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Comparative policy analyses: U.S., EU and transatlantic Arctic policy

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FINAL REPORT

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Executive Summary

This background paper provides a comparative analysis of EU and U.S. policy relevant to dealing with the effects of climate change in Arctic marine areas.

The paper finds that the U.S. and the EU share a common set of interests in the marine Arctic, mainly in shipping, fisheries and in their current focus on energy security. At the same time, significant differences in jurisdictional aspects point to a possible difference of opinion across the Atlantic regarding the desired approaches to marine Arctic governance. The EU has prepared a specific Arctic Communication addressed to European Parliament and Council.[1] The U.S. released its revised Arctic Region Policy in January 2009.[2] These statements officially clarify their respective positions, and provide an Arctic policy context that is broader than the climate-adaptation issues and marine-specific policies considered in Arctic TRANSFORM. There are significant commonalities in the U.S. and EU Commission's Arctic policy statements, with clear areas for potential policy co-operation.

Arctic marine governance at present is a patchwork of rules, measures and polices at various levels and institutions. A key question is how better co-ordination among the current sectoral and regional approaches can be achieved to address future governance needs. A second question is whether even better co-ordination among these approaches will suffice to meet these needs, or whether a more comprehensive approach is required. Addressing the unique challenges facing the marine Arctic could be an opportunity for both the EU and U.S. to revitalise their co-operation and show combined environmental leadership.

The European Union

For the EU, Arctic policy in general, as well as environmental concerns and energy security in particular, have so far been mainly linked to its relations with Russia. Its interest in the whole Arctic region is—outside the domain of research—relatively new and related to a significant policy concern about the impacts of climate change and its recent adoption of an overall integrated maritime policy that aims to ensure that all EU policies acting within a given sea basin are coherent and contribute towards sustainable development. The EU's growing foreign policy role is increasingly recognised and would be strengthened under the proposed changes to its structure under the Lisbon Treaty. Three Member States—Denmark (Greenland), Finland and Sweden—have territories in the Arctic. Two other Arctic states—Iceland and Norway—are members of the European Economic Area and generally adopt EU policies in matters of environment and civil protection. Given the prominence of the EU's global leadership role in climate and energy policies, its significant fishing and shipping

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1 Communication from the Commission to the European Parliament and the Council "The European Union and the Arctic Region" COM(2008) 763.

2 The U.S. Arctic Region Policy was released on 12 January 2009 as National Security Presidential Directive 66 (NSPD-66). It supersedes the U.S. Arctic Policy issued in 1994 (Presidential Decision Directive/NSC-26 (PDD-26)). http://www.america.gov/st/texttrans-english/2009/January/20090112161521eaifas0.2872126.html&distid=ucs

interests in the region, as well as its broader strategic interest in the issues at stake in the Arctic, it is likely to continue seeking greater influence in related policy areas.

The United States

In contrast to the EU, the U.S. is a member of the Arctic Council and an Arctic coastal state and thereby entitled to the associated sovereignty, sovereign rights and jurisdiction in its respective parts of the Arctic marine area. The January 2009 revision of the U.S. Arctic Region Policy was motivated, in part, to address challenges posed by the effects of climate change and increasing human activity. The State of Alaska is now engaged in a policy development process regarding climate adaptation, which is a truly urgent issue for some Alaskan communities and is now widely recognised in the state as an important consideration for government. The federal government is not yet engaged in Arctic adaptation issues to the same degree. More generally, the State of Alaska and its various stakeholders have significant influence over U.S. Arctic policy.

International governance

It is uncertain whether the existing governance structures can facilitate international policy leadership effectively geared to dealing with climate adaptation. With regard to institutions, the Arctic Council has obvious achievements and merits, but its future role on climate change issues will depend on whether its members agree to expand its mandate from a current focus on sustainable development and environmental protection, and on whether it will allow meaningful participation by non-Arctic states. There are limits to what the Arctic Council can achieve without strengthening its institutional structure, funding mechanisms, legal status and mandate.

Core challenges within the current international governance framework stem mainly from the fact that the international conventions that currently apply to the Arctic are generally not specific to Arctic conditions. Another key issue is that not all Arctic states are parties to these most important treaties—most importantly U.S. non-ratification of the UNCLOS and the Biodiversity Convention. Many international agreements relevant to the marine Arctic provide only very general frameworks. This has been a key factor in leading the littoral states of most of the other semi-enclosed and other sea areas to adopt their own regional standards on the basis of the UNCLOS or a regional seas programme. The establishment of an Arctic regional seas agreement, perhaps modeled on OSPAR Convention or the Helsinki Convention, might be a possible approach for improving governance of the Arctic Ocean. It is also important to note that among the international treaties, only the Biodiversity Convention accords any special status to the Arctic marine region’s indigenous peoples.

With regard to international instruments, the idea of a comprehensive, stand-alone and binding Arctic legal governance arrangement has run into significant political opposition from the Arctic Ocean coastal states and has not been taken up by the European Commission in its Arctic Communication adopted on 20 November 2008. Whatever the forum, exercising policy leadership for a coherent Arctic policy may be an appropriate role for the EU as a means of representing European interests in the marine Arctic. Though climate change in the Arctic is an issue of global concern, the five Arctic coastal states would not accept having the

region as a whole viewed (and governed) as a global “commons”. From a U.S. perspective, the basis for the EU defining and pursuing its interests in the Arctic may not be as self-evident as it may seem to the EU.

