# The Arctic Fisheries Regime and Its Implications to Korea

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#### **ABSTRACT**

In the near future, the thawing of the Arctic Ocean will influence the fisheries by creating more fishing opportunities. The Arctic Ocean coastal states and other states like China, Japan, and EU have competitively established and announced their development policies for the Arctic including those related to fisheries. And it is no doubt an opportunity for the Korean fishing industries as well as those who are seeking new fishing grounds abroad due to diminishing fishing resources and forthcoming free trade regimes such as FTA and WTO/DDA. Despite the uncertainties in developing the Arctic fisheries and the lack of scientific data or statistics, the Arctic fisheries can become the center of world fisheries in the near future. The aim of this paper is to examine the current Arctic fisheries, their regimes and its implications, and to suggest objectives for Korean policymaking on the Arctic fisheries.

**Key words**: Arctic Fishery, Arctic Fishery Regime, Arctic Council, RFMO, Scope of Arctic fishing grounds

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# 1. Introduction

In the near future, the thawing of the Arctic Ocean is anticipated to influence the fisheries by creating more fishing opportunities; it is no doubt an opportunity for the Korean fishing industries as well as those who are seeking new fishing grounds abroad due to diminishing fishing resources, forthcoming free trade regimes such as FTA and WTO/DDA, and rising fuel prices. Thus it is essential for the Korea fish industry to prepare strategies to participate in Arctic fishing. Moreover, it is crucial to have a comprehensive view of the Arctic since its activities are becoming global concerns in various fields.

The aim of this paper is to examine the current Arctic fisheries, their regimes and its implications, and to suggest objectives for Korean policymaking on the Arctic fisheries. Among numerous instruments of the Arctic fisheries, this paper focuses on the United Nations Convention on the Law of the Sea (further referred to as UNCLOS), United Nations Fish Stocks Agreement (the Agreement), and the FAO Code of Conduct for Responsible Fisheries (FAO Code). With regards to the institutions, it discusses regional fishery management organizations (RFMOs) and the Arctic Council.

# 2. Korea's challenges to develop the Arctic fisheries

The arctic is most directly affected by global warming than any other areas on earth. For example, its inhabitants, the circumpolar species, face extinction due to the direct influence of the disappearing ozone layer. As such, the Korean fishery industries and related policy makers should take measures to incorporate such circumstances in making decisions.

First, Korean fish industries need new fishing grounds to overcome their financial difficulties. A substantial decline in fishing productivity was caused by policy changes resulting from WTO and DDA negotiations, FTA expansion, reduction of fishery resources and high oil prices. In order to survive under these conditions, Korean fisheries must develop new fishing grounds like the Arctic Ocean.

Second, Korea needs a stable supply of cold-water fish such as Pacific Cod and Alaska Pollock, in order to meet its high consumption. The Alaska Pollock, the main species caught by trawl fishing in the North Pacific has been highlighted as an important national source of protein supply, but its fishing grounds have been gradually decreasing; the quota-fishing and Korea-U.S.A joint fishing projects of the Alaska Pollock in the Bering Sea were already closed in the late 1980's. Thereafter the trawl fisheries of Alaska Pollock retired in the high seas and only the Russian waters have been expedited since 1989.

Third, the Arctic fishery is expected to contribute to a steady growth of Korean fisheries in a long-term perspective and to activate the new growth engine in the fishery sector. Developing the Arctic fishery can ensure Objective 7, exploring new industries by actively adapting climate change, and Objective 8, making agricultural, forestry and fishing

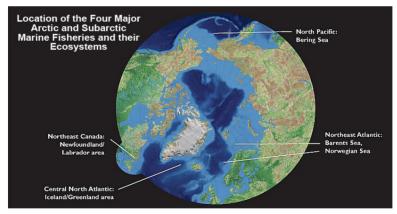
industries generate more profits.

# 3. An overview of the Arctic fisheries

# 3.1 The spatial scope of the Arctic fishing area!

## 3.1.1 Ecosystem Based Scoping

The spatial scope of the Arctic fishing area varies among the relevant institutions and reports. It is mainly because no universally accepted definition is currently available for the spatial scope of the Arctic or the Arctic Ocean. Different criteria cause inconsistency in defining the geographical scopes of Arctic fishing areas, leading to different borders and difficulties in analysis. Based on the characteristics of the ecosystem, Arctic Climate Impact Assessment (ACIA) scientific report focuses on the four major Arctic and subarctic fishing areas (Figure 1), namely (i) the Northeast Atlantic (Barents and Norwegian Seas) (ii) the Central North Atlantic (waters around Iceland and off East Greenland), (iii) Northeast Canada (Newfoundland and Labrador Seas) and (iv) the North Pacific (Bering Sea).



