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Central Arctic Ocean Fisheries Agreement: China's role and implications for sustainable Arctic governance

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Abstract The opening of the Arctic Ocean has prompted the signing of the Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean (CAOF Agreement) by 10 parties, including the five Arctic Ocean coastal states and the world's leading distant-water fishing states. The negotiation process, initiated by the United States, progressed in two stages: the "A5 process" and the "A5+5 process". The CAOF Agreement sets a precedent for cooperation between Arctic and non-Arctic states in managing Arctic high seas resources. It also incorporates several innovative management approaches for Arctic fisheries, such as the precautionary approach, ecosystem-based management, and state-of-the-art scientific knowledge as the basis for decision-making. Since 2015, China has actively participated in the negotiation and implementation of the CAOF Agreement. This article carefully analyzes the background and progressiveness of the CAOF Agreement and examines the responsibility that all state parties share concerning the sustainable use of marine living resources in the Central Arctic Ocean. The article also reviews China's interests and engagement in the Arctic region, with particular attention to its participation in the CAOF Agreement. Finally, the article concludes by discussing China's role and implications for sustainable Arctic governance and its broader implications for evolving international environmental and ocean governance.

Keywords **CAOF Agreement**, **Central Arctic Ocean, China**, **Arctic governance**

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1 Introduction

The Arctic is warming at a rate and magnitude that exceed the global average (Dai et al., 2019; Previdi et al., 2020; Shu et al., 2022). Predictions suggest that by 2050 (or, more aggressively, by 2037), the Arctic Ocean could become ice-free during the summer (Wang and Overland, 2009). This would create an environment that allows more fish species to migrate to sub-Arctic waters (Jones and Cheung, 2015) and increase the prospect of fishing in the Central Arctic Ocean (CAO), although the exact species, numbers, and timing remain unclear (Chang and Khan, 2021). Other physical impacts affecting the biological processes in the Arctic high seas, such as increased CO_2 levels and ocean acidification, will also shift the life patterns and geographical distribution of fish species (Hoel, 2020a; Pincus, 2020).

Concerns about managing potential future unregulated commercial fisheries have led to the establishment of the Agreement to Prevent Unregulated High Seas Fisheries in the CAO (CAOF Agreement) (Dupuis et al., 2018). After a decade of preparations, the agreement was formally signed in 2018 by the five Arctic Ocean coastal states, namely Canada, Denmark (representing the Faroe Islands and Greenland), Norway, Russia, and the United States, together with China, Iceland, Japan, Republic of Korea, and the European Union (EU). It came into force in June 2021

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(Fisheries and Oceans Canada, 2018).

The CAOF Agreement represents an innovative management approach for the Arctic fishery. It applies a precautionary approach, ecosystem-based management, and the use of state-of-the-art scientific knowledge as the basis for decision-making. The agreement and its related negotiations set an excellent example of cooperation between Arctic states and non-Arctic states. The outcomes of the CAOF Agreement, including the Joint Program of Scientific Research and Monitoring Framework (JPSRM), Implementation Plan, Data Sharing Protocol, and provisions for exploratory fishing, aim to promote the sustainable management of Arctic fisheries step by step.

China, located in the northern hemisphere, has been deeply engaged in Arctic affairs. Since the 1990s, China has conducted research expeditions (i.e., Chinese National Arctic Research Expeditions, CHINAREs) in the Arctic Ocean. China has also established two research stations in the Arctic region: the Arctic Yellow River Station in Ny-Ålesund, Svalbard, and the China-Iceland Arctic Science Observatory (CIAO) in Karholl, Iceland. In 2013, China became an observer in the Arctic Council, marking a new stage in its participation in Arctic governance. In 2018, China's State Council Information Office released the China's Arctic Policy, which outlines China's goals and basic principles for Arctic affairs. China is also actively involved in Arctic trade and shipping activities and participates in various international Arctic forums, such as the Arctic: Territory of Dialogue, Arctic Circle, and Arctic Frontiers. In 2013, China established the China-Nordic Arctic Research Center (CNARC) to promote cooperation between Chinese and Nordic scholars on Arctic issues.