On the other hand, there is also concern about recent initiatives by Arctic Ocean coastal states, including the U.S., acting without other Arctic states and key global players. This incipient form of co-operation may over time challenge the Arctic Council, given that there is need to take stronger policy actions in higher-stakes policy areas (fisheries, continental shelf delimitation) than those that can be pursued in the Arctic Council.

Fisheries

The U.S. and EU share a common interest in avoiding over-exploitation of target species and impacts on non-target species. Fisheries management is typically exercised at the regional rather than the global level. It is significant that a large part of the Arctic marine area is not covered by regional fisheries instruments (with the exception of two agreements covering only tuna, tuna-like and anadromous species). Climate change may bring the current regional fisheries management regimes and the allocation of fishing opportunities out of sync with changing and migrating fish stocks.

As noted above, the U.S. and EU are not similarly situated regarding Arctic fisheries. The U.S., as a coastal state, has a portion of the Arctic Ocean subject to its fisheries jurisdiction. The U.S. also participates in a number of regional fisheries management organisations (RFMOs) and arrangements that regulate fisheries in the Bering Sea, North Pacific and North Atlantic. The EU is not a coastal state of the Arctic Ocean, but does participate in a number of North Atlantic fisheries management organisations. The EU may also have a future interest in having its fishing vessels operate in more northerly areas, either in waters under the jurisdiction of Arctic coastal states or in areas of the Arctic Ocean beyond national jurisdiction.

An opportunity for transatlantic co-operation has emerged from the U.S. Senate’s Joint Resolution (SJ RES. No. 17 of 2007), which has been signed into law and directs the U.S. to initiate international discussions and begin steps toward negotiating an agreement for managing the Arctic Ocean’s transboundary fish stocks. The EU position is that "in principle, extending the mandate of existing management organisations such as NEAFC is preferable to creating new ones. Until a conservation and management regime is in place for the areas not yet covered by such a regime, no new fisheries should commence".[3] A comparative analysis of the effectiveness of the respective fisheries policies would be useful. Harmonising policies and measures on illegal, unreported and unregulated (IUU) fishing is also a clear opportunity for transatlantic co-operation.[4] Other issues warranting co-operative discussion include: 1) combined efforts on Arctic fisheries research; 2) improved domestic regulations and impact-assessment procedures; 3) the prospect for new bilateral fishing agreements; 4)

[3] Communication from The Commission to the European Parliament and the Council "The European Union and the Arctic Region" COM (2008) 763 of 20 November 2008, p.8

[4] The Council of the European Union on 29 September 2008 adopted a Regulation on IUU fishing that will enter into force on 1 January 2010 (COUNCIL REGULATION (EC) No 1005/2008).

new or modified RFMOs or arrangements; and 5) shortcomings in international fisheries instruments generally.

Shipping

Shipping activity in the marine Arctic remains primarily intra-Arctic, with truly trans-Arctic shipping routes still some way off from commercially significant utilisation. If Arctic sea-borne tourism continues to grow in popularity, tourism safety has to be considered in addition to, and perhaps with more urgency than merchant shipping. A comprehensive ships' routeing system or other navigational measures could be negotiated within the International Maritime Organization (IMO), with the availability of search and rescue services an important consideration. The technical level of co-ordinating shipping at this level is a good starting point for increased transatlantic co-operation, as political considerations should play a minor role.

Oil spills would have particularly severe environmental consequences in Arctic conditions and noise from increased ship traffic may also have effects on marine living resources (especially mammals). As this to a large extent depends on the area affected, this could be an argument for agreed routes as a complementary measure to marine protected areas. Subsistence activities of indigenous peoples will also need increased levels of protection from oil spills and marine pollution.

The completion of the Arctic Council's Arctic Marine Shipping Assessment (expected in 2009) will shed more light on these issues.

Offshore hydrocarbon activities

Both the U.S. and EU have significant energy security interests regarding Arctic offshore hydrocarbon activities. The key difference is that the U.S. is a coastal state entitled to significant potential reserves off the coast of Alaska (perhaps 30% of total Arctic reserves). Apart from the development of natural resources, carbon capture and storage (CCS) in geological formations of the Arctic seabed might become a future environmental concern. Both the EU and the U.S. take the view that exploration and development should not harm the environment. The U.S. Arctic Region Policy also stresses the importance of defining with certainty the area of the Arctic seabed in which the U.S. can exercise sovereign rights over natural resources, including oil and gas.

Indigenous peoples

Indigenous communities will be among the most affected by climate change. For this reason, their participation in governance on these issues is essential. The full participation of indigenous peoples is commonly acknowledged as one of the key ingredients of the Arctic Council's work and acceptance. Any future governance option should take this into account. In particular, the participation of indigenous peoples should be considered if a different key policy forum for the Arctic emerges. The EU Treaty already takes into account the special rights of Saami people. The EU could learn from U.S. experience with indigenous peoples, especially with respect to co-management of resource and environmental issues, which

could be valuable input for EU Arctic policy. The State of Alaska's efforts to identify communities especially impacted by climate change and develop near- and long-term policy responses are useful to examine and discuss in a transatlantic context.

