

Chapter 7

Climate Change and Arctic Fisheries

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Abstract Climate change will have a variety of consequences for marine capture fisheries within the broadly defined Arctic marine area. Among these are new and expanding fisheries in the Arctic Ocean. This chapter provides an overview of current Arctic fisheries, the current international legal and policy framework with respect to Arctic fisheries and some national regulation over Arctic fisheries. This is complemented by the identification of gaps in the international legal and policy framework and national regulation and options for addressing them. Among the options are ensuring the availability of relevant scientific data; individual action by Arctic Ocean coastal states and other states in their capacities as flag, coastal, port and market states and with regard to their natural and legal persons; bilateral or subregional arrangements between the relevant Arctic Ocean coastal states on the conservation and management of shared fish stocks; a regional declaration on new fisheries in the Arctic marine area; and one or more state-of-the-art RFMOs or Arrangements.

7.1 Introduction

It is now widely accepted that global climate change will have dramatic impacts for the Arctic. The rapid warming of the Arctic climate was the first and most prominent of the 10 key findings of the 2004 Arctic Climate Impact Assessment ([ACIA], 2004, 2005). On 15 September 2007, the Arctic ice cap was 22% below the last record set in 2005 (*Arctic sea ice*, n.d.). This 2007 record exceeded the

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computer model predictions used to prepare the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) in 2007 (*Arctic ice retreating*, 2007). While the 2007 record seems unlikely to be broken in 2008 (*Arctic sea ice*, n.d.), many scientists now fear that the 'Arctic meltdown' has become irreversible.

Of particular importance to this chapter are ACIA's key findings No. 4: 'Animal species' diversity, ranges and distribution will change' and No. 6: 'Reduced sea ice is very likely to increase marine transport and access to resources' (ACIA, 2004, Executive Summary, p. 10). While the former predicts changes in the composition of the Arctic marine ecosystem in quantitative, qualitative, spatial and temporal terms, the latter predicts increased pressure on this ecosystem due to more intensive exercise of existing maritime uses as well as new uses. Examples of these are maritime navigation (for the transport of persons and cargo, including for tourism and military purposes), exploration and exploitation of living (e.g., fishing) and non-living (e.g., oil and gas) marine resources, construction of artificial installations, laying of cables and pipelines, overflight and marine scientific research (including bio-prospecting).

This chapter starts with Section 7.2 on current Arctic fisheries and Section 7.3 on Arctic fisheries and climate change. Section 7.4 provides some basic information on the law of the sea in the Arctic marine area, Section 7.5 gives an overview of the international legal and policy framework with respect to Arctic fisheries and Section 7.6 devotes some attention to national regulation over Arctic fisheries. The chapter concludes with Section 7.7 on the gaps in the international legal and policy framework and national regulation and options for addressing them.

In this chapter, the acronym regional fisheries management organization (RFMO) is defined as a regional intergovernmental organisation with the competence to impose on its Members legally binding measures for the conservation and management of target fishery resources and regulating impacts of fishing on non-target species.¹ The term 'Arrangement' is understood to be a bilateral or (sub-)regional cooperative mechanism other than an intergovernmental organisation, but otherwise has in principle the same characteristics as an RFMO.²

In this chapter, the following are regarded as 'Arctic states': Canada, Denmark (in relation to Greenland), Finland, Iceland, Norway, the Russian Federation, Sweden and the United States. Even though there is no universally accepted definition for the 'Arctic Ocean', it seems generally accepted that there are only five coastal states to the Arctic Ocean, namely Canada, Denmark (in relation to Greenland), Norway, the Russian Federation and the United States.³

This chapter focuses exclusively on marine capture fisheries; aquaculture is therefore beyond its scope. As regards species, the chapter will often distinguish between fisheries for target species and the impacts of fisheries on non-target species. Target species are exclusively 'fishery resources', which are defined as

¹See also Section 7.5.1 below.

²The term 'Arrangement' is derived from the term 'arrangement' as defined in Art. 1(1)(d) of the Fish Stocks Agreement (*Agreement for the Implementation*, 1995).

³This can for instance be deduced from the *Ilulissat Declaration* (2008).

fish, molluscs, crustaceans and sedentary species.⁴ Non-target species can be fishery resources and marine mammals but also birds and (other) benthic species, including corals. Even though fisheries are in this chapter approached from a sectoral perspective, the objective is to pursue an ecosystem approach to fisheries (EAF), defined in the FAO Technical Guidelines on 'The ecosystem approach to fisheries' (Food and Agriculture Organisation [FAO], 2003, Suppl. 2) as follows:

An ecosystem approach to fisheries strives to balance various societal objectives by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries. (FAO, 2003, p. 6)

More concrete, operationalized objectives of EAF include minimising or avoiding impacts of fishing on non-target species, for instance in terms of by-catch and ensuring availability of food in light of predator-prey relationships. These objectives complement the classic objectives of avoidance of over-exploitation of target species.

As a consequence of the sectoral perspective of this chapter, the focus will be exclusively on international instruments and intergovernmental and other relevant international bodies that relate to, or pursue, conservation as well as management. No attention will therefore be paid to those that focus exclusively on conservation of species and habitat by various means, including by the regulation of international trade.

7.2 Current Arctic Fisheries

There is currently no universally accepted definition for the spatial scope of the marine Arctic. Relevant instruments and processes use different definitions for the Arctic, for instance the area north of the northern treeline or the area north of the Arctic circle (66° 33' North). In this chapter, Arctic fisheries are regarded as the fisheries that occur in marine areas within the outer limits of the so-called 'AMAP area', as agreed by the Arctic Monitoring and Assessment Programme (AMAP) of the Arctic Council. These are the marine areas north of the Arctic Circle (66°32'N), and north of 62°N in Asia and 60°N in North America, modified to include the marine areas north of the Aleutian chain, Hudson Bay, and parts of the North Atlantic Ocean including the Labrador Sea. For the purpose of this chapter, these marine areas are referred to as the 'Arctic marine area'.

It should be noted, however, that other relevant global international organisations have opted either explicitly or implicitly for different definitions of the Arctic or marine Arctic. For instance, FAO (United Nations Food and Agriculture Organization) Statistical Area No. 18: 'Arctic Sea', comprises Hudson Bay and adjacent waters, waters within the Canadian Arctic Archipelago and all of the Arctic Ocean, except the Atlantic sector.

⁴Based on Art. 1(b) of the amended NEAFC Convention (1980).