Source: ACIA, Scientific Report, Chapter 13 'Fisheries and Aquaculture', 2005, p. 693

Figure 1. The Arctic Fishing grounds by ACIA

NOAA identified the Arctic area as one of even more detailed 17 large-marine ecosystems<sup>2</sup> (LME). (See Figure 2)

<sup>1</sup> Bettina Rudloff, The EU as fishing actor in the Arctic, working paper, FG2, 2010/02, July 2010, SWP Berlin.

<sup>2</sup> The physical extent of the LME and its boundaries are based on four linked ecological, rather than political or economic, criteria. These are: (i) bathymetry, (ii) hydrography, (iii) productivity and (iv) trophic relationships. Based on the 4 ecological criteria, 64 distinct LMEs have been delineated around the coastal margins of the Atlantic, Pacific and Indian Oceans. These are 200,000km or greater, adjacent to the continents in coastal waters, where primary productivity is generally higher than in open seas. This mapping refers to the UN goal to implement such approaches as general principle by 2010 and has been integrated already in some Agreement, like the Convention for Biodiversity.

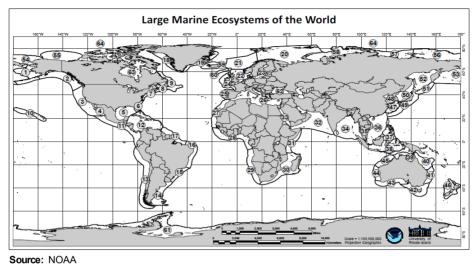
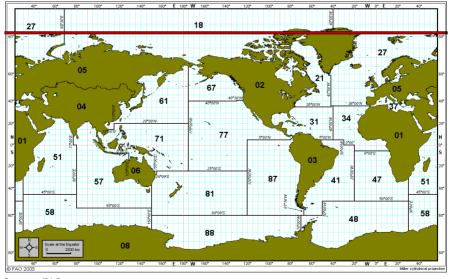


Figure 2. Ecosystem Based Arctic Waters by NOAA

#### 3.1.2 Statistically defined identification

The FAO defines statistically relevant Arctic areas and explicitly includes only area No.18 as Arctic waters. This paper proposes to define the fishing area of the Arctic to include the Arctic Sea (FAO Area No.18) and parts of North Atlantic and North Pacific sides (FAO Area No. 21, 27, 61 and 67) to the Arctic Circle. To be more exact, the proposed border includes waters just over the Arctic Circle, the red line in Figure 3.



Source: FAO

Figure 3. The Arctic fishing areas by FAO statistical definition

The definitions of the Arctic fishing areas mentioned above are compared in the following table.

Ecosystem based Areas (ACIA)	Geographical specification	Statistical Area (FAO)	Applied Arctic Definition (Arctic Circle)	
Northeast Atlantic	Barents Sea	Area 27 I, IIb	completely covered	
Northeast Atlantic	Norwegian Sea	Area 27 Ila	completely covered	
0 1 1 1 1 1 1 1 1	Waters around Iceland	Area 27 Va	completely covered	
Central North Atlantic	East of Greeland	Area 27 XIVa, XIVb	completely covered	
Northeast Canada	Labrador and Newfoundland	Area 21 2,3	partly covered	
Northeast Canada	Eastern coast Iceland, Western coast Greenland	Area 21 0A, 0B, 1A-F	completely covered	
Bering sea	Bering sea Bering Sea		partly covered	
-	Northern marine areas	Area 18	completely covered	

Table 1. Definition of the Arctic fishing area

#### 3.1.3 Institutional based area

The regional fishery management organizations identify the Arctic fishing areas; the institutional coverage of marine areas may be different from or overlap with other geographical borders and statistically defined areas. The Arctic waters that belong to the high seas, if existing, are to be ruled under customary laws or by RFMOs.

The Arctic fishing areas are defined by various institutions like the North Atlantic Marine Mammal Commission (NAMMCO), the North Atlantic Salmon Conservation Organization (NASCO), the Northwest Atlantic Fisheries Commission (NAFO), the Northeast Atlantic Fishery Commission (NEAFC), and the tuna and migrating species-related RFMOs such as the International Commission for the Conservation of Atlantic Tunas (ICCAT) and the Western and Central Pacific Fisheries Commission (WCPFC).