Environmental Outlook

Arctic governance obviously extends beyond EU-U.S. relations, but transatlantic co-operation is needed, not least because of the region's connection with climate change mitigation and adaptation. In contrast to the U.S., the EU already has an ambitious climate policy it can use as a background and driving force for its Arctic policy. The U.S. has first-hand experience in managing Arctic marine areas. A joint effort at establishing marine protected areas could be one means of achieving an approach to environmental governance that represents an integrated, cross-sectoral ecosystem-based management of the Arctic marine area.

Over the history of modern environmental policy, both the U.S. and European countries have often been front-runners in developing certain environmental policies and instruments. Some of their current policies and instruments could serve as models for an Arctic policy. There is a broader need for political leadership capable of addressing adaptation challenges in the marine Arctic.

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List of Abbreviations

ACIA	Arctic Climate Impact Assessment
ACMA	Alaska Coastal Management Act
ACMP	Alaska Coastal Management Program
AEPS	Arctic Environmental Protection Strategy
AHDR	Arctic Human Development Report
AMAP	Arctic Monitoring and Assessment Program
AMSA	Arctic Marine Shipping Assessment
AMSP	Arctic Marine Strategic Plan
ANCSA	Alaska Native Claims Settlement Act
ANILCA	Alaska National Interest Lands Conservation Act
ANOs	Alaska Native organisations
ANWR	Arctic National Wildlife Refuge
ATS	Antarctic Treaty System
BAT	Best available techniques
BEAC	Barents Euro-Arctic Council
BEAR	Barents Euro-Arctic Region
BEP	Best environmental practices
BRC	Regional Council for the Euro-Arctic Region
CAFF	Conservation of Arctic Flora and Fauna working group
CBD	Convention on Biological Diversity
CCS	CO_2 capture and storage
CCSP	U.S. Climate Change Science Program
CFP	Common Fisheries Policy
CIMMC	Cook Inlet Marine Mammal Council
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CPAN	Circumpolar Protected Areas Network
DG	Directorate-General
EAEC	European Atomic Energy Community
EC	European Community
ECE	UN Economic Commission for Europe
EEA	European Environment Agency
EEZ	Exclusive economic zone
EIA	Environmental Impact Assessment; Energy Information Administration
EMSA	European Maritime Safety Agency
EPPR	Emergency Prevention, Preparedness and Response working group
ESA	Endangered Species Act
EU	European Union
FAO	Food and Agriculture Organisation of United Nations
ICC	U.S. Russia Intergovernmental Consultative Committee
ICES	International Council for the Exploration of the Sea
ICRW	International Convention for the Regulation of Whaling
IJC	International Joint Commission
IMO	International Maritime Organization
IMP	Integrated Maritime Policy

IUCN	International Union for Conservation of Nature
LME	Large marine ecosystem
MARAD	U.S. Maritime Administration
MARPOL	International Convention for the Prevention of Pollution from Ships
MMPA	Marine Mammal Protection Act
MMS	Minerals Management Service
MPA	Marine protected areas
MSFD	Marine Strategy Framework Directive
NAB	Northwest Arctic Borough
NAMMCO	North Atlantic Marine Mammal Commission
NARF	Native American Rights Fund
NDEP	Northern Environmental Partnership
NEAFC	North East Atlantic Fisheries Commission
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NMFS	U.S. National Marine Fisheries Service
NOAA	U.S. National Oceanic and Atmospheric Association
NORAD	North American Aerospace Defence Command
NPFMC	North Pacific Fisheries Management Council
NSB	North Slope Borough
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelves Land Act
OPMP	Office of Project Management and Permitting
OPRC 90	The International Convention on Oil Pollution Preparedness, Response and Cooperation
PAME	Protection of the Arctic Marine Environment working group
POPs	Persistent organic pollutants
RAC	Regional advisory councils
RFMOs	Regional fisheries management organisations
RFO	Regional fisheries organisations
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environmental Program
U.S.	United States of America
U.S. DOI	U.S. Department of the Interior
USGS	U.S. Geological Survey
U.S.S.R.	Union of Soviet Socialist Republics
USFWS	United States Fish and Wildlife Service
WGE	BEAC's Working Group on Environment
WWF	World Wide Fund for Nature

1 Introduction

Both the European Union and the United States are wrestling with the challenge of how to address the impacts of climate change. The effects of climate change are most apparent in the Arctic and future changes are also expected to be the greatest at the high latitudes near the Earth's poles. Driven also by economic and technological change, increased activity in the Arctic marine area is expected, requiring effective international and national policy approaches for protecting fragile ecosystems, safeguarding the rights and interests of the indigenous peoples of the high north, and resolving conflicting claims on resources and marine areas.

This background paper provides a comparative analysis of EU and U.S. policy relevant to dealing with the effects of climate change in the Arctic marine area. It includes input from discussions held at an expert workshop in September 2008 and feeds into the final report for Arctic TRANSFORM.