The broad spatial scope of the Arctic marine area implies that it includes a wide range of different ecosystems, fish stocks and fisheries. Significant differences exist for instance between the Atlantic and Pacific sides of the Arctic marine area. Cognisant of these differences, Chapter 13 on 'Fisheries and Aquaculture' of the Arctic Climate Impact Assessment (ACIA) Scientific Report opts to focus on the four major Arctic and Subarctic marine fisheries and their ecosystems, 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).

The species on which this ACIA chapter focuses are 'those few circumpolar species (capelin (*Mallotus villosus*), Greenland halibut (*Reinhardtius hippoglossoides*), northern shrimp (*Pandalus borealis*), and polar cod (*Boreogadus saida*)) and those of commercial importance in specific regions. The latter include Atlantic cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), Alaska pollock (*Theragra chalcogramma*), Pacific cod (*Gadus macrocephalus*), snow crab (*Chionoecetes opilio*)' (ACIA, 2005, p. 693). Other species discussed by the ACIA include herring, salmon and (red) king crab. It is nevertheless clear that these species are merely a selection, based to a considerable extent on the focus on the four spatial areas mentioned above. Saying anything useful about the relative importance of fisheries for these species is impossible without going into a lot of detail.⁵ The ACIA chapter also notes the complexity of the functioning of Arctic marine ecosystems as well as the limitations and shortcomings of science (ACIA, 2005, p. 692). Presumably, a lot of data required for pursuing an EAF is also presently not available.

The ACIA does not examine subsistence fisheries in the Arctic marine area under a separate heading, but devotes attention to them within the scope of the four spatial areas mentioned above. It seems likely, however, that subsistence fishing in the other parts of the Arctic marine area will be relatively more important to indigenous peoples.

7.3 Arctic Fisheries and Climate Change

The following seem to be the main consequences of climate change to the Arctic marine area:

- much more rapid warming of Arctic surface temperatures in comparison with the rest of the world. As a consequence, Arctic waters will warm more rapidly as well;
- substantial reductions of Arctic sea ice coverage and thickness;

⁵For such detailed information see ACIA (2005, Chapter 13). Other information can be obtained through the Arctic Fisheries Working Group operating under the International Council for the Exploration of the Sea (ICES; see www.ices.dk). This working group, however, has so far been focusing exclusively on the Northeast Atlantic.

- reduced salinity due to influx of fresh water as a consequence of melting sea ice (which is essentially salt free) and glacial ice;
- other oceanographic and meteorological changes (e.g., more storms and waves) in particular due to changes in air and water temperature and sea ice coverage; and
- increasing acidification of the world's oceans due to increasing uptake of CO₂ (which is not just relevant to the Arctic marine area).

That these changes will affect Arctic marine ecosystems is certain, but accurate predictions cannot be made. One general conclusion is that a 'moderate warming will improve the conditions for some of the most important commercial fish stocks', as well as for aquaculture. 'This is most likely to be due to enhanced levels of primary and secondary production resulting from reduced sea-ice cover' and more 'extensive habitat areas for Subarctic species such as cod and herring. [...] Global warming is also likely to induce an ecosystem regime shift in some areas, resulting in a very different species composition' (ACIA, 2005, p. 692.). One area in which an ecosystem shift occurred in the past is the Bering Sea. The composition of Arctic marine ecosystems will undoubtedly change, both qualitatively and quantitatively. Some species will at some stage disappear and others (e.g., due to northward migration) will be added and the relative importance of species in abundance will change as well. These changes will of course be spatially and temporally differentiated. Where new fishing opportunities will occur (on the high seas or within coastal state maritime zones) and with respect to which species or categories of species (e.g., shared, anadromous, straddling or highly migratory) is also difficult to predict.⁶ It will be similarly difficult to predict which states – Arctic Ocean coastal states or other states – will benefit or suffer and how subsistence fishing will be affected, among other things by competition with commercial fisheries. Finally, as reduced ice coverage and thickness will also enable other human activities – most importantly shipping and offshore hydrocarbon activities – these activities may compete with fishing in a spatial sense or affect them by pollution and other impacts.

The impact of current and future Arctic fisheries on the marine environment and marine biodiversity in the Arctic is not likely to be fundamentally different from impacts to the marine environment and biodiversity in other parts of the globe. Arctic fisheries could lead to over-exploitation of target species and a variety of impacts on non-target species, for instance on dependent species due to predator-prey relationships, on associated species due to by-catch and on benthic species due to bottom fishing.⁷ In view of the broad spatial scope of the Arctic marine area, such undesirable effects are without doubt already occurring, even though not necessarily on a very serious scale.

⁶See Section 7.5.3 on the LOS Convention.

⁷See Section 7.5.3 on the LOS Convention.

7.4 The Law of the Sea in the Arctic Marine Area

The Arctic marine area is geographically covered in its entirety by the current international law of the sea. The cornerstones of the current international law of the sea are the United Nations Convention on the Law of the Sea ([LOS Convention], 1982)⁸ and its two implementation agreements, the Part XI Deep-Sea Mining Agreement (*Agreement relating*, 1994)⁹ and the Fish Stocks Agreement (*Agreement for the Implementation* [Fish Stocks Agreement], 1995).¹⁰ The LOS Convention's overarching objective is to establish a universally accepted, just and equitable legal order – or 'Constitution' – for the oceans that lessens the risk of international conflict and enhances stability and peace in the international community. The LOS Convention currently has 156 parties, the Part XI Deep-Sea Mining Agreement 133 parties and the Fish Stocks Agreement 71 parties. The eight Arctic states are parties to all these treaties, except for the United States, which is not a party to the LOS Convention and the Part XI Deep-Sea Mining Agreement (*Oceans and the Law of the Sea* website). The European Community (EC) is party to all three treaties. This is important in view of the fact that Denmark, Finland and Sweden are Member States of the European Union (EU) and Iceland and Norway are parties to the EEA Agreement (*Agreement on the European* [EEA Agreement], 1993).¹¹

The most basic distinction between marine areas made by the LOS Convention is between the maritime zones of coastal States – also referred to as 'areas within national jurisdiction' – and the commons seaward thereof – also referred to as 'areas beyond national jurisdiction'. The maritime zones of coastal States can consist of: internal waters, archipelagic waters, territorial sea, contiguous zone, exclusive economic zone (EEZ) and continental shelf. As will become clearer below, the EEZ includes the continental shelf but in some cases there is also an 'outer' continental shelf that extends seaward of the EEZ. The two marine commons are the high seas – usually seaward of the EEZ (where established) – and the so-called 'Area' – seaward of the EEZ or outer continental shelf. The Area is defined as 'the sea-bed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction' (LOS Convention, 1982, art. 1(1)(1)).

