsidiary bodies to prepare and carry out programs, and projects under the guidance and direction of SAOs. The composition and mandates of such bodies shall be agreed to by the Arctic States in a Ministerial meeting. The activities of these bodies shall be subject to these rules.” (Arctic Council Rules of Procedure 1998, Rule 28 of the Arctic Council Rules of Procedure) Even in these subordinate bodies, decisions are made by consensus among the eight Arctic States (Council Rules of Procedure, Article 30).

The Ottawa Declaration, Article 5, stipulates that “responsibility for hosting meetings of the Arctic Council, including provision of secretariat support functions, should rotate sequentially among the Arctic States.” In this regard, the 1998 rules of procedure, Article 32, stipulate that “the host country shall be responsible for facilitating preparations for forthcoming Ministerial and SAO meetings, liaison, and

coordination, providing secretariat support functions, and carrying out such other tasks as the Arctic Council may require or direct.” As a result of this provision, the host country of the biennial Arctic Council Ministerial Meeting is designated as the chair country for the coming two years, and the SAO meetings to be held between the two biennial meetings are, in principle, to be held within the host country. Therefore, the rotating secretariat system was established, in which the Arctic Council Presidency was responsible for the annual meeting. In relation to the costs of meeting administration, which will be discussed subsequently, the 1998 rules of procedure specify that the working language of the Council shall be English (Article 41). Also, the rules of procedure says that individual may speak in a language other than English and in such cases that individual shall arrange for interpretation into English (Article 43). However, for ministerial and SAO meetings, the host country (presidency) will make reasonable efforts to provide Russian interpreters (Article 42).

It should be noted that some working groups established under the Arctic Environmental Protection Strategy (AEPS), which began in 1991, currently have permanent secretariats. These working groups and their secretariats, were successfully integrated into the Arctic Council by 1998 (Council 1998) and the Council, while expressing appreciation for the voluntary contributions of its member States to these working group secretariats, requests other Arctic States to also make voluntary, sufficient, and reliable contributions to the working group secretariats (Arctic Council Rules of Procedure 1998, para. 27). According to the Common Operational Guidelines for Arctic Council Working Groups (2016), the Working Groups and all their activities are subject to the terms of the Ottawa Declaration, the Arctic Council, the Council’s Rules of Procedure, the Observer Manual, and other relevant documents of the Council (Arctic Council, Working Group Common Operating Guidelines 2016), clarifying that the Working Groups, including their secretariats, are subordinate bodies of the Arctic Council. Regarding the status of the Arctic Council under international law, the Ottawa Declaration that established the Council is not a treaty under international law.

11.3 The Recent Trend of the Arctic Council

The 12th Ministerial Meeting of the AC, held in Reykjavik, Iceland on May 20, 2021, was chaired by Iceland and included ministers of AC member states and representatives of indigenous organizations residing in Arctic nations to adopt the “Reykjavik Declaration.”¹ Following the preamble, the declaration is divided into five parts: “People and Communities of the Arctic,” “Sustainable Economic Development,” “Climate, Green Energy Solutions, Environment, and Biodiversity,” “Arctic Marine Environment,” and “Stronger Arctic Council,” and it gives responsibility

¹ The last time the meeting was held in Finland in 2019, a joint declaration could not be issued because the former U.S. administration of President Trump opposed the language surrounding climate change (Hokkyokuken, jizokugata no kaihatu wo hyougikai kakuryoukaigou de icchi 2021).

to the AC to maintain peace, stability, and constructive cooperation in the Arctic region. This commitment was reaffirmed. It also emphasizes the unique position of Arctic nations in promoting responsible governance and asserts the importance of immediately addressing climate change in the Arctic (Government of Iceland HP 2021). Although a joint declaration was not released at the 11th ministerial meeting in 2019, the inauguration of the Biden administration in the U.S., which emphasizes international cooperation, is considered a unifying statement of intent by the countries involved. Furthermore, at the 12th Ministerial Meeting, the “Arctic Council Strategic Plan (2021–2030)” was adopted for the first time on the 25th anniversary of the AC’s establishment, which provides guidance for that 10-year period. The plan identified seven goals: “Arctic Climate,” “healthy and resilient Arctic ecosystems,” “healthy Arctic marine environment,” “sustainable social development,” “sustainable economic development,” “knowledge and communication,” and “stronger Arctic Council.”