The paper provides a general overview and background on EU and U.S. policy and puts this in the context of international agreements and initiatives relevant to marine Arctic issues. We identify priority areas for possible policy attention and describe the main synergies and challenges for transatlantic dialogue and co-operative policy development. The paper cannot cover every relevant issue, and omissions in coverage should in no way limit the policy options discussed. This Background Paper focuses on EU and U.S. policy approaches to help understand the legal basis, policy initiatives and international governance context. More in-depth treatment on specific policy issues can be found in the companion background papers on the respective issues of environmental governance, Arctic fisheries, indigenous peoples, Arctic shipping, and offshore hydrocarbon activities.

In addition to literature research, the report is based on a series of interviews conducted with U.S. and EU government officials. Obviously, responsibility for the governance of Arctic marine issues also extends to states and non-state actors other than the EU and U.S. For this reason, non-U.S. and non-EU representatives are included in the Arctic TRANSFORM dialogue. Though the remit for this report is to elucidate EU and U.S. policy, the authors believe it is appropriate to provide some overview of other countries' policies also. These short summaries are included as an annex.

The paper finds that the U.S. and the EU share a common set of interests in the marine Arctic, mainly in shipping, fisheries and in their current focus on energy security. At the same time, significant differences in jurisdictional aspects point to a possible difference of opinion across the Atlantic regarding the desired approaches to marine Arctic governance. Arctic governance at present is a patchwork of rules, measures and polices at various levels and institutions. A key question is how better co-ordination among the current sectoral and regional approaches can be achieved to address future governance needs. A second question is whether even better co-ordination among these approaches will suffice to meet these needs, or whether a more comprehensive approach is required. Addressing the unique

2 International agreements and institutional frameworks

This section presents an overall view of the existing international regulatory and governance[5] regime in the Arctic and identifies gaps therein. The discussion focuses on whether the governance framework in the Arctic marine area is sufficient, provides an overview of the strengths and weaknesses of the Arctic Council, and concludes with a summary of recent developments and challenges to Arctic governance. This assessment suggests there are clear limits to what the Arctic Council can achieve without strengthening its institutional structure, funding mechanisms, and legal status. Furthermore, while there is fairly good legal coverage of sector-based activities, the existing agreements are not sufficient to govern the "new sea areas" emerging from beneath the Arctic ice.

Is the present governance framework in the Arctic marine area sufficient?

Many Arctic stakeholders question whether the current governance framework in the Arctic marine environment is adequate in light of expected climate-change impacts. It is clear that there are many rules that apply to the Arctic marine area.[6] For instance, many of the global conventions apply in the region simply because many of the Arctic states are parties to these conventions. Some countries, such as Norway, argue that there is no need for a regional governance solution because the existing UNCLOS and other agreements are sufficient.[7] This section briefly outlines the most relevant treaties applicable in the marine Arctic. The summary is intended to describe the existing framework and highlight potential weaknesses in adapting to future challenges in the Arctic marine area.

UNCLOS is the overarching treaty governing the Arctic marine area. All Arctic states are party to the Convention, except the U.S., which may become a party.[8] UNCLOS provides basic jurisdictional rules for coastal, flag and port states, and prescribes principles for major ocean uses and marine environmental protection. The Fish Stocks Agreement[9]—one of the two UNCLOS implementing agreements (the other one being the Part XI Deep-Sea Mining Agreement)[10] – has all eight Arctic states as its parties and provides rules governing

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5 There are various definitions of these concepts. Here the term 'international regulatory regime" means simply an authoritative set of standards, while 'international governance regime" denotes also an organisational structure to develop, monitor and enforce these standards.

6 In a recent conference (September 2006) organised by Arctic parliamentarians and UNEP Grid Arendal, secretariats of eight multilateral environmental agreements (MEAs) outlined how their respective conventions apply in the Arctic, see at <http://polar.grida.no/activities.cfm?pageID=3>.

7 This news story can be found on the Arctic Council website, at <http://arctic-council.org/article/2008/3/no_consequenses_for_international_law>

8 The U.S. has affirmed that most of the provisions of UNCLOS are legally binding on it, given that these codify customary international law. United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982. In force 16 November 1994, 1833 United Nations Treaty Series 396; <www.un.org/Depts/los>).

9 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, New York, 4 August 1995. In force 11 December 2001, 34 International Legal Materials 1542 (1995); <www.un.org/Depts/los>.