There are four high seas pockets (enclaves) in the Arctic marine area. These are the so-called 'Banana Hole' in the Norwegian Sea, the so-called 'Loophole' in the Barents Sea, the so-called 'Donut Hole' in the central Bering Sea and the central

⁸United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982. In force 16 November 1994.

⁹Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, New York, 28 July 1994. In force 28 July 1996.

¹⁰Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, New York, 4 August 1995. In force 11 December 2001.

¹¹Agreement on the European Economic Area, Brussels, 17 March 1993. In force 1 January 1994.

Arctic Ocean.¹² Moreover, it is likely that there will be two pockets of the Area in the central Arctic Ocean.¹³ This will only become apparent, however, after all Arctic Ocean coastal states have established the limits of the outer continental shelf 'on the basis of' (LOS Convention, 1982, art. 76(8)) the recommendations of the Commission on the Limits of the Continental Shelf (CLCS), without culminating in international dispute settlement mechanisms.

It should also be noted that while the Treaty of Spitsbergen (1920)¹⁴ grants sovereignty over Svalbard to Norway, there is disagreement between States as to whether Norway is entitled to establish an EEZ and outer continental shelf off Svalbard and exercise therein the usual sovereign rights and jurisdiction granted to coastal States under the LOS Convention and, if so, whether the equal rights accorded to parties to the Treaty of Spitsbergen should apply to these maritime zones.

The fact that the current international law of the sea applies to the entire marine Arctic, however defined, is also emphasised by the five Arctic Ocean coastal states in the *Ilulissat Declaration* (2008). Accordingly, as the 'law of the sea' is an 'extensive international legal framework', they 'therefore see no need to develop a new comprehensive international legal regime to govern the Arctic Ocean' (*Ilulissat Declaration*, 2008). Conversely, they recognise the need for 'appropriate measures' as a consequence of 'developments in the Arctic Ocean' (*Ilulissat Declaration*, 2008). In the less than a single page text that follows, reference is among other things made to the safety of navigation, vessel-source pollution and contingency planning and emergency response to incidents with shipping and offshore exploitation. Notably, no mention is made of international fisheries instruments, fisheries management in general or the need for holistic, integrated or cross-sectoral governance or management.

It is worth noting that the *Ilulissat Declaration* refers to the 'law of the sea' but not explicitly to the LOS Convention. This is hardly surprising as the United States is not a party to the LOS Convention. It is well-known that the United States takes the view that, except for its Part XI, the LOS Convention is already part of customary international law and in that way creates rights and obligations for the United States. However, while the United States does not also explicitly accept the dispute settlement mechanism in Part XV of the LOS Convention from its statement on customary international law, this mechanism is not able to become part of that body of law as a consequence of its procedural nature (Cf. McDorman, 2000, p. 259). The dispute settlement mechanism in Part XV is widely regarded as a critical component of the package-deal that paved the way for the adoption of the LOS Convention. The fact that it provides for compulsory third party dispute settlement

¹²It should be noted that the map of the NEAFC Convention Area that is currently available on the NEAFC website (www.neafc.org) does not show the high seas pocket in the Arctic Ocean.

¹³See, *inter alia*, the figure in Oude Elferink and Rothwell (2001, p. 150). See also the map at www.dur.ac.uk/ibru/resources/arctic.

¹⁴Treaty on the Status of Spitsbergen, Paris, 9 February 1920. In force 14 August 1925.

entailing binding decisions in many scenarios was a novelty in international law at the time. It thereby helps to safeguard the preservation of the package-deal of the LOS Convention by undesirable applications and interpretations of its provisions. The non-applicability of the dispute settlement mechanism of Part XV of the LOS Convention as between Arctic Ocean coastal states is therefore a significant gap in the ‘extensive international legal framework’ referred to in the Ilulissat Declaration.

7.5 International Legal and Policy Framework for Fisheries Management

7.5.1 Introduction

The aim of this section is to provide an overview of the international legal and policy framework with respect to Arctic fisheries. The ensuing subsections address inter-governmental and other relevant international bodies and international instruments.

7.5.2 Intergovernmental and Other Relevant International Bodies

The main global intergovernmental organisations and bodies of relevance to this chapter are the United Nations General Assembly (UNGA) and the FAO. At the regional level, there are a number of RFMOs and bilateral or regional organisations/arrangements whose spatial scope overlaps to some extent with the Arctic marine area. These are:

- the International Commission on the Conservation of Atlantic Tunas (ICCAT), established by the ICCAT Convention (*International Convention [ICCAT Convention]*, 1966);¹⁵
- the bilateral (Canada and the United States) International Pacific Halibut Commission (IPHC), established by the IPHC Convention (*Convention for the Preservation [IPHC Convention]*, 1953);¹⁶
- the bilateral (Russian Federation and the United States) Intergovernmental Consultative Committee (ICC), established by the Agreement on Mutual Fisheries Relations (*Agreement between*, 1988);¹⁷

¹⁵International Convention for the Conservation of Atlantic Tunas, Rio de Janeiro, 14 May 1966. In force 21 March 1969.

¹⁶Convention for the Preservation of the Halibut Fishery of the North Pacific Ocean and the Bering Sea, Ottawa, 2 March 1953. In force 28 October 1953. Exchange of Notes Constituting an Agreement to Amend the [IPHC Convention], Washington, 29 March 1979. In force 29 March 1979.

¹⁷Agreement between the Government of the United States of America and the Government of the Union of Soviet Socialist Republics on Mutual Fisheries Relations, Moscow, 31 May 1988. In force 28 October 1988. The Agreement expires on 31 December 2008 but the United States will seek to

- the Northwest Atlantic Fisheries Organization (NAFO), established by the NAFO Convention (*Convention on Future* [NAFO Convention], 1978).¹⁸ Its main regulatory body is the NAFO Fisheries Commission;
- the North Atlantic Salmon Conservation Organization (NASCO), established by the NASCO Convention (*Convention for the Conservation* [NASCO Convention], 1982);¹⁹
- the North East Atlantic Fisheries Commission (NEAFC), established by the NEAFC Convention (*Convention on Future* [NEAFC Convention], 1980);²⁰
- the North Pacific Anadromous Fish Commission (NPAFC), established by the NPAFC Convention (*Convention for the Conservation* [NPAFC Convention], 1992);²¹
- the Norway-Russian Federation Fisheries Commission, established by the 1975 Framework Agreement (*Agreement between, 1975*)²² and the trilateral Loophole Agreement and Protocols (*Agreement between, 1999*);²³

extend it for another five years. The two states are currently engaged in negotiations to establish a comprehensive fisheries agreement for the Northern Bering Sea. At the 2007 ICC meeting, only three provisions of the draft agreement remained unresolved. The next ICC meeting is scheduled to take place in September 2008 (information obtained from www.nmfs.noaa.gov/ia/bilateral, visited 26 August 2008).