The AC presidency was handed over from Iceland to Russia in 2021. Russia has identified “responsible governance for a sustainable Arctic” as a priority through promoting collective approaches to the sustainable development of the Arctic in a balanced way—environmentally, socially, and economically—enhancing synergy and cooperation and coordination with other regional structures, as well as the implementation of the Arctic Council’s Strategic Plan (2021–2030), while respecting international law. It also identifies priority areas as “people of the arctic, including indigenous peoples,” “environmental protection,” “socio-economic development,” and “strengthening the AC,” with particular focus on the AC in terms of, “improving its work, increasing the effectiveness of its working and expert groups, the Arctic Council Secretariat, as well as developing mechanisms for financing the Council’s activities, including its projects and programs, implementing decisions and recommendations, as well as encouraging the dialog and interaction with the observers to provide their meaningful and balanced engagement in the Council’s activities.” Also, “Russia intends to further intensify collaboration of the Arctic Council with the Arctic Economic Council, the Arctic Coast Guard Forum, and the University of the Arctic (Council 2021).”

11.4 Japan’s Recent Initiatives Concerning the Arctic

The Government of Japan considers Arctic policy to be an important issue because Japan’s geographical location makes it vulnerable to the effects of climate change in the Arctic, and also because Japan is the closest country to the Arctic Ocean in Asia and enjoys economic and commercial opportunities such as utilization of its shipping routes and resource development. The first comprehensive Arctic policy was implemented (Naikakufu (Cabinet Office of Japan) HP 2022; Cabinet Office and of Japan HP 2022a), and the Third Ocean Basic Plan, formulated in May 2018, positioned the Arctic policy as a main policy for the first time (Cabinet Office and of Japan HP 2022b).

On May 8 and 9, 2021, the governments of Japan and Iceland co-hosted the 3rd Arctic Science Ministerial (ASM3) in Tokyo that was attended by 35 countries/regions and indigenous groups, which was the largest number to date. The ASM3 aimed to promote research and observation in the Arctic, address major social issues, and further promote scientific cooperation among the countries concerned as well as indigenous groups living in the Arctic region. Co-chaired by Japan and Iceland, the discussion focused on the theme “Knowledge for a Sustainable Arctic,” with “observe, understand, respond, and enhance” as a sub-theme. Agreements were made to promote international collaboration in the field of Arctic science, accelerate the understanding of the region, and support science as a basis for policymaking in the Arctic. In October 2021, a handover ceremony from ASM3 to ASM4 was held at the Arctic Circle Assembly in Reykjavik, Iceland, and the Japanese Ambassador to Iceland, Ryotaro Suzuki, who attended the ceremony, stated that it is essential to strengthen international scientific cooperation with non-Arctic countries, and that Japan has started construction of an Arctic research vessel to embody international collaboration in the Arctic.² Mikhail Noskov, Russian Ambassador to Iceland Ambassador, stated that the next ASM4 will focus on the priorities of the livelihood and welfare of Arctic residents, in relation to the “promotion of scientific cooperation in the Arctic,” “Arctic Ocean,” “biodiversity,” “indigenous peoples and their traditions,” “education,” and “climate change.”

It was also decided to begin construction of a new Arctic research vessel with icebreaking capability. The Japan Agency for Marine-Earth Science and Technology (JAMSTEC) currently has an oceanographic research vessel, *Mirai*, which has made many observation cruises in the Arctic and Antarctic regions; however, it cannot enter sea ice areas because it does not have icebreaker ability. The new Arctic research vessel will be capable of continuous breakage of flat ice up to 1.2 m thick, thereby enabling new observations, including sea ice study. In addition, the new research vessel is intended to serve as an “international research platform,” as the importance of fostering young human resources for Arctic research has been identified not only in Japan, but also in other Arctic and non-Arctic countries. The new research vessel will be the first in the world to use dual-fuel (marine fuel oil and liquefied natural gas) engines to reduce environmental impact and will feature new equipment such as a scientific fish finder (National Institute of Polar Research HP 2022). At ASM3, then Minister of Education, Culture, Sports, Science, and Technology, Koichi Hagiuda advocated operating the new Arctic research vessel as an international platform and promoting human resource development. The use of research vessels is suggested to accelerate the development of human resources to contribute to problem-solving in this region. Since multiple ministries involve in the Arctic affairs in Japan, new guidelines are needed in order to build an integrated relationship in order to implement a coherent strategy in the science and policy fields. A strategic plan for broader and deeper involvement in AC working groups is also needed.

² <https://www.youtube.com/watch?v=TIS0ZmymAak&list=PLI0a77tmNMvSz9UV6iiPzMFAnu8qiY7vj&index=46>.