10 Information obtained from <www.un.org/Depts/los> on 27 June 2008.

straddling and highly migratory fish stocks, especially by obligating them to establish regional fisheries management organisations (RFMOs). The Biodiversity Convention is applicable to the components of biological diversity in marine areas under the national jurisdiction of seven Arctic states that are parties to it (excluding the U.S.).[11] The main body working to specify regulation relating to conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction is the United Nations Ad Hoc Open-ended Informal Working Group.[12]

The International Convention for the Prevention of Marine Pollution from Ships, 1973 as modified by the Protocol of 1978 relating thereto (MARPOL 73/78, together with its annexes)[13] is the main treaty governing ship-based pollution, and all the eight Arctic states are party to it and many of its Annexes.[14] The International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC 90) prescribes principles for responding to oil pollution accidents, according IMO the governing role of the Convention, and includes all but Russia from the Arctic states.[15] The Espoo Convention requires parties to integrate potential trans-boundary pollution from proposed activities into the EIA procedure of the origin state. This Convention currently applies to only five Arctic states, although Iceland, the Russian Federation and the U.S. are still signatories.[16] The Stockholm Convention on Persistent Organic Pollutants aims to protect human health and the environment from POPs and specifically acknowledges that Arctic ecosystems and indigenous peoples are particularly threatened by these substances.[17]

This above listing of the most important treaties provides the basis for an argument that indeed there is fairly good legal coverage of various activities (especially shipping, fisheries, offshore hydrocarbon exploration and development), which are becoming increasingly

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[11] According to Article 4 (b), contracting states are responsible 'in the case of processes and activities, regardless of where their effects occur, carried out under its jurisdiction or control, within the area of its national jurisdiction or beyond the limits of national jurisdiction'.

[12] See Report of the 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, 20 March 2006, UNGA A/61/65 at paras. 55, 58, online: Division for Ocean Affairs and the Law of the Sea <http://www.un.org/Depts/los/biodiversityworkinggroup/biodiversityworkinggroup.htm>. The Ad Hoc Open-ended Working Group on Protected Areas, established under the Convention on Biological Diversity, has been tasked with addressing not only how to enhance establishment of MPAs within national jurisdiction but also how marine protected areas might be established beyond national jurisdiction. See at <http://www.cbd.int/convention/wgpa.shtml>.

[13] IMO, MARPOL 73/78 Consolidated Edition, 2002 (London: IMO, 2002).

[14] See <http://www.imo.org/Conventions/contents.asp?doc_id=678&topic_id=258>.

[15] The International Convention on Oil Pollution, Preparedness, Response, and Cooperation, 1990, 30 November 1990, 1891 U.N.T.S. 77, 30 I.L.M. 733 (entered into force 13 May 1995).

[16] UNECE, Convention on Environmental Impact Assessment in a Transboundary Context, 25 February 1991, 30 I.L.M. 800. This procedure is complemented by Articles 205 and 206 of the UNCLOS.

[17] Stockholm Convention on Persistent Organic Pollutants, see at <http://chm.pops.int/Portals/0/Repository/conf/UNEP-POPS-CONF-4-AppendixII.5206ab9e-ca67-42a7-afee-9d90720553c8.pdf>. The U.S. and the Russian Federation are not parties to the Stockholm Convention (Faroe Islands and Greenland are excluded by Denmark from the scope of the Convention).

widespread due to Arctic sea-ice melt in both summer and winter seasons. However, there are some obvious gaps in this legal regime applicable to the Arctic marine area:

1. Not all Arctic states are parties to these most important treaties, the most important gap being the non-membership of the U.S. to the UNCLOS and the Biodiversity Convention.
2. Many of these conventions are framework instruments and not regulatory conventions.
3. With the exception of the Biodiversity Convention, the above-mentioned conventions do not accord any special status to the region's indigenous peoples in the Arctic marine area.[18]
4. Most importantly, with two small exceptions (the Stockholm Convention and Article 234 of the UNCLOS), these conventions were not designed to function in, or did not take account of, Arctic conditions. The only other example, albeit non-legally binding, relates exactly to this Article 234 of the UNCLOS, and provides standards for shipping in ice-covered areas in the Arctic marine area, namely the non-legally binding IMO Guidelines for Ships Operating in Arctic Ice-Covered Waters.[19]
5. These treaties apply globally or regionally, but their prescriptions do not take into account the very special conditions in the Arctic marine area and its special vulnerability to human-induced pollution. The only example of a treaty focusing on the Arctic and its unique conditions is still the Polar Bear Treaty of 1973.[20]

Overall, it can be concluded that the littoral states of particular seas or ocean regions have mostly opted for regional solutions for the simple reason that the framework type of rules, such as the ones fleshed out in the UNCLOS and the Biodiversity Convention, without any regional institutional machinery to implement these is not seen as a viable solution. It can be argued that the existence of rules that only potentially apply in the Arctic marine area is not enough to govern the "new sea areas" that are emerging from underneath the ice in the Arctic. Given that there is significant consensus that the Arctic sea ice will melt sooner or later, there is a clear need for states and other stakeholders to engage in discussions as to how to regulate the Arctic marine area now.

Are there rules for adjusting the international and national marine standards to the Arctic?

As described above, there is a body of international legal rules applicable in the Arctic marine area, but they have not been designed to take into account the particular Arctic conditions, special vulnerability of the Arctic ecosystems or unique problems to the Arctic marine area. The only exception to this is Article 234 of the UNCLOS, which authorises coastal states to

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[18] See, especially, Article 8 (j) of the Biodiversity Convention. and the working group on Article 8 (j), at <http://www.cbd.int/convention/wg8j.shtml>.

[19] Guidelines for Ships Operating in Arctic Ice-Covered Waters were subsequently adopted by IMO as recommendary provisions. See IMO MSC/Circ. 1056, MEPC/Circ. 399 (23 December 2002). Important are also the Unified Requirements Concerning Polar Class adopted by the International Association of Classification Societies (IACS).