¹⁸Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries, Ottawa, 24 October 1978. In force 1 January 1979. 2007 Amendment, Lisbon, 28 September 2007. Not in force, NAFO/GC Doc. 07/4. The 2007 Amendment consists of eight articles which replace the title with “Convention on Cooperation in the Northwest Atlantic Fisheries” and the existing Preamble, Annexes and almost all provisions by new ones.

¹⁹Convention for the Conservation of Salmon in the North Atlantic Ocean, Reykjavik, 2 March 1982. In force 1 October 1983.

²⁰Convention on Future Multilateral Cooperation in the North-East Atlantic Fisheries, London, 18 November 1980. In force 17 March 1982. 2004 Amendments (Art. 18bis), London; 12 November 2004. Not in force, but provisionally applied by means of the ‘London Declaration’ of 18 November 2005. 2006 Amendments, London (Preamble, Arts 1, 2 and 4), 11 August 2006. Not in force, but provisionally applied by means of the ‘London Declaration’ of 18 November 2005

²¹Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean, Moscow, 11 February 1992. In force 16 February 1993.

²²Agreement between the Government of Norway and the Government of the Union of Soviet Socialist Republics on Co-operation in the Fishing Industry, Moscow, 11 April 1975. In force 11 April 1975. See also Stokke (2001, p. 274).

²³Agreement between the Government of Iceland, the Government of Norway and the Government of the Russian Federation Concerning Certain Aspects of Co-operation in the Area of Fisheries, St. Petersburg, 15 May 1999. In force 15 July 1999; Protocol between the Government of Iceland and the Government of the Russian Federation under the Agreement between the Government of Iceland, the Government of Norway and the Government of the Russian Federation concerning Certain Aspects of Co-operation in the Area of Fisheries St. Petersburg, 15 May 1999. In force 15 July 1999; and Protocol between the Government of Norway and the Government of Iceland under the Agreement between the Government of Iceland, the Government of Norway and the Government of the Russian Federation concerning Certain Aspects of Co-operation in the Area of Fisheries St. Petersburg, 15 May 1999. In force 15 July 1999.

- the Western and Central Pacific Ocean Fisheries Commission (WCPFC), established by the WCPFC Convention (*Convention on the Conservation [WCPFC Convention]*, 2000);²⁴
- the Yukon River Panel of the bilateral (Canada and the United States) Pacific Salmon Commission (PSC), established by the Pacific Salmon Treaty (*Treaty between*, 1985);²⁵ and
- the annual Conference of Parties (CoP) to the CBS Convention (*Convention on the Conservation [CBS Convention]*, 1994).²⁶

Mention can also be made here of the currently ongoing negotiation process for the establishment of an RFMO in the Northwest Pacific.²⁷ During the last meeting in that process in May 2008, the United States proposed to extend the spatial scope of the future RFMO to the entire North Pacific, but excluding *inter alia* the Bering Sea.

As regards the Arctic Council, the main working groups of relevance to this chapter are the Conservation of Arctic Flora and Fauna (CAFF) and the Sustainable Development Working Group (SDWG). CAFF's work is guided by the CAFF Strategic Plan for the Conservation of Arctic Biological Diversity and has five core objectives, namely

- Monitoring of Arctic biodiversity;
- Conservation of Arctic species and their habitats;
- Consider the establishment of protected areas;
- Conservation of nature outside protected areas; and
- Integration of conservation objectives and measures for economic sectors of the society;

Finally, reference can be made to the following relevant international bodies:

- the OSPAR Commission established under the OSPAR Convention (*Convention for the Protection [OSPAR Convention]*, 1992),²⁸ in particular for its work under Annex IV on the assessment of the quality of the marine environment and under

²⁴Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean, Honolulu, 5 September 2000. In force 19 June 2004.

²⁵Treaty between the Government of Canada and the Government of the United States of America Concerning Pacific Salmon, Ottawa, 28 January 1985. In force 18 March 1985. The Yukon River Panel was established by means of the Yukon River Salmon Agreement of December 2002, which amended the Pacific Salmon Treaty.

²⁶Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea, Washington, 16 June 1994. In force 8 December 1995.

²⁷For some information see Molenaar (2007a, p. 124).

²⁸Convention for the Protection of the Marine Environment of the North-East Atlantic, Paris, 22 September 1992. In force 25 March 1998. Annex V, Sintra, 23 September 1998. In force 30 August 2000.

Annex V on the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area;

- various bodies established under the International Council for the Exploration of the Sea (ICES), in particular the Arctic Fisheries Working Group;
- bodies established under the North Pacific Marine Science Organization (PICES);²⁹ and
- the International Arctic Science Committee (IASC).

7.5.3 *International Instruments*

7.5.3.1 Introduction

As a point of departure, it should be noted that all the global legally binding and non-legally binding instruments related to fisheries conservation and management are also applicable to the Arctic marine area. The most important ones are:

- the LOS Convention;
- the Fish Stocks Agreement;
- the FAO Compliance Agreement (*Agreement to Promote*, 1993);³⁰
- the FAO Code of Conduct for Responsible Fisheries (1995),³¹ and its Technical Guidelines, international plans of action (IPOAs) – for instance the IPOA-IUU (*International Plan [IPOA-IUU]*, 2001)³² – and the Model Scheme on PSM (2005);³³ and
- UNGA Resolutions, among other things on driftnets and destructive fishing practices.³⁴

The subsections below will address in some more detail the LOS Convention, the Fish Stocks Agreement, constitutive instruments of RFMOs and Arrangements and their conservation and management measures, Arctic Council instruments and recent developments related to the Law of the Sea. Finally, for the sake of

²⁹For information see North Pacific Marine Science Organisation at www.pices.int.

³⁰Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, Rome, 24 November 1993. In force 24 April 2003.

³¹Adopted by the Twenty-eight Session of the FAO Conference, Rome, 31 October 1995.

³²International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. Adopted by consensus by FAO's Committee on Fisheries on 2 March 2001 and endorsed by the FAO Council on 23 June 2001.

³³Model Scheme on Port State Measures to Combat Illegal, Unreported and Unregulated Fishing endorsed by COFI at its 26th Session in March 2005.