Source: FAO

Figure 4. Arctic Sea with the regional fisheries management organizations

# 3.2 The Species and Production of the Arctic Fisheries

The broad spatial extension causes large disparities in defining the local ecosystems and fish species, especially comparing the Atlantic and the Pacific site of the area. Capelin, Greenland halibut, northern shrimp, and polar cod or northeast cod are specifically defined as the circumpolar species. Species that are defined as non-Arctic, but commercially relevant species are Atlantic cod, Alaska Pollock, haddock, Pacific cod, snow crab, herring, Atlantic salmon and red king crab.<sup>3</sup>

In 2008, the amount of catches from the Arctic fishing areas (FAO Area No. 21, 27, 61 and 67) mentioned above was approximately 33.9 million ton accounting for about 42.1% of the world's total catches.<sup>4</sup> Until the 1980s, the same areas produced over 50% of the total catches, but it has been gradually decreasing ever since. The production of the Arctic Sea (FAO Area No. 18) was not large in 2008, recording 480 tons, 0.5 % of the total.

Table 2. The Amount of Catches of the Arctic Fishing Areas

(Unit: 1,000 ton, %)

	FAO Area No.					Sub Total	World Total	a/b(%)
	18	27	21	61	67	(a)	(b)	a/b( /0)
1950	0.0	5,335	2,262	598	4,487	12,681	17,293	73.3
1960	0.0	7,469	3,068	767	8,761	20,066	31,626	63.4
1970	0.8	10,601	4,203	2,613	12,058	29,476	59,222	49.8
1980	0.0	11,717	2,896	1,945	17,410	33,969	63,145	53.8
1990	0.0	8,837	3,309	3,332	22,467	37,946	79,556	47.7
2000	0.0	11,362	2,103	2,478	21,489	37,432	86,155	43.4
2005	0.0	9,875	2,223	3,210	20,094	35,402	83,870	42.2
2008(c)	0.5	8,650	2,065	2,573	20,616	33,905	80,580	42.1
c/b(%)	0.0	10.7	2.6	3.2	25.6	42.1	100.0	-

Source: FAO, Total Fisheries Production Statistics

# 4. The Fisheries Regime of the Arctic

# 4.1 The Arctic Fisheries Regime

The major international fishery instruments like the UNCLOS, the Agreement, and the FAO Code as well as other instruments like the bilateral and multilateral Agreements can be applicable to the Arctic fishery regime (Table 3).

<sup>3</sup> Ibid.

<sup>4</sup> It would be 13.3% without the North Pacific Ocean (Area No. 61 and 67). It is noteworthy that the very small part of North Pacific area (Bering Sea) is included within the Arctic Circle and the fishery production in this area cannot be known.

	Instruments				
Major Instruments		UNCLOS			
	The Agreement				
		FAO Code of Conduct for Responsible Fisheries			
Other instruments	UN	Resolutions of the United Nations General Assembly			
	FAO	FAO Compliance Agreement, FAO International plans of action: IPOAs, IPOA-IUU			
	RFMO	NAFO Convention, NEAFC Convention, Convention on the Conservation and Management of Pollock Resource in the Central Bering Sea(CBSPC) and etc.			
	Bilateral Agreement	Norway-Russian Federation Loophole Agreement and Protocols, and etc.			

Table 3. The instruments of the Arctic fisheries regime

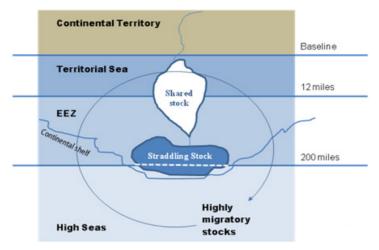
#### 4.1.1 United Nations Convention on the Law of the Sea (UNCLOS)

The United Nations Convention on the Law of the Sea (UNCLOS) was adopted in 1982 and took effect in 1996. UNCLOS ascertains a comprehensive legal regime covering all aspects of the seas and oceans.<sup>5</sup> One of the most important features of UNCLOS is to settle the issues regarding the extent of national sovereignty over the oceans and seabed. Subsequently the UNCLOS can be applied to the Arctic Ocean. Table 4 shows the major provisions according to the contents and related activities in the EEZ and high seas of the Arctic Ocean.