[20] The 1973 Agreement on the Conservation of Polar Bears. The Agreement is reproduced in 13 I.L.M. 13 (1974).

take non-discriminatory measures within ice-covered areas within the limits of their EEZs for the prevention, reduction and control of vessel-source pollution. The only other example, albeit not legally binding, relates exactly to this provision of the UNCLOS, and provides standards for shipping in ice-covered areas in the Arctic marine area, namely the non-binding IMO Guidelines for Ships Operating in Arctic Ice-Covered Waters.[21]

Most of the policy and assessment work relating to the Arctic marine area is done with Arctic-wide co-operation, now functioning under the Arctic Council. In 1991, the Arctic Environmental Protection Strategy (AEPS) of the eight Arctic states established the Protection of the Arctic Marine Environment (PAME) Working Group, which continues under the auspices of the Council. The AEPS also stated that activities in the marine environment should be conducted in line with the UNCLOS, even though UNCLOS had not entered into force at that time.[22] Marine issues are also covered in other working groups, such as in the Emergency Prevention, Preparedness and Response (EPPR) and Conservation of Arctic Flora and Fauna (CAFF) working groups. AMAP conducts assessments, many of which touch upon the environmental problems caused also to the Arctic marine area. Notable PAME documents related to the Arctic marine environment include the Report on the Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities; the Arctic Marine Strategic Plan (AMSP), which lays out the need for an integrated ecosystem-based approach to managing Arctic marine resources; the Arctic Marine Shipping Assessment (AMSA), which highlights that the future Arctic marine reality requires new kinds of policy measures; and the Arctic Offshore Oil and Gas Guidelines, which recommends regulatory and industry best practices and policies. In general, all the present assessments (Circumpolar biodiversity assessment, AMSA and the Oil and Gas Assessment) together with ACIA and its possible update raise the awareness of upcoming changes to the marine Arctic, which will in all likelihood put pressure on adopting new guidelines and policy recommendations.

Although the Arctic Council assessments are likely to apply pressure to the Council participants, there are clear limits to what these assessments, policy recommendations and guidelines can achieve. First of all, they are not legally binding. This in itself does not mean that these policy recommendations and guidelines could not be effective. However, these guidelines do not contain any follow-up mechanisms to supervise whether these have been implemented and applied.

It is important to note that Arctic indigenous peoples – in contrast to their lack of recognition in virtually all international conventions applicable to the Arctic marine area – play an important role in virtually all the Arctic Council marine policy and assessment work. They have a unique status as permanent participants, and are entitled to participate in all the

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21 Guidelines for Ships Operating in Arctic Ice-Covered Waters were subsequently adopted by IMO as recommendary provisions. See IMO MSC/Circ. 1056, MEPC/Circ. 399 (23 December 2002). Important are also the Unified Requirements Concerning Polar Class adopted by the International Association of Classification Societies (IACS).

22 Of course, most of its provisions were seen as codifying the customary law of the sea already at that time. The AEPS stated that "The implementation of the Strategy will be carried out through national legislation and in accordance with international law, including customary international law as reflected in the [UNCLOS]", see at <http://arctic-council.npolar.no/Archives/AEPS%20Docs/artic_environment.pdf>.

working groups, Senior Arctic Official (SAO) meetings and ministerials of the Council, though they do not have a vote in the Council. With this status, they have been able to include indigenous marine concerns to many of the AEPS and Arctic Council guidelines and policy recommendations. They have also contributed traditional knowledge to many of the influential scientific assessments done under the auspices of the Council, e.g. the ACIA, AMSA etc. This is a significant development, which certainly increases the legitimacy of the marine policy work in the Council.

Recent developments related to governance in the Arctic marine area

During the Cold War, Arctic-wide co-operation was not possible, except in very limited policy areas, such as the conclusion of the 1973 Polar Bear Treaty by the five Arctic states with bear populations. It was *perestroika* and *glasnost* that opened up opportunities for pan-Arctic co-operation. Secretary-General Gorbachev's speech in Murmansk in 1987 proposed pan-Arctic co-operation in a number of fields, one of which was protection of the Arctic environment. Inspired by the Gorbachev speech outlining various areas for Arctic co-operation, Finland took the initiative in 1989 for pan-Arctic co-operation in one of these policy areas, that of environmental protection; in 1991 the Arctic Environmental Protection Strategy (AEPS) was adopted by the eight Arctic states by means of a declaration.[23]

The 1991 AEPS enabled participants to think about societal and environmental problems for the first time from the Arctic perspective (rather than from the perspective of individual countries' northern or Arctic regions) and tackle them with policy measures. AEPS is important for understanding the current function of the Arctic Council[24]— and the proposals to renew it—since the basic elements of Arctic Council co-operation are nearly the same as those designed in the 1991 AEPS.