³⁴See *inter alia* UNGA Resolution No. 61/105, of 8 December 2006, 'Sustainable fisheries, including through the 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, and related instruments', in particular paras 59 and 80–86.

completeness reference should be made here to the OSPAR Convention and the Treaty of Spitsbergen (1920).

7.5.3.2 LOS Convention

In addition to acknowledging the sovereignty, sovereign rights and jurisdiction of coastal states over all or certain living resources within their maritime zones and the freedom of fishing of all states in the high seas, the LOS Convention lays down several basic obligations which restrict these entitlements. These are³⁵

1. avoiding over-exploitation of target species by means of
 - a. determining the TAC, *inter alia*, by taking account of
 - i. dependent species (predator-prey relationships) and by-catch of associated species;
 - ii. generally recommended minimum standards;
 - b. using the best available scientific research available, where appropriate by cooperating within relevant international organisations;
2. avoiding or limiting by-catch of non-target species;
3. avoiding or limiting other impacts of fisheries on the marine ecosystem, for instance fragile ecosystems as well as the habitat of depleted, threatened or endangered species;
4. striving for the objective of maximum sustainable yield (MSY), except for marine mammals, sedentary species and species whose range of distribution does not extend seaward of the territorial sea;
5. cooperating in relation to transboundary stocks and discrete high seas stocks. The following different categories of transboundary stocks can be distinguished
 - a. shared stocks: between the EEZs of two or more coastal states;
 - b. straddling stocks: occurring within the EEZs of one or more coastal states and the high seas;
 - c. highly migratory stocks: the species listed on Annex I to the LOS Convention (in particular tuna and tuna-like species); and
 - d. anadromous (e.g., salmon) & catadromous (e.g., eel) stocks.

7.5.3.3 Fish Stocks Agreement

The Fish Stocks Agreement is an Implementation Agreement of the LOS Convention and does not deal with all of the LOS Convention's categories of stocks, but exclusively with straddling fish stocks and highly migratory fish stocks. Its objective is 'to ensure the long-term conservation and sustainable use of straddling fish

³⁵See, among other things, Articles 61–68, 116–120 and 194(5) of the LOS Convention (1982).

stocks and highly migratory fish stocks' (Fish Stocks Agreement, 1995, art. 2). Its scope of application encompasses not only areas beyond national jurisdiction but also areas within national jurisdiction (*Ibid.*, art. 3).

While the Fish Stock Agreement does not alter the basic jurisdictional framework of the LOS Convention,³⁶ the basic provisions of the LOS Convention are broadened, strengthened and specified in more detail in the Fish Stocks Agreement in relation to straddling and highly migratory fish stocks. This includes the requirements to apply a precautionary approach and an ecosystem approach to fisheries,³⁷ to protect biodiversity in the marine environment, the concept of compatibility, a variety of specific obligations for flag states, high seas enforcement powers for non-flag states and rights and obligations for port states.

In contrast with the LOS Convention, the Fish Stocks Agreement regards RFMOs and Arrangements as the preferred vehicles for fisheries regulation at the regional level. It imposes obligations on States that are Parties to the Fish Stocks Agreement to cooperate through appropriate existing RFMOs and Arrangements. Of crucial importance in that regard is Article 8(4), which stipulates that access to fisheries is limited to cooperating states. Also new is the right in Article 8(3) of states with a 'real interest' to become members of RFMOs or participants in Arrangements. Arguably, the duty to cooperate with the relevant RFMO or Arrangement laid down in Article 8(3) is already part of customary international law and thereby entitles the relevant members or participants to take measures against (non-cooperating) non-members and non-participants that would otherwise be in violation of international law, for instance trade-related measures (Cf. United Nations General Assembly [UNGA], 2006a, para. 46). The practice of RFMOs on trade-related measures has at any rate not been challenged by means of the establishment of a dispute settlement procedure under the World Trade Organization.

RFMOs and Arrangements are to be established where these do not exist (Cf. Fish Stocks Agreement, 1995, art. 8(5)). Moreover, as a consequence of in particular bottom-fisheries targeting deep-sea fish species – which are often discrete high seas fish stocks – there is broad support in the international community to ensure that all areas beyond national jurisdiction are covered by RFMOs or Arrangements. Such coverage would ensure that all target fisheries fall within the mandate of an RFMO or Arrangement. Moreover, these RFMOs or Arrangements need to have modern ecosystem-based fisheries management mandates that also allow them to address fisheries impacts on non-target species (including on benthic habitats) (UNGA, 2006a, para. 82). These developments have among other things led to the 'filling' of gaps in such coverage in the Southern Indian Ocean and the establishment of negotiation processes to fill gaps in the Southern Pacific and the Northern

³⁶Article 4 of the Fish Stocks Agreement stipulates that the Agreement "shall be interpreted and applied in the context of and in a manner consistent with the [LOS] Convention" (Fish Stocks Agreement, 1995, art. 4).

³⁷Even though this terminology is not explicitly used.

or Northwest Pacific.³⁸ Within the United States, these developments have led to the adoption of Senate joint resolution (SJ Res.) No. 17 of 2007 (see Section 7.6).

The Agreement does not establish a regulatory body but provides for the convening of a review conference in its Article 36. While this was likely to have been envisaged as a one-off event, the Review Conference on the Fish Stocks Agreement that convened in May 2006 (*Report of the Review*, 2006, para. 43(d) at p. 39) was not formally closed and will resume in 2010. This may transform the review conference into a permanent or at least regularly recurring forum in which the implementation of the Fish Stocks Agreement and RFMOs and Arrangements can be discussed and where recommendations can be made to improve such implementation.

The non-applicability of the Fish Stocks Agreement to stocks other than straddling and highly migratory fish stocks came in particular to the fore as a consequence of bottom-fisheries targeting deep-sea fish species – which are often discrete high seas fish stocks. It has been proposed that a legally binding instrument is needed to address this gap.³⁹ So far, however, there is not much more than the following operative paragraph in a UNGA Resolution, which reads:

Calls upon all States, directly or through regional fisheries management organizations and arrangements, to apply widely, in accordance with international law and the Code, [footnote omitted] the precautionary approach and an ecosystem approach to the conservation, management and exploitation of fish stocks, including straddling fish stocks, highly migratory fish stocks and discrete high seas fish stocks, and also calls upon States parties to the Agreement to implement fully the provisions of article 6 of the Agreement as a matter of priority; (UNGA, 2006a, para. 5).