As one of the world's leading distant-water fishing states, China has significant fishing interests in the CAO (The State Council Information Office of the People's Republic of China, 2023a). Although some view China's activities and investments in the Arctic as part of a long-term strategy to access resources such as oil and gas, minerals, fisheries, and shipping routes, and China's claim as a "near Arctic state" is also questioned by Arctic states, being one of the founding Parties of the CAOF Agreement, China needs to its fulfil contractual obligations to ensure the successful implementation of the agreement (Francis, 2020). China's strong capabilities in ocean investigation and scientific research will help fill knowledge gaps in understanding the fishery conditions and marine ecosystem of the Agreement Area. Given China's critical role in the implementation of the CAOF Agreement, a detailed examination of China's involvement and its implications for sustainable Arctic governance is necessary.

The methodology employed in this article is based on the qualitative data analysis of meeting reports, documents, working papers, official declarations, agreements, academic journals, books, and key newspaper articles. The two authors of this article both joined the Chinese delegation to the CAOF Agreement in 2022, who have attended the 2022 Conference of Parties (COP) meeting (Republic of Korea), the 2023 Scientific Coordination Group (SCG) meeting (United States), and more than ten online working group meetings since then. When writing the article, the authors made full use of the first-hand material, as well as the insights gained during the negotiations. The article draws on the literature and content analysis method to qualitatively analyse China's role and implications for sustainable Arctic governance. To this end, Section 2 provides insight to understand the background and progressiveness of the CAOF Agreement. Section 3 analyzes the special responsibility that all state parties share concerning the sustainable use of marine living resources in the CAO. Section 4 provides a review of China's engagement and interests in the Arctic region, with particular attention to its participation in the CAOF Agreement. Section 5 discusses China's role and implications for sustainable Arctic governance, followed by concrete concluding remarks in light of the new development in international environmental and ocean governance in Section 6.

2 "Fishing" or "No Fishing" in the Arctic high north?

2.1 Negotiation of the CAOF Agreement

To manage and conserve CAO fish stocks in a precautionary manner, the CAOF Agreement is based on the provisions of the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and the 1995 United Nations Fish Stocks Agreement (UNFSA) on straddling fish stocks and highly migratory fish stocks. UNCLOS provides a fundamental regime of law and order for the conservation of marine living resources (Xue, 2020). Articles 117-118 of UNCLOS require states to cooperate with others and enter into negotiations to establish regional or subregional fisheries organizations when appropriate to conserve the living resources of the high seas. UNFSA grants states the right to join a Regional Fisheries Management Organization (RFMO) if they have a "real interest" in fisheries managed by that RFMO (Kim et al., 2022).

The negotiation of the CAOF Agreement was initiated by the United States to prevent another tragedy of the commons, such as the pollock collapse in the "Donut Hole" of the Aleutian Basin in the central Bering Sea during the 1980s (Hoel, 2020b). As the ice began to melt in the high seas of the CAO, Congress of the United States passed a joint resolution in 2008 directing the United States to initiate international discussions and take necessary steps to negotiate an agreement for managing migratory and transboundary fish stocks in the Arctic Ocean (Schatz et al., 2019). In the following year, the United States banned commercial fishing in the North American zone beyond Alaska by passing an Arctic Fisheries Management Plan.

Since 2008, the United States Department of State has led an 11-year-long negotiation process for an international treaty on Arctic fisheries (Calderwood and Ulmer, 2023).

The negotiation process of the CAOF Agreement is divided into two stages. The first stage (2008–2015), known as the "A5 process", involved discussions between the five CAO coastal states (United States, Canada, Denmark/Greenland, Norway and Russia), resulting in the signing of the non-binding Oslo Declaration. The second stage (2015–2021), known as the "A5+5 process", saw the A5 inviting China, Japan, Iceland, Republic of Korea, and the EU to join the negotiations, leading to the signing of the CAOF Agreement in 2018, which entered into force in 2021. The CAOF Agreement stands as a significant example of cooperation between Arctic and non-Arctic states in managing Arctic resources through numerous government negotiations, scientific conferences, working group seminars, and informal talks.