There are still the same participants in the co-operation, although the Declaration establishing the Council strengthened the status of Arctic indigenous peoples' organisations as permanent participants with power to influence decision-making (they were observers in the AEPS). The same institutional structure has been retained, with ministerial meetings convened every two years, Senior Arctic Officials managing the day-to-day activities of the Council, and most work being done in the working groups (two more working groups have been adopted during the operation of the Council). To date, there is no permanent secretariat in the Council, as was the case in the AEPS, although the three Scandinavian states have agreed to maintain the secretariat in Tromsø until 2012.[25] As was the case in the AEPS, there is no permanent and mandatory funding mechanism in the Council, although a project

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23 Arctic Environmental Protection Strategy, Canada, Denmark, Finland, Iceland, Norway, Sweden, Union of Soviet Socialist Republics, and United States, 14 January 1991, 30 I.L.M. 1624, s. 2.1(v) at 1631.

24 See Joint Communiqué and Declaration on the Establishment of the Arctic Council (1996) 35 I.L.M. 1382.

25 See the joint declaration by Sweden, Norway and Denmark, "A joint secretariat, led by the Chair of Senior Arctic Officials (SAO), will be established in Tromsø for the period 2006-2012", at <http://arcticportal.org/en/arctic-council2>. Individual working groups have had their secretariats from the beginning of the AEPS.

support instrument has been created to pool resources for funding of individual projects.[26] Finally, both the AEPS and the Arctic Council were established via a declaration, intentionally as soft-law organisations, not inter-governmental organisations with legal personality or binding decision-making power.

Even though the structure has remained much the same, the Arctic Council has become a stronger form of co-operation over the years of its existence. In addition to the changes identified above, the working groups have become stronger in status and in terms of their deliverables. The Council ministerials have also adopted important—albeit not very strong—policy recommendations connected with major scientific assessments, such as the ACIA. After the release of the ACIA, climate change considerations have become a cross-cutting issue in the Council, placing pressure on the working groups to adjust their work to future vast challenges. There is also more interest in the work of the Council, major states (e.g. China) becoming observers.

The Arctic Council has clear strengths. It now serves as a high-level platform for internationally oriented actors. It is, however, not oriented to including the Arctic sub-units of federal states and other administrative units.[27] It has produced scientific assessments—mainly via its strongest working group, the AMAP—that have made a significant difference to regional and even global environmental negotiation processes.[28] The Council is also the only inter-governmental forum that accords indigenous peoples the strong status of permanent participant (i.e. not merely as non-governmental organisations with observer status, as they are usually deemed to be).[29]

However, the Arctic Council is expected to continue to be a platform for discussion and generate scientific assessments and non-binding guidelines rather than a governance or regulatory body due to its limited mandate, weak institutional structure, lack of any permanent funding mechanism, and lack of legal status. Hence, from the viewpoint of governance in the Arctic marine area, and the coming climate-change challenges, it is fairly clear that the Arctic Council cannot do much more with its present structure and mandate.

Challenges to the present regime from observers to the Arctic Council

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26 See <http://www.nefco.org/financing/arctic_council_project_support>.

27 Even the Northern Forum, an observer to the Council, which ostensibly represents many counties in the north, does not really represent the interests of the counties but serves more as a low-key forum for their mutual co-operation. Contrast this to the draft Arctic Region Council proposal circulated by Canada in AEPS negotiations, which would have directly included those administrative units in its institutional structure.

28 See e.g. Lars-Otto Reiersen, Simon Wilson, & Vitaly Kimstack, “Circumpolar Perspectives on Persistent Organic Pollutants: the Arctic Monitoring and Assessment Programme” in David Leonard Downie & Terry Fenge, eds., Northern Lights Against POPs: Combating Toxic Threats in the Arctic (Montreal & Kingston: McGill-Queen’s University Press, 2003).

29 It is good to remember that these organisations do not directly represent the Arctic governance bodies that represent indigenous peoples, but are their international organisations (and need to represent either many indigenous peoples in one Arctic country or one indigenous people in many Arctic countries).

Increasingly, scholars as well as international and NGO observers to the Council have started to criticise the way the Arctic Council conducts its work in general, and its environmental protection mandate in particular. The various initiatives by IUCN, WWF Arctic, UNEP Grid-Arendal and Arctic Parliamentarians that have studied the possibility of an Arctic treaty have ended up with recommendations containing two steps: an audit to assess the effectiveness and relevance of existing regimes as a basis for the second step, a discussion concerning the possibility of developing an Arctic treaty.[30]

Hence, there clearly seems to be pressure from various observers of the Arctic Council to at least examine the applicable treaties carefully, studying in particular how these treaties are implemented in the region and whether, on the basis of that analysis, an integrated Arctic treaty approach is called for. What these actions by observers of the Arctic Council serve to demonstrate is that pressures are building to adopt a treaty approach. Yet, the ultimate problem for those who push for an Arctic treaty is that at least at present there are no real signs from the Council and its member states that they would be ready to go for the treaty approach, at least in the immediate future. To the contrary, the Ilulissat Declaration of 28 May 2008 issued by the five Arctic coastal states explicitly rejected this option for the time being.[31] The European Commission concurs with this approach indicating that "the full implementation of already existing obligations, rather than proposing new legal instruments should be advocated. This however should not preclude work on further developing some of the frameworks, adapting them to new conditions or Arctic specificities."[32]