While this paragraph applies in principle to all fish stocks, its purpose seems mainly aimed at singling out discrete high seas fish stocks. In the Arctic context, however, new fishing opportunities are also likely to relate to shared and anadromous fish stocks. The non-applicability of the Fish Stocks Agreement to these fish stocks would mean that only the relatively general obligations contained in the LOS Convention apply.

7.5.3.4 Constitutive Instruments of RFMOs and Arrangements and Their Conservation and Management Measures

This subsection deals with multilateral fisheries conservation and management.⁴⁰ An important first distinction is between multilateral fisheries conservation and management that applies explicitly to the Arctic marine area and that which applies implicitly or less explicitly to the Arctic marine area. The latter category consists of two examples, namely the WCPFC and the ICCAT. The WCPFC Convention Area ‘comprises all waters of the Pacific Ocean’, but does not have an

³⁸For an overview see Molenaar (2007a, p. 124). See also the overview of gaps in Gjerde (2008b, pp. 5–6).

³⁹See, *inter alia*, Molenaar (2007a, pp. 129–133).

⁴⁰For national fisheries conservation and management see Section 7.6.

agreed northern boundary (WCPFC Convention, 2000, art. 3(1)). That means that the Bering Sea would come within the scope of the WCPFC, provided tuna or tuna-like species within its mandate occur therein. The ICCAT Convention Area consists of the 'waters of the Atlantic Ocean, including the adjacent Seas' (ICCAT Convention, 1966, art. 1). It is very likely that its negotiators had the Mediterranean and Caribbean Seas, but not the Arctic Sea, in mind when agreeing on this phrase. Nevertheless, as there is no agreed definition for, or northern limit of, the Atlantic Ocean, ICCAT may in principle have competence within the entire FAO Statistical Area No. 18, with regard to the tuna and tuna-like species within its competence. It should be noted, however, that the occurrence of tuna or tuna like species is currently and in the near future likely to be confined to the most southern parts of the Arctic marine area. Occurrence in the Arctic Ocean will be even further ahead in the future.

The regulatory areas of all the other RFMOs and Arrangements listed in Section 7.5.2 apply explicitly to part of the Arctic marine area. Moreover, NEAFC does not exercise its full competence with regard to the Loophole, which is governed by the Norway-Russian Federation Fisheries Commission and the Loophole Agreement and Protocols. Whereas the main focus of the latter is on demersal species, the main focus of NEAFC is on pelagic and deep-sea fisheries. It may of course be possible that NEAFC will actually also exercise species competence in the Loophole in the future, for instance if a fishery for one or more pelagic species in the Loophole would become commercially viable.⁴¹

As regards the NASCO Convention, pursuant to Article 1(1) it 'applies to the salmon stocks which migrate beyond areas of fisheries jurisdiction of coastal states of the Atlantic Ocean north of 36°N latitude throughout their migratory range.' In the absence of an agreed definition for, or northern limit of, the Atlantic Ocean, it seems possible for NASCO to exercise competence over salmon in the entire FAO Statistical Area No. 18.⁴²

As regards the Bering Sea, the overview above indicates that it is explicitly covered by at least four multilateral regimes in addition to the WCPFC Convention. While these regimes all focus on a single species or a single group of species (anadromous), it should be noted that the CBS Convention can also be applied to 'living marine resources other than Pollock' (CBS Convention, 1994, art. II(4)).

The content of all these constitutive instruments varies considerably and in the context of this chapter it is not possible – and arguably also not necessary – to examine it in depth. Among other things, the older instruments are relatively concise and simple and the newer ones much more extensive and complex, largely as a consequence of the progressive development of international fisheries law.

⁴¹ It should be noted, however, that the provisions in the NEAFC Scheme of Control and Enforcement (in force 1 May 2008) on 'Port State Control of Foreign Fishing Vessels' are made applicable to the NEAFC Convention Area by Article 20 and thereby also the area covered by the Norway-Russian Federation Fisheries Commission and the Loophole Agreement and Protocols.

⁴² This may nevertheless require adjustment of the spatial scope and composition of NASCO Commissions.

The substantive standards of these RFMOs and Arrangements are in most cases laid down in conservation and management measures that are adopted or revised during periodic meetings.⁴³

As a consequence of the growing crisis in marine capture fisheries globally, both as regards over-exploitation of target species and the impacts on non-target species, processes have been set in motion to upgrade the constitutive instruments of these RFMOs and Arrangements to enable them to carry out the objectives of the Fish Stocks Agreement in light of the functions of RFMOs pursuant to Article 10 of the Fish Stocks Agreement. These processes are, to put it differently, aimed at making them ‘compatible’ with the Fish Stocks Agreement and other modern international instruments. The upgrades are among other things aimed at replacing older mandates with EAF mandates. In addition, several RFMOs have agreed to having their performance assessed.⁴⁴

7.5.3.5 Arctic Council Instruments

The Arctic Council has so far not focused on the conservation and management of target species and can also not be equated with an RFMO or Arrangement.⁴⁵ However, especially CAFF has been and still is engaged in various important monitoring and assessment activities, such as Circumpolar Biodiversity Monitoring Program and the Arctic Biodiversity Assessment.⁴⁶ These would seem very useful for international fisheries conservation and management.

7.5.3.6 Recent Developments Related to the Law of the Sea

The LOS Convention was adopted more than 25 years ago and many of the provisions that are relevant to this chapter already received very broad support several years prior thereto. The mere existence of its two implementation agreements already shows that the international community was prepared to address what it perceived to be as gaps at the time. Recent undertakings within the framework of

⁴³In the case of the Norway-Russian Federation Fisheries Commission these are to a large extent laid down in the so-called ‘Grey Zone Agreement’ (*Avtale mellom, 1978*) (original title: *Avtale mellom Norge og Sovjetunionen om en midlertidig praktisk ordning for fisket i et tilstøtende område i Barentshavet med tilhørende protokoll og erklæring*, translated to “Agreement between Norway and the Soviet Union on a temporary and practical arrangement for the fishery in an adjacent area of the Barents Sea”). This is a temporary agreement first adopted in 1978 and renewed annually since then.

⁴⁴The first performance assessment of an RFMO related to NEAFC.

⁴⁵Note that most Members of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) (*Convention on the Conservation* [CCAMLR Convention], 1980) – which is part of the Antarctic Treaty system – do not regard CCAMLR as an RFMO. However, most take the view that CCAMLR is ‘something more than an RFMO’.

⁴⁶For information see *Conservation of Arctic Flora and Fauna* website. See also Koivurova and VanderZwaag (2007, pp. 147–149).

the UNGA and the CBD (*Convention on the Biological [CBD], 1992*)⁴⁷ address newly perceived gaps in relation to marine biodiversity in areas beyond national jurisdiction.