Part	Section	Article	Contents	Related Activities
Part II	Section 3	17-28	Innocent passage in the territorial sea	Navigation
Part V		61-75	Living resources in the exclusive economic zone	Fisheries
Part VI		76-85	Continental Shelf	Resource developing
	Section 1	89-94	Navigation of the high seas	Navigation
Part VII	Section 2	116-120	Conservation and management of the living resourced of the high seas	Fisheries
Part XI	Section 3	150-155	Development of resources of the Area	Resource developing
Part XII	Section 8	234	Ice-covered areas	Environment

Table 4. The articles of UNCLOS related with the Arctic matters

<sup>5</sup> FAO. © 2005-2011. Fisheries and Aquaculture topics. The United Nations Convention on the Law of the Sea. Topics Fact Sheets. Text by William Edeson. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 27 May 2005. [Cited 4 January 2011]. http://www.fao.org/fishery/topic/14839/en



Source: FAO / Fisheries Department

Figure 5. Maritime zones and distribution of fishery stocks as defined by UNCLOS

With regard to fisheries, the UNCLOS establishes a regime for the conservation and management of fishery resources based on the areas and types of fish stocks within the area. Coastal states are required to conserve and manage living marine resources in the territorial seas and the EEZ. They are also required to cooperate to conserve and manage specific stocks, particularly straddling fish stocks and highly migratory species in the high seas. See Figure 5 for the maritime zones for fishing defined by the UNCLOS. In this context, it is meaningful to examine the application of this law to the Arctic fishery regime.

#### **4.1.2** United Nations Fish Stocks Agreement (The Agreement)

After the drastic decrease in the resources due to the highly risen fishing intensity in the 1980s, the need for manning the fish resources of the high seas has been formally raised. Consequently, 'the United Nations Agreement for the Implementation of the Provisions of the UNCLOS was passed for the conservation and management of straddling fish stocks and highly migratory fish stocks'6 in 1995 and took effect in 2001. The agreement mainly contains basic rules for preserving and managing the straddling and highly migratory fish stocks of the high seas by international and regional cooperation. It supports the establishment of the RFMOs and will influence international collaborations for the Arctic fisheries.

<sup>6</sup> The Agreement contains 50 clauses and 2 annexes with the preamble and articulates the principle of the scope and the provisions for long-term preservations and sustainable development of fishing resources in high seas.

#### **4.1.3** FAO Code of Conduct for Responsible Fishing

While the concerns about the over exploitations in the high seas have been growing since 1980s, the FAO tried to bridge the instruments of fisheries with general regimes of the ocean environment preservation. In recognition of environmental impacts and other important developments in world fisheries, the FAO governing bodies recommended the formulation of a global Code of Conduct for Responsible Fisheries which would be consistent with the UNCLOS, the Agreement, and the non-mandatory standards for conservation, management and development of all the fisheries. Subsequently the FAO Code provides a necessary framework for national and international efforts to ensure sustainable development of aquatic living resources in harmony with the environment. Korea has ratified and accepted those instruments.

## 4.2 Major Institutions for the Arctic Fishery Regime

#### **4.2.1** RFMOs

The regime in fishing in the Arctic Ocean would take an important role in the related RFMOs. RFMOs can be divided into two types of institutions: one with explicit jurisdiction including the Arctic Ocean and the other with implicit jurisdiction. The former would be NAFO, NEAFC, the Norway-Russia Fishing Commission, NASCO, Yukon River Panel and etc., and the latter would represent WCPFC and ICCAT, which are the tuna or tuna-like species related RFMOs. Meanwhile, the North Atlantic Marine Mammal Commission (NAMMCO) is a regional body for conservation and management of all the species of cetaceans (whales and dolphins) and pinnipeds (seals and walruses) in the region, many of which have not been covered before by such an international agreement. Recently, due to growing concerns about IUU and climate changes, RFMOs are taking various measures to protect fishing resources in each jurisdiction. This trend will be adopted in fishing in the Arctic Ocean.

There are international science organizations such as ICE, PICES, IASC, which are the supporters for the RFMOs. Also, the CCAMLR is noteworthy in the preservation of polar life. Korea is a member of the NAFO, the WCPFC, the ICCAT, the NPAFC, the PICES, and the CCAMLR (See Table 5).