The agreement came into effect on 25 June, 2021, after ratification by all ten signatories. Since then, the CAOF Agreement has entered a new phase of implementation. According to the agreement, the contracting parties must develop JPSRM and adopt a data-sharing protocol within two years of its entry into force. Additionally, within three years, the parties must establish conservation and management measures (CMMs) for exploratory fishing in the Agreement Area. These efforts will enhance the understanding of the marine environment in the Arctic high seas and enable informed decisions about potential future fishing. Other practical issues must also be addressed, including coordination with the North-East Atlantic Fisheries Commission (NEAFC) in the overlapping area, incorporation of indigenous and local knowledge, accession of other states with a "real interest", and the formation of committees or similar bodies to promote the implementation of the CAOF Agreement.

2.2 CAOF Agreement and sustainable fishery management

The CAOF Agreement is drafted to achieve the degree of innovation, coherence, and accuracy necessary to meet its objectives (Schatz et al., 2019). It represents an innovative management approach for Arctic fisheries, incorporating the precautionary approach, ecosystem-based management, and the use of the best available science in fisheries management. These approaches, which emphasize the sustainable use of marine living resources, are widely embraced by the international community.

2.2.1 Precautionary approach

The "precautionary approach" or "precautionary principle" first emerged in the late 1960s and has since been incorporated into numerous international treaties. UNFSA implements the precautionary approach and provides states with guidelines for its application in fisheries. The approach is also broadly adopted by Regional Fishery Bodies (RFBs) and at the national level. The CAOF Agreement effectively implements the precautionary principle. According to Article 2: "The objective of the Agreement is to prevent unregulated fishing in the high seas portion of the CAO through the application of precautionary conservation and management measures as part of a long-term strategy to safeguard healthy marine ecosystems and to ensure the conservation and sustainable use of fish stocks (Fisheries and Oceans Canada, 2018)".

Due to the harsh conditions in the Arctic, it is challenging to evaluate scientific information, and significant data gaps remain in key areas of the CAO. The CAOF Agreement was signed to establish conservation and management measures despite the lack of sufficient scientific data. It encourages the parties to cooperate in scientific activities to increase knowledge of the living marine resources in the CAO and the ecosystems in which they occur, establishing a JPSRM. The scientific information derived from the JPSRM will be used as a basis for decision-making. The CAOF Agreement also implements precautionary conservation and management measures for exploratory fishing, which involves fishing to assess the sustainability and feasibility of future commercial fisheries by contributing scientific data (CAOF Agreement, 2018; Pan and Huntington, 2016; Zahner, 2023).

2.2.2 Ecosystem-based management

Ecosystem-based management involves comprehensive, integrated, and adaptive management of ecosystems rather than simply managing individual species (De Lucia, 2022). The CAOF Agreement references ecosystem-based management on multiple occasions. Article 5(1) (c) states that "ecosystem considerations, including the precautionary approach and potential adverse impacts of fishing on ecosystems", should be taken into account (Fisheries and Oceans Canada, 2018). While the term "ecosystem-based management" is not explicitly defined, both the JPSRM and the CMMs for exploratory fishing incorporate elements of the ecosystem approach. Article 4(2) specifies that the goal of the JPSRM is to assess "the possible impacts of such fisheries on the ecosystems of the Agreement Area" (Zahner, 2023). "To safeguard healthy marine ecosystems" is also the goal of the CMMs for exploratory fishing when developing a framework for exploratory fishing in the Agreement Area to assess the sustainability and feasibility of future commercial fisheries by contributing scientific data (CMMs, 2024). Additionally, the CMMs for exploratory fishing includes a requirement that vessels conducting exploratory fishing apply the Vulnerable Marine Ecosystems (VMEs) protocol, which is also required by the NEAFC in areas that overlap with the CAOF Agreement.