As regards the UNGA, it established the United Nations Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction (UNWG BBNJ) in 2004. So far, the UNWG BBNJ convened twice: in 2006 and in 2008.⁴⁸ While there was no negotiated outcome of the 2nd Meeting of the UNWG BBNJ, attention should be drawn to some of the issues selected by the Co-chairpersons as issues which the UNGA may decide as suitable for consideration by a next meeting of the UNWG BBNJ, namely:

- (a) [...]
- (b) The strengthening of cooperation and coordination at all levels and across all sectors, including enhanced cooperation in capacity-building for developing countries;
- (c) The development and implementation of effective [environmental impact assessment (EIA)] as a tool for improving ocean management;
- (d) Development and use of [area-based management tools (ABMTs)], including designation, management, monitoring and enforcement, consistent with [the LOS Convention]; (*Joint statement, 2008, para. 54 at p. 12*)

Arguably, the reason why the Co-Chairpersons selected these issues is their perception that many states regard them as gaps in the current international law of the sea, despite disagreement on the solutions to address these gaps. Issues (b) and (d), read in conjunction, could be interpreted as support for integrated cross-sectoral ecosystem-based management, operationalized by among other things spatial measures or tools (e.g., marine protected areas (MPAs)). Such support has also been expressed by the UNGA in its 2006 and 2007 Resolutions on Oceans and the law of the sea (UNGA, 2006b, para. 119; 2007, para. 99).

As regards the CBD, mention can be made of efforts in relation to MPAs in areas beyond national jurisdiction and, more recently, on EIAs and strategic environmental assessments (SEAs) in relation to unregulated activities in areas beyond national jurisdiction. The 9th Conference of the Parties (CoP) to the CBD in May 2008

- adopted scientific criteria for identifying areas in need of protection in open ocean waters and deep sea habitats as well as scientific guidance for designing a representative network of marine protected areas;
- agreed to convene an expert workshop that will provide guidance to Parties and the United Nations on identifying important areas that need protection in areas

⁴⁷Convention on Biological Diversity, Nairobi, 22 May 1992. In force 29 December 1993.

⁴⁸See also Gjerde (2008a, 2008b).

beyond national jurisdiction as well as on the use and further development of biogeographic classification systems; and

- decided to develop scientific guidance for environmental impact assessments and strategic environmental assessment of activities which may have a significant adverse impact on marine biodiversity beyond national jurisdiction.⁴⁹

Finally, it is submitted that a fundamental regulatory and governance gap in the current international law of the sea relates to mechanisms that safeguard the interests of non-user states or the international community as a whole in the protection and preservation of the marine environment and marine biodiversity.⁵⁰ Spatial gaps in the coverage of the world's seas and oceans by regional environmental protection regimes⁵¹ and RFMOs and Arrangements undermine these interests. While there are a few relevant international instruments that allow for the participation of non-user states,⁵² these do not seem to have led to a satisfactory balance between socio-economic interests and the above mentioned interests for present and future generations.

However, particular account should in this context be taken of the innovative approach by the UNGA in relation to the impact of bottom fisheries on vulnerable marine ecosystems (UNGA, 2006a, paras. 83–87). The main elements of this approach are

- conducting prior EIAs;
- identifying the location of vulnerable marine ecosystems;
- freezing the footprint of bottom fishing in areas where vulnerable marine ecosystems are known to occur or likely to occur, until adequate conservation and management measures are in place; and
- making actions taken pursuant to these elements publicly available.

These elements essentially operationalize the precautionary approach, the need for science-based fisheries management and accountability. Subsequently, they are made applicable to three different scenarios, namely (1) areas covered by existing RFMOs or Arrangements, (2) areas covered by negotiation processes to establish RFMOs or Arrangements and (3) areas beyond national jurisdiction not covered by existing RFMOs or Arrangement or negotiation processes to establish them. Unfor-

⁴⁹As contained in the Decision 'on Marine and Coastal Biodiversity' (information provided by K.M. Gjerde to E.J. Molenaar); see also the draft decision incorporated in 'Draft Decisions for the Ninth Meeting of the Conference of the Parties to the Convention on Biological Diversity' (2008, pp. 126–135).

⁵⁰For a discussion see Molenaar (2007b, pp. 108–110).

⁵¹See the overview of gaps in Gjerde (2008b, pp. 5–6), which, it should be emphasized, all relate to areas beyond national jurisdiction.

⁵²Notably the ICRW (International Convention for the Regulation of Whaling), Washington D.C., 2 December 1946. In force 10 November 1948; the 1958 Fisheries Convention (*Convention on Fishing*, 1958), and the CCAMLR Convention (1980).

tunately, however, only the first two scenarios are subject to deadlines. But the mere possibility that the UNGA would adopt non-legally binding restrictions on bottom fisheries in areas beyond national jurisdiction is likely to have been the main driver for the establishment of the negotiation process in the Northwest Pacific.⁵³ Or, in other words, regional action to pre-empt global action. These actions by the UNGA are clearly aimed at safeguarding the interests of the international community in light of the inability or unwillingness of states to discharge their obligations to cooperate at the regional level.

7.6 National Regulation

Within the context of this chapter it is not possible to give a comprehensive overview of national regulation by Arctic states on the conservation and management of target species and the regulation of the impacts of fishing on non-target species within the Arctic marine area. In some parts of the Arctic marine area, for instance the North Atlantic, national regulation is expected to be extensive and relate to all or most of the relevant capacities in which states can exercise jurisdiction, namely as flag, coastal, port and market states and with regard to their natural and legal persons.

For other parts of the Arctic marine area, however, the presence of ice for most of the year has so far rendered national fisheries regulation for those areas unnecessary. But as diminishing ice-coverage will attract fishing vessels looking for possible new fishing opportunities, Arctic states will be required to develop national regulation in order to discharge their obligations under international law, including those under the LOS Convention and the Fish Stocks Agreement. The United States is currently engaged in this process with regard to fishing in the maritime zones off Alaska north of the Bering Strait. In the United States, competence over fisheries is shared by the individual states (in this case Alaska) within 3 n.m. from shore and the federal government in the remainder of the United States maritime zones. The North Pacific Fishery Management Council (NPFMC) plays a key role in federal regulation with regard to the maritime zones of the United States in the North Pacific. The NPFMC has adopted various fishery management plans (FMPs) that apply as far north as the Bering Strait and its King and Tanner Crab and Scallop FMPs also apply to that part of the Chukchi Sea that lies between the Bering Strait and Point Hope. In June 2007, the NPFMC closed the Northern Bering Sea to bottom trawling and directed a research plan to be developed for that area (*News and Notes*, 2007).⁵⁴ Also, the NPFMC is currently developing a comprehensive Arctic FMP which may be adopted in December 2008 (*Council Motion*, 2008) and may become effective in 2009 or 2010. Until then, the state of Alaska could intervene on behalf of the federal state to regulate or prohibit (commercial) fishing in the EEZ off Alaska.