	Institutions	membership of Korea
Institutions of Fisheries (RFMOs)	The North Atlantic Marine Mammal Commission (NAMMCO)	
	International Commission on the Conservation of Atlantic Tunas (ICCAT)	<b>V</b>
	Northwest Atlantic Fisheries Organization (NAFO)	$\checkmark$
	North Atlantic Salmon Conservation Organization (NASCO)	
	North East Atlantic Fisheries Commission (NEAFC)	
	North Pacific Anadromous Fish Commission (NPAFC)	√
	Western and Central Pacific Ocean Fisheries Commission (WCPFC)	√
Arctic Council	Working Group (CAFF, SDWG)	
Science Institutions	The Oslo and Paris (OSPAR) Commissions	
	International Council for the Exploration of the Sea (ICE)	
	North Pacific Marine Science Organization (PICES)	√
Others	Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)	V

Table 5. The Institutions of the fisheries Regime in the Arctic Ocean

#### **4.2.1.1** Northwest Atlantic Fisheries Organization (NAFO)<sup>7</sup>

The NAFO Convention Area encompasses a very large portion of the Atlantic Ocean and includes the 200-mile zones of Coastal States jurisdiction (USA, Canada, St. Pierre et Miquelon and Greenland). The NAFO Management, however, applies only to the areas straddling and outside the EEZs (Exclusive Economic Zones). The NAFO in fishing in the Arctic Ocean is important because the members are the major fishers close to the Arctic Ocean with extended roles in the development of the Arctic Ocean. Currently, the NAFO has twelve members including South Korea, Japan, United States, Russia, EU, Norway and Denmark.

## 4.2.1.2 Northeast Atlantic Fisheries Commission (NEAFC)8

Established in 1980, the NEAFC has control over parts of the Barents Sea and serves as an important bridgehead in the development of the fisheries in the Arctic Ocean. The NEAFC Convention Area covers the Atlantic and Arctic Oceans east of a line south of Cape Farewell - the southern tip of Greenland (42° W), north of a line to the west of Cape Hatteras - the southern tip of Spain (36° N) and west of the line touching the western tip of Novya Semlya (51° E). The Baltic and Mediterranean Seas are excluded. Most of these area is under the jurisdiction of the NEAFC's contracting Parties, as they are defined as their national waters. However, three large areas are defined as international

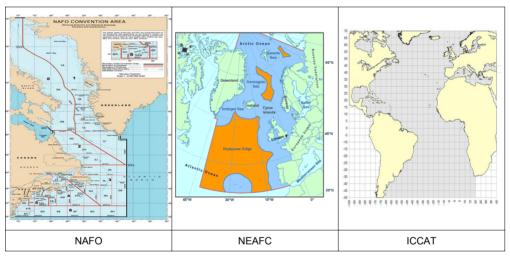
<sup>7</sup> www.nafo.int

<sup>8</sup> www.feafc.org

waters and constitute the NEAFC Regulatory Area. This institution has two types of membership status; one with contracted status including Denmark (Faeroe Island and Greenland), EU, Iceland, and Norway, and the other with cooperating status including Belize, Japan, Canada, and New Zealand. Typical fish found in their jurisdiction waters are red croaker, hake, and mackerel.

#### 4.2.1.3 International Commission on the Conservation of Atlantic Tunas (ICCAT)<sup>9</sup>

The regions subject to the ICCAT agreement include the waters of the Atlantic Ocean and its adjacent waters. While no agreement is made on the northern region of the Atlantic Ocean, the ICCAT has authority over the Arctic Sea waters (FAO Area No.18) for tuna and other similar species. Although its regulating activity is not currently active in the Arctic Ocean, the ICCAT can exercise greater authority in fishery management when tuna and its similar species get included in the southern region of the Arctic Ocean in the near future.



Sources: The website of each organization

Figure 6. The convention area of NAFO, NEAFC and ICCAT

#### 4.2.2 The Arctic Council

Regarding the Arctic regime, the Arctic Council is recognized as a primary institution that can serve as one of the key players in the Arctic fishery regime. The council is a forum of Arctic region countries that was launched on September 19, 1996. The goal of the establishment is to promote the welfare of habitants near the Arctic by conserving

<sup>9</sup> www.iccat.es

traditions and communities of the natives in the region, to protect the environment of the ecosystem of the Arctic region, the health of its habitants and the preservation of biological diversity. It also aims to allow sustainable use of the natural resources in the Arctic, and to support sustainable development to integrate the regions' economical/sociological development along with the realization of cultural welfare.