2.2.3 Use of best available science

The use of "best available science" fosters credibility and trust among stakeholders and promotes communication,

transparency, and understanding in management communities (Ryder et al., 2010). Given the significant gaps in scientific knowledge about fisheries and ecosystems in the Arctic high seas, the CAOF Agreement encourages the parties to conduct scientific research under the JPSRM framework and through their respective national scientific programs (Dupuis, 2018). The JPSRM will improve understanding of the ecosystems in the CAO and help determine whether fish stocks might exist now or in the future for harvesting on a sustainable basis (Fisheries and Oceans Canada, 2018).

Scientific experts were engaged since the beginning of the negotiation process of the CAOF Agreement. There have been five meetings of Scientific Experts on Fish Stocks in the CAO (FiSCAOs) from the year 2011 to 2017 alongside the formal negotiation meetings. Now the FiSCAO has been replaced by the SCG, and the JPSRM is being carried out under the guidance of SCG. The JPSRM should also take into account the work of relevant scientific and technical organizations, bodies and programs, as well as indigenous and local knowledge (Fisheries and Oceans Canada, 2018). This also works for the CAO exploratory fishing, a party may authorize exploratory fishing only on the basis of sound scientific research.

By applying the precautionary approach, ecosystem-based management, and the best available science, the CAOF Agreement takes highly precautionary measures to support the long-term sustainable use of marine living resources in CAO waters (Kim et al., 2022). The parties to the CAOF Agreement have imposed a minimum 16-year moratorium on CAO fishing, with successive 5-year extensions unless a formal objection is raised by a party. During this period, the parties will gather scientific evidence for the COP of CAOF Agreement to decide whether to "to fish" or "not to fish" in the future.

3 Urgent demand for collaborative Arctic fisheries management between all parties

UNCLOS does not grant coastal states additional rights in managing Areas Beyond National Jurisdiction (ABNJ) compared to non-coastal states. Article 64(1) states that when fishing for highly migratory species listed in Annex I, coastal states and other states must cooperate to optimize the utilization of such species both within and beyond the exclusive economic zone (EEZ). When the five CAO coastal states began negotiating the CAOF Agreement in 2008, their foreign ministers signed the Ilulissat Declaration, in which the A5 group asserted: "by virtue of their sovereignty, sovereign rights, and jurisdiction in large areas of the Arctic Ocean, the five coastal states are in a unique position to address these possibilities and challenges... [and] have a stewardship role in protecting the Arctic ecosystems" (Ilulissat Declaration, 2008; Serdy, 2019). The Ilulissat Declaration, therefore, holds more political than legal significance.

The CAOF Agreement is a legally binding agreement. It explicitly acknowledges "the special responsibilities and interests of the Central Arctic Ocean coastal states in relation to the conservation and sustainable management of fish stocks in the Central Arctic Ocean" (Hoel, 2020b). Current geopolitical circumstances favor the priorities of coastal states, especially when these are backed by powerful countries (Stokke, 2022). The Ilulissat Declaration faced widespread criticism, especially from Iceland, a member of the Arctic Council that aspires to gain status as an Arctic coastal state (Vylegzhanin et al., 2020).

In 2015, the A5 states began to recognize the interests of other nations in the CAO fisheries through the signing of the Oslo Declaration. At the same time, the five new parties were also eager to participate in the negotiations of the CAO fishery agreement: Iceland, having been excluded from the "A5 process", took the lead in opposing the initial exclusivity of the negotiations; the EU, which has three member states with Arctic territory, plays a leading role in Arctic science and high seas fisheries management; Japan, Republic of Korea, and China, which gained observer status in the Arctic Council in 2013, are the world's largest distant-water fishing nations and have adopted their own Arctic policies and engaged in Arctic research (Dodds, 2019; Shan et al., 2023).