⁵³See *supra* note 38 and accompanying text.

⁵⁴See also Wilson (2007).

As some of the fish stocks in the EEZ off Alaska are likely to be transboundary, reference should be made to the United States Senate joint resolution (SJ Res.) No. 17 of 2007, 'directing the United States to initiate international discussions and take necessary steps with other Nations to negotiate an agreement for managing migratory and transboundary fish stocks in the Arctic Ocean' (United States Senate, 2007).⁵⁵ The House of Representatives voted in favour of SJ Res. No. 17 in May 2008 and the President signed it on 4 June 2008. The current United States Administration has so far informed Canada and the Russian Federation of SJ Res. No. 17 of 2007 and has expressed its willingness to engage in exploratory talks on the issue. The United States also brought SJ Res. No. 17 of 2007 to the attention of SAOs during their meeting in November 2007. During the discussion that followed there was 'strong support for building on and considering this issue within the context of existing mechanisms' (*Final Report*, 2007, p. 12). This would seem to indicate that a considerable majority of the Arctic states does not want the Arctic Council to become directly involved in fisheries management and conservation.

Finally, mention should be made of fisheries conservation and management in the fisheries protection zone established by Norway off Svalbard. This fisheries conservation and management can be categorised as unilateral, even though Norway allocates fishing opportunities for certain species to some contracting parties to the Treaty of Spitsbergen.

7.7 Gaps in the International Legal and Policy Framework and National Regulation and Options for Addressing Them

7.7.1 Introduction

This subsection will try to identify gaps in the international legal and policy framework and national regulation relating to marine capture fisheries in the Arctic in light of current and future threats to the Arctic marine ecosystem and the current body of relevant rules of international law and relevant non-legally binding commitments by Arctic and non-Arctic states.

7.7.2 Gaps

Even though all the global intergovernmental organisations, bodies and legally binding and non-legally binding instruments related to fisheries conservation and management are also applicable to the Arctic marine area, a large part of the Arctic marine area is not covered by an RFMO or Arrangement with competence over target species other than tuna and tuna-like species and anadromous species. The Arctic Council has so far not focused on the conservation and management of target species

⁵⁵Passed by the Senate on 4 October 2007.

and also lacks any express mandate for conserving or managing Arctic fisheries. The Arctic Council can at any rate not be equated with an RFMO or Arrangement. The above conclusion assumes that the Bering Sea would come within the scope of the WCPFC and that ICCAT and NASCO may in principle have competence within the entire FAO Statistical Area No. 18.

The applicability of these global instruments to the Arctic marine area also means that their shortcomings apply as well, for instance the non-applicability of the Fish Stocks Agreement to other fish stocks than straddling and highly migratory fish stocks. This is relevant for the Arctic context as new fishing opportunities are also likely to relate to shared and anadromous fish stocks. Moreover, the discussion on recent developments related to the Law of the Sea in Section 7.5.3 has identified several gaps that should also be taken into account.

In some parts of the Arctic marine area, the presence of ice for most of the year has up until now rendered national fisheries regulation unnecessary. However, as diminishing ice-coverage will attract fishing vessels looking for possible new fishing opportunities, Arctic states will have to develop national regulation in order to discharge their obligations under international law.

Another gap relates to science and data. The complexity of the functioning of Arctic marine ecosystems as well as the limitations and shortcomings of science were noted in the ACIA.⁵⁶ It is most likely that a lot of data required for pursuing an EAF is presently also not available. Fortunately, these aspects played a crucial role in the development of the Arctic FMP within the NPFMC.

7.7.3 Options

This subsection contains various options for adjusting the current international legal framework relating to fisheries in the Arctic marine area in case such adjustments are regarded as necessary in view of current or future threats of fisheries to the marine environment and marine biodiversity in the Arctic marine area. An assessment of the need for such adjustments should start with the development of future scenarios about areas, dates, species, fishing techniques for which new fishing opportunities are likely to arise and potential impacts for non-target species. It may for instance reveal that new fishing opportunities in the Pacific side of the Arctic Ocean will be mainly located in the maritime zones of coastal states for a considerable time, whereas fishing opportunities in the Atlantic side may much sooner also encompass the high seas that were not fished before. Such an assessment could be carried out in the framework of the Arctic Council (e.g., through CAFF) or independently.

In view of the discussion at the meeting of SAOs in November 2007, there is currently considerable opposition within the membership of the Arctic Council against it becoming actively involved in fisheries management and conservation.

⁵⁶See Section 7.2.

This opposition is likely to mean that the Arctic Council may not be used as a forum for discussing the options identified in this subsection, let alone be used as a forum for negotiating a legally binding or non-legally binding instrument on Arctic fisheries conservation and management.

In addition to ensuring the availability of relevant scientific data, *inter alia* by developing the scenarios mentioned above, the following options can be identified

- individual action by Arctic Ocean coastal states and other states in their capacities as flag, coastal, port and market states and with regard to their natural and legal persons;
- bilateral or subregional arrangements between the relevant Arctic Ocean coastal states on the conservation and management of shared fish stocks;
- a declaration by which the main relevant general principles of the Fish Stocks Agreement, the recent UNGA Resolutions in relation to vulnerable marine ecosystems and destructive fishing practices and relevant conservation and management measures drawn from RFMOs are made applicable to new fisheries in the Arctic marine area. In particular, this declaration could stipulate that there shall be no new fisheries until adequate assessments of their potential impacts on target and non-target species and livelihoods of indigenous peoples are carried out;
- mechanisms or procedures similar to an EIA and/or a SEA for new fisheries in the Arctic marine area; and
- one or more state-of-the-art RFMOs or Arrangements. These could be self-standing or part of a legally binding framework instrument for the Arctic which pursues integrated cross-sectoral ecosystem-based management and may have to be accompanied by adjustments in the competence of existence RFMOs or Arrangements, in particular in geographical terms.

In considering these and other options, Arctic states and other states may wish to pursue the same pro-active approach that led to the negotiations of the main instruments of the Antarctic Treaty system, which took place prior to the start of various commercial activities.

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