The Arctic Council, however, was not explicitly established to function as a governing body of the Arctic Ocean. Currently, it does not have a legal binding force to establish any detailed vision or plan. Nonetheless, the many reports and guidelines that the council has provided on the environment of the Arctic for the past 20 years have great influences on formulating rules or principles related to the future of the Arctic. Thus, it is meaningful to examine the current roles of Arctic Council as a primary institute of the Arctic Ocean regime in relation to the Arctic fisheries.

The members of the council are the eight Arctic coastal countries: Russia, Canada, Greenland, Iceland, Norway, Finland, Sweden and the USA. In addition to the member countries, there are regularly participating groups such as the organizations of the Arctic indigenous peoples representing the majority of Arctic indigenous constituents: ICC, SAAMI, RAIPON, AIA, AAC and GCI.<sup>10</sup> The participating groups regularly raise Arctic related issues and serve as consultants. There are also observers who participate without any decision-making privileges, which include non-Arctic coastal countries, international organizations, and various NGOs who have stakes related to the Arctic. The Chairmanship of the Arctic Council rotates every two years, and the Arctic Council Ministerial Meetings are held biannually in the country holding the chairmanship. The Senior Arctic Officials Meeting is held twice a year, as shown in Figure 7. So far, Korea has not yet been recognized as a permanent observer of the Arctic Council. Considering the critical role of the Arctic Council, it would be beneficial for Korea to take strategic actions to earn this title as soon as possible.

With regards to the Arctic fisheries, the Arctic Council has taken passive actions compared with other environment and shipping matters. As of today, the council has published the ACIA in collaboration with the International Arctic Science Committee. The report differentiates the fisheries of the Arctic Ocean in four regions and presents the analyses of each fishery on its ecosystem, fishing resources, and productions. It also closely examines the effects of fishing and climate changes in each fishery. The report, however, fails to provide a specific policy such as fishing policies or international cooperation. In addition, due to its focus on environmental issues, it does not deal with fishing in the Arctic Ocean in depth.

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<sup>10</sup> Aleut International Association (AIA), Arctic Athabaskan Council (AAC), Gwich'in Council International (GCI), Inuit Circumpolar Council (ICC), Saami Council(SAAMI), Russian Arctic Indigenous Peoples of the North (RAIPON)

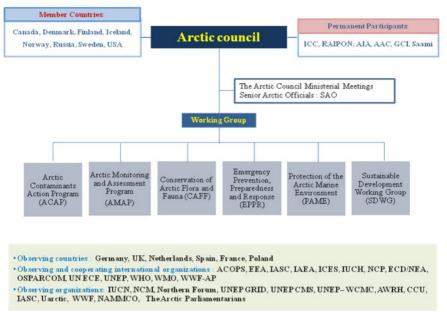


Figure 7. The Organization Chart of Arctic Council

# 5. Conclusion and Implications

The Arctic Ocean is emerging as an attractive new business opportunity to Korean fishing industries. Due to the melting ice of the (Arctic) Ocean, the feasibility of the Arctic fishing is rapidly growing. As a consequence, the Arctic Ocean coastal states and other states like China, Japan, and EU have competitively established and announced their development policies for the Arctic including those related to fisheries. Despite the uncertainties in developing the Arctic fisheries and the lack of scientific data or statistics, the Arctic fisheries can become one of main pillars of global fisheries in the near future.

Given these circumstances, the followings are suggested for development of the Arctic fishery policies of Korea.

- ✓ It is important for Korea to strengthen the liaisons with the regional fishery bodies such as NAFO, NEAFC, and ICCAT since their supervisory systems are employed to establish the regime of the Arctic fisheries. This can be actively implemented in connection with the distant water fishery policy in Korea.
- ✓ The Korean government has to be recognized as a permanent observer as soon as possible in the Arctic Council. To achieve this goal, Korea should have more interest and conduct more research on the Arctic matters by establishing

- joint research with the arctic coastal states as well as actively participating in various group projects of the Council.
- ✓ Scientific research and investigations should take place to assess the fish resources in the Arctic Ocean. The research needs to be based on international cooperation for securing credibility and objectiveness. Cooperation with China and Japan may be considered in discussing the exploitation of the Arctic fishing grounds.
- ✓ In coping with the ramifications of climate changes, it is critical to establish the multilateral and bilateral cooperative relation with the Arctic Council and its member states.

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