The CAOF Agreement also emphasizes the importance of involving indigenous and local peoples who live in coastal communities dependent on the bordering seas of the Agreement Area. Indigenous communities possess extensive knowledge from long-term conservation and sustainable use of marine living resources, as well as the maintenance of healthy marine ecosystems in the Arctic Ocean. Their involvement promotes a holistic understanding of the CAO ecosystem. Indigenous representatives participated in the negotiations in both stages of the CAOF Agreement as members of the delegations from Canada, Denmark (representing the Faroe Islands and Greenland), and the United States. Indigenous knowledge is incorporated into the work of the JPSRM and exploratory fishing, and the CAOF Agreement ensures that the needs and impacts on Arctic indigenous peoples are considered in decision-making (Molenaar, 2024). Non-governmental organizations (NGOs), such as the Pew Charitable Trusts and the World Wide Fund for Nature (WWF), have also been actively involved throughout the negotiation and implementation processes of the CAOF Agreement, providing the parties with valuable scientific information on the CAO (Harrison et al., 2020).

The geographic scope of the CAOF Agreement covers a 2.8×10^6 km^2 area of high seas around the North Pole. The agreement area overlaps with the regulatory area of the NEAFC, which has the authority to adopt conservation and management measures in part of the high seas portion of the CAO. The CAOF Agreement acknowledges this overlap

and emphasizes the importance of cooperation and coordination between the parties and NEAFC. Notably, all contracting parties to the NEAFC are also parties to the CAOF Agreement.

Since its entry into force in 2021, the CAOF Agreement has entered the implementation phase. The parties are required to prohibit commercial fishing in the Agreement Area, support joint research expeditions under the JPSRM framework, share data according to the Data Sharing Protocol, and develop CMMs for exploratory fishing (Kim et al., 2022). However, there are differences in long-term interests among the 10 parties. Scholars argue that while the United States may lean more towards a continued moratorium on fishing, Russia, Norway, Iceland, and the Asian states (China, Japan and Republic of Korea) are more open to future fishing, and the EU favors establishing a network of marine protected areas (MPAs) (James et al., 2024; Wegge, 2015) (Table 1). Canada and Denmark (representing the Faroe Islands and Greenland) have not yet shown their clear inclinations. Therefore, concerted actions by all parties are crucial for the successful implementation of the Agreement, which largely depends on the political will of each party to balance national interests with those of the international community (Kim et al., 2022; Xue, 2020).

Table 1 Composition of the Parties to CAOF Agreement

Contracting Parties of CAOF Agreement	Arctic Five	Other Five	Arctic states	Contracting Parties of NEAFC	Long term interests
United States	√		√		Moratorium
Russia	√		√	√	Fishing
Canada	√		√	Cooperating non-Party	Unclear
Norway	√		√	√	Fishing
Denmark (Faroe Islands/Greenland)	In respect of Greenland	Denmark belongs to EU	√	√	Unclear
Iceland		√	√	√	Fishing
EU		√	Finland, Sweden	√	MPA
China		√			Fishing
Japan		√			Fishing
Republic of Korea		√			Fishing

4 The engagement of China in the Arctic

4.1 China's interest in the Arctic

As China rises as a global power, its interests have expanded to include the Arctic (Fravel et al., 2021). On 15 May, 2013, China became a permanent observer to the Arctic Council, marking the beginning of its deeper involvement in Arctic governance. According to the 2018 white paper titled "China's Arctic Policy", China is a significant stakeholder in Arctic affairs and geographically identifies itself as a "near-Arctic State", closely involved in various Arctic issues (The State Council Information Office of the People's Republic of China, 2018).