11.5 Black Carbon Reduction Initiatives in the Arctic Council

The Arctic is warming faster than other regions of the globe, leading to fundamental changes in the environment and human living conditions in both the Arctic and worldwide. Black carbon and methane are short-lived climate pollutants that contribute to atmospheric warming, and their emissions directly contribute to air pollution, thereby negatively affecting human health. In addition, black carbon that falls on snow and ice accelerates the melting of these reflective surfaces, consequently accelerating the impact of global warming in the Arctic. Arctic States are uniquely positioned to slow Arctic warming caused by black carbon emissions. Despite generating just ten percent of global black carbon emissions, Arctic States endure 30% of the related warming effects in the Arctic due to the greater impact of local emission sources. Action by non-Arctic States is also important, as black carbon emissions can be transported large distances from their source to Arctic regions (Arctic Council and expert group on black carbon and methane 2022).

Prompted by the climate impacts of black carbon and methane emissions, the Ministers of the Arctic Council adopted “Enhanced Black Carbon and Methane Emissions Reductions: An Arctic Council Framework for Action” in April 2015. The framework pronounces that the Arctic States shall commit to:

take leadership based on this Arctic Council Framework by further reducing black carbon and methane emissions in our countries and by working with Arctic Council Observer

States and others to also reduce emissions produced beyond the borders of Arctic States;

take enhanced, ambitious, national, and collective action to accelerate the decline in our overall black carbon emissions and to significantly reduce our overall methane emissions; and

submit biennial national reports on countries’ existing and planned actions to reduce black carbon and methane, national inventories of these pollutants, and, if available, projections of future emissions (Arctic Council and enhanced black carbon and methane emissions reductions an arctic council framework for action 2022).

To help implement these commitments, the framework established an expert group on black carbon and methane that was tasked with developing a biennial “summary of progress and recommendations” based on national reports and other relevant information. These reports are submitted through the Senior Arctic Officials to ministers at Arctic Council Ministerial meetings. In developing recommendations for its summary reports, the expert group sought to identify a focused menu of priority actions from which Arctic States could select based on their national circumstances and the need for economic development of Arctic communities.

Each Arctic State and Observer State commit to submitting a national report to the Arctic Council Secretariat on emission reduction, measuring their collective progress, and jointly identifying conclusions and recommendations. According to the guidelines, the Arctic Council Secretariat will make these national reports publicly

available. Each Arctic State and participating Arctic Council Observer States should submit a national report that includes six areas:

- (1) Summary of current black carbon emissions and, if available, future projections;
- (2) Summary of current methane emissions to the United Nations Framework Convention on Climate Change (UNFCCC), and, if available, future projections;
- (3) Summary of national actions, national action plans, and mitigation strategies by sector;
- (4) Highlights of best practices or lessons learned for key sectors;
- (5) Projects relevant to the Arctic; and
- (6) Other information, if available (e.g., climate, health, environmental, and economic effects of emissions and mitigation) (Arctic Council and enhanced black carbon and methane emissions reductions an arctic council framework for action 2022).

All of these efforts aim toward continuous improvements in the climate and health of the Arctic; therefore, this framework is important to the Arctic environment as well as the global environment.

In addition, the Arctic Council Secretariat (ACS) holds an important role in the framework. Each Arctic State commits to submitting a national report to the ACS, who makes these reports available to the public. Since this framework is important for avoiding fundamental changes to the environment and human living conditions in both the Arctic and worldwide, and there are no replacements for the ACS to support the framework, the ACS plays a crucial role within their mandate.

In practice, although not included in the framework documents, the Director of the Arctic Council Secretariat has attended the UN Climate Change Conference (COP21) and moderated the event focused on black carbon and methane. The ACS has dispatched information about black carbon and methane in international meetings, which have previously given little attention to the black carbon issue, and even the Paris Agreement has no mention of it. Therefore, this external activity of the ACS was important to disseminate information regarding black carbon and methane to the world from the Arctic perspective.

According to EU, “many issues affecting the Arctic region can be more effectively addressed through regional or multilateral cooperation. EU engagement in Arctic matters is important in the interest of the citizens of the EU and of the EU Member States, not least those who are located in the Arctic. (The European External Action Service (EEAS) HP, EU Arctic policy 2022)” In 2021, the European Union High Representative for Diplomatic Affairs and Security, Josep Borrell announced the EU’s new strategy, which is aimed at preventing global warming. The policy is to stop the development of fossil fuels, such as oil and natural gas. It also advocates a multilateral legal framework to stop the development and purchase of fossil fuels produced in the Arctic. In the Arctic region, the struggle for control over natural resources and the development of new shipping routes between the U.S., Russia, and China is intensifying, and the EU, which is appealing for the realization of a decarbonized society, is looking to increase its involvement (Hokkoku News Paper HP 2022). In addition, the European Union contributes to the development of collective

responses to reduce black carbon emissions in the Arctic and provides and communicates knowledge about sources and emissions of black carbon and supports relevant international policy processes (AMAP HP 2022). Thus, environmental conservation activities are becoming more active in the Arctic region.

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