China's offshore fishing industry began in 1985. Although it started later than other states, after more than 30 years of development, China's offshore fishing industry has achieved significant growth. In its 2018 white paper, China emphasizes both the right to fish on the high seas and the need to conserve fishery resources and ecosystems in the Arctic. As fish stocks have shown a tendency to move northwards due to climate change, the Arctic has the potential to become a new fishing ground in the future (Jones and Cheung, 2015; Rosen, 2020). China supports efforts to formulate a legally binding international agreement on the management of fisheries in the high seas portion of the Arctic Ocean. Through strengthening cooperation with the Arctic coastal states, conducting survey on fishery resources in the high seas in the Arctic, and carrying out appropriate exploratory fishing, China aims to play a constructive part in the management of fisheries in the high seas of the Arctic Ocean.

China also pursues other interests in the Arctic. Firstly, the natural conditions of the Arctic and their changes directly impact China's climate system and ecological environment, influencing sectors such as agriculture, forestry, fisheries, and the marine industry (Luo and Ding, 2023). Secondly, China views the Northeast Passage, Northwest Passage, and Central Passage as new international shipping routes. The 2018 white paper links Arctic shipping routes with the Belt and Road Initiative. As Arctic sea routes become commercially viable, China could save roughly 4000 n mile on shipments to Europe and North America via the Arctic (Huang et al., 2015). Thirdly, on the condition of protecting the Arctic environment, China encourages its nationals to participate in the exploration and exploitation of oil, gas, minerals, and other resources. China respects the sovereign rights of coastal states and seeks cooperation in developing these resources (The State Council Information Office of the People's Republic of China, 2018). Lastly, China actively promotes scientific research in the Arctic. By conducting in-depth research on climate change and ecological environments, China aims to respond to climate change in the Arctic and protect the

region's natural environment and ecosystem.

4.2 China's contribution to implementing the CAOF Agreement

China joined the negotiations of the CAOF Agreement in 2015, and Chinese scientists actively participated in the 4th and 5th FiSCAO meetings in 2015 and 2017. After the agreement came into effect, China dedicated itself to strengthening scientific research and exploratory fishing on Arctic fishery resources under the framework of the JPSRM and CMMs of the CAOF Agreement, playing a constructive role in its implementation.

Since 1999, China has embarked on 14 CHINAREs to the Arctic Ocean using the R/V *Xuelong* or *Xuelong 2*, conducting surveys in the Northwest Arctic Ocean and the nearby coastal seas, including the Bering Sea, Chukchi Sea, and the Canada Basin (The State Council Information Office of the People's Republic of China, 2023b). Scientific survey and research have been carried out at Chinese Arctic Yellow River Station in Ny-Ålesund in the Spitsbergen Archipelago and the China-Iceland Arctic Science Observatory in Karholl, north of Iceland as well. In 2020, China has sent scientists to participate in the international Multidisciplinary drifting Observatory for the Study of Arctic Climate (MOSAiC) expedition, collecting winter data from the Arctic Ocean (Lei, 2020). China has also actively involved in Arctic research under international platforms such as the Pacific Arctic Group (PAG), Sustaining Arctic Observing Networks (SAON) and working groups of the Arctic Council. With these efforts, China has gradually built a multi-disciplinary observation system covering various domains such as the sea, ice, snow, atmosphere, biology, and geology of the Arctic.

Within two years of the CAOF Agreement entering into force, the COP was required to adopt a JPSRM and a data protocol. Since 2021, Chinese fishery scientists have contributed significantly to developing the JPSRM framework and its implementation plan. They provided expertise on priority species of fish, birds, and mammals, which were subsequently refined by scientists from all signatory nations. China's R/V *Xuelong* and *Xuelong 2*, are listed in the implementation plan and will be used for data collection in mapping and monitoring programs under the JPSRM framework. As part of the Data Management Working Group (DM-WG), Dr. Wu Lizong from the Polar Research Institute of China (PRIC) shared the chairmanship with Dr. Robert Foy from the Alaska Fisheries Science Center, National Oceanic and Atmospheric Administration (NOAA), beginning in 2022. Together, they worked collaboratively under the COP's guidance. Dr. Wu and other colleagues from the Chinese delegation played a crucial role in drafting the Data Sharing Protocol (DSP), which, after adoption, led to the rebranding of the DSP Working Group as the Data Management Working Group (DM-WG) (Figure 1). Experts from China's Yellow Sea Fisheries Research Institute, East China Sea Fisheries Research Institute, and other universities and research institutions have also made significant contributions to developing the CMMs for exploratory fishing in the Agreement Area.

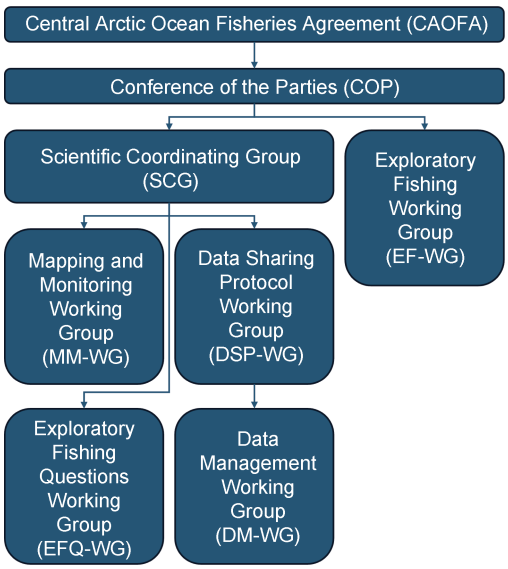

Figure 1 Interim framework of the Central Arctic Ocean Fishery Agreement and its working groups.

5 China's role and implications for sustainable Arctic governance

Despite its relatively short history in Arctic affairs, China has made substantial efforts to understand and explore the Arctic and expand its scope of activities over the past two decades. China currently participates in various Arctic-related activities and is closely involved in trans-regional and global issues in the Arctic. Although facing some mistrust or misunderstanding from some Arctic states, as an emerging stakeholder in the region, China could contribute to the implementation of the CAOF Agreement and sustainable Arctic governance in several key ways.

Firstly, China respects the existing international legal framework governing the Arctic and fulfills its international obligations. China asserts its rights to conduct scientific research, navigation, overflight, fishing, the laying of submarine cables and pipelines, and resource exploration and exploitation in the high seas and the Area of the Arctic Ocean, as stipulated by international law and global treaties. China also undertakes obligations under the international legal framework and actively participates in addressing challenges related to environmental and climate change in the Arctic. China believes that sustainable governance requires both protection and the rational use of resources. Chinese involvement in the CAOF Agreement, the new international Agreement under the UNCLOS on the Conservation and Sustainable Use of Marine Biodiversity

of Areas beyond National Jurisdiction (BBNJ Agreement), the Kunming-Montreal Global Biodiversity Framework (GBF) and other global and regional forums highlights its commitment to developing an inclusive, transparent, rules-based governance framework in line with the interests of all parties.

Secondly, China is committed to enhancing international cooperation with Arctic communities. At the global level, China expands cooperation with international organizations on issues such as global environmental protection, climate change, international maritime issues, and high seas fisheries management. It fulfills its commitments under the UN Framework Convention on Climate Change, the Kyoto Protocol, and the Paris Agreement, and plays a constructive role in the work of the International Maritime Organization. At the regional level, China actively participates in intergovernmental mechanisms related to the Arctic. It supports the work of the Arctic Council and contributes to its working groups, task forces, and legal agreements, such as those signed in 2011, 2013, and 2017. At the bilateral and multilateral levels, China has established cooperative partnerships with Arctic and non-Arctic states. The CNARC, established in 2013 by PRIC and institutions from five Nordic countries, promotes mutual understanding and cooperation between Chinese and Nordic scholars. China also values cooperation with non-Arctic states and has launched high-level trilateral dialogues on Arctic issues with Japan and Republic of Korea to promote exchanges on policies and practices regarding Arctic international cooperation (Shan et al., 2023).

Thirdly, the Chinese government places great importance on Arctic scientific research. As one of the founding Parties of the CAOF Agreement, China has been actively conducting ocean investigation and scientific research to help fill knowledge gaps in understanding the fishery conditions and marine ecosystem of the Agreement Area. Over the years, China's field observations and data collection have provided critical data on climate change and the Arctic ecosystem, contributing to the global understanding of climate change and efforts to protect the Arctic environment (Luo and Ding, 2023; Wei et al., 2019). China continues to increase its investment and support for Arctic scientific research, particularly in climate change, glacier dynamics, marine ecology, and marine sciences in the region. China encourages the development of environmentally-friendly polar technology and promotes innovation in renewable energy. In 2023, China introduced the concept of "new quality productivity", emphasizing technological innovation, green development, and the use of advanced information and digital technologies to promote high-quality development in the marine industry (Gu et al., 2024).

Fourthly, China respects the sovereignty, sovereign rights, and jurisdiction of Arctic states. China's Arctic policy focuses on understanding, protecting, developing, and participating in governance, guided by principles such as "respect" and "cooperation". The CAOF Agreement and its related negotiations set a great model of cooperation between Arctic and non-Arctic states. China respects the exclusive jurisdiction and sovereign rights of Arctic states within their jurisdiction, and their legislative, enforcement, and adjudicative powers in the waters subject to their jurisdiction. China also respects the environmental laws and regulations of Arctic states (The State Council Information Office of the People's Republic of China, 2018). Furthermore, under the background of climate change, the recognition of indigenous people's voices and knowledge is critical to a holistic and successful governance of the Arctic Ocean. China acknowledges the values, interests, traditions, and cultures of indigenous Arctic communities. The Evenki people of China have joined the Association of World Reindeer Herders, an observer organization of the Arctic Council. The connection between the Chinese Evenki people and Arctic indigenous communities exemplifies China's cooperation with indigenous Arctic societies, and will promote a better implementation of the CAOF Agreement (Reindeer Herding, 2024).

6 Conclusion

Several landmark developments in international environmental and ocean governance have occurred since the CAOF Agreement entered into force. The Kunming-Montreal GBF, adopted in December 2022 at the COP15 to the UN Convention on Biological Diversity, contains wide-ranging goals and targets to reverse biodiversity loss and achieve a more sustainable future, including the "30×30" conservation target. In September 2023, the BBNJ Agreement was adopted and opened for signature, addressing four main elements: (1) marine genetic resources, including benefit-sharing; (2) area-based management tools, including marine protected areas (MPAs); (3) environmental impact assessments; and (4) capacity building and technology transfer (BBNJ Agreement, 2023). By September 2024, 92 countries had signed the BBNJ Agreement, and eight parties had ratified it. The BBNJ Agreement will enter into force 120 days after the deposit of the 60th instrument of ratification, approval, acceptance, or accession.

The 2025 COP meeting of the CAOF Agreement will address urgent issues, such as climate change and its impacts on the CAO, procedures for the accession of non-parties, and linkages with other international mechanisms. The EU and non-governmental organizations will likely push for the BBNJ Agreement to ensure the conservation and sustainable use of marine biodiversity in the CAO. However, the establishment of an RFMO or an MPA within the CAOF Agreement Area will depend on various factors, including the results of JPSRM scientific monitoring and mapping, the priorities of contracting parties and indigenous communities, and trends in global ocean governance.

As one of the founding members of the CAOF Agreement, China has actively participated in the

negotiations of the BBNJ Agreement. Although Arctic states may be reluctant to recognize China's claim as a "near-Arctic" state, China's activities in the Arctic are conducted through legitimate avenues (Francis, 2020). China respects the existing international legal framework governing the Arctic and the interests and rights of Arctic states and indigenous peoples. In the context of global warming, the Arctic is gaining strategic and economic significance, as well as scientific and environmental importance. Cooperation between Arctic and non-Arctic states, including China, will be crucial to ensuring long-term sustainability and stability in this unique and fragile region.

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