3 U.S. Policy

As an Arctic state with an extensive coastline in the high north, the U.S. is actively engaged in both domestic and international governance issues regarding the marine Arctic. This section briefly identifies the relevant economic and geopolitical interests of the U.S., provides an overview of the legal basis and governance structures in the U.S. Arctic, and identifies current policies and initiatives that are of particular relevance for climate adaptation in the marine Arctic, including the U.S. Arctic Region Policy revised in January 2009.[33]

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30 The only exception is the Nordic Council, which went further and adopted the following recommendation directed at the Nordic Council of Ministers: 'The Nordic Council recommends to the Nordic Council of Ministers that in co-operation with the Arctic Council the aim is to create a legal system pertaining to the Arctic.' See Pohjoiset merialueet käsittävästä oikeustieteellisestä tutkimuksesta ja Arktista koskevasta oikeusjärjestelmästä (In English: Legal Research pertaining to the Northern marine Regions and Arctic Legal Regime) (26 April 2006 decision) A 1392/medborgar.

31 Ilulissat Declaration 28 May 2008 available online at: <http://www.um.dk/NR/rdonlyres/BE00B850-D278-4489-A6BE-6AE230415546/0/ArcticOceanConference.pdf>.

32 Communication from the Commission to the European Parliament and the Council "The European Union and the Arctic Region" COM (2008) 763 of 20 November 2008, p. 10.

33 The U.S. Arctic Region Policy was released on 12 January 2009 as National Security Presidential Directive 66. It supersedes the U.S. Arctic Policy issued in 1994 (Presidential Decision Directive/NSC-26 (PDD-26)). http://www.america.gov/st/texttrans-english/2009/January/20090112161521eaifas0.2872126.html&distid=ucs

3.1 Key economic and geopolitical interests

The Arctic region has long been important to the United States both economically and strategically. The U.S has been an Arctic nation since its purchase of Alaskan territory in 1867, and the area has been of key interest for both its abundant natural resources and its role in U.S. security policy, most significantly during the Cold War period. Alaska achieved statehood in 1959. U.S. interests in the region have evolved over time, with climate change, security concerns, and natural resource interests among the key drivers behind the current need to adapt U.S. policy to new conditions.

Energy production and security is a central concern to the U.S., driving a desire to ensure increased domestic production and access to energy sources and supply routes outside of volatile regions. After Texas, Alaska is the second-biggest energy producing state in the United States and the fossil-energy industry is its largest economic sector. Over 18% of U.S. oil reserves are found in Alaska, and Prudhoe Bay on Alaska's North Slope is the highest-yielding oil field in the country, with 400,000 barrels per day of production. While onshore production reached its peak in the late 1980s, offshore oil and gas production in U.S. Arctic waters is on the rise. Totaling 97.7 million barrels of crude oil in 2006, Alaskan offshore production currently delivers 5.2% of total U.S. crude production. A recent oil and gas assessment of U.S. Geological Survey (USGS) found that up to one-fifth of the world's undiscovered oil and natural gas resources may be in the Arctic, with 84% of the resources in Arctic countries' continental shelf areas.[34] One third of these potential resources (30 billion barrels) are thought to be off the coast of Alaska.[35]

Table 1 summarises the key economic and geopolitical U.S. interests with significance for the marine Arctic. Many of these interests are interrelated, with the growing importance of geopolitical interests such as identifying maritime boundaries tied up with their growing importance in economic terms. Along with energy production and security, key interests include reliable maritime routes; sustainable and productive fisheries; resolution of boundary disputes; national and global security; and environmental protection and cleanup. These interests overlap with those of the EU mainly for fisheries, alongside the more recent key interests of climate change and security as well as energy.

Maritime activity in the Arctic is an issue of increasing importance to the U.S. The majority of current and near-term shipping activity in the U.S. Arctic is regional and driven mainly by mining, supply shipments to villages and offshore hydrocarbon development.[36] Though virtually non-existent at present, trans-Arctic shipping via the Northwest Passage (as well as increased tourism) could become a reality in future summer periods, and the U.S. has a significant interest in ensuring passage for international vessels with adequate provisions for vessel/passenger safety, international security and environmental protection. The Northwest Passage would reduce considerably the travel distance from European ports to some ports on the U.S. west coast, and offer a competing route to the Panama Canal. Using the

[34] USGS (2008)

[35] Mouawad (2008)

[36] The main maritime activity in the Alaskan marine Arctic is shipment of zinc ore from the Red Dog Mine during the ice-free period in the Chukchi Sea.

Northwest Passage would reduce the shipping distance from Rotterdam to Seattle from 9,000 to 7,000 nautical miles, a reduction of nearly 25%.[37]

Table 1. Key U.S. economic and geopolitical interests regarding the marine Arctic

U.S. interest	Interest summary
Energy production and security	One-third of the total undiscovered oil in the Arctic (30 billion barrels) could be off the coast of Alaska in the U.S. continental shelf. Higher energy prices and increased accessibility due to climate change will drive development of Arctic offshore oil. Concerns about energy security spur interest in increasing domestic energy production and reduced reliance on imports from volatile regions.
Reliable maritime routes	Additional offshore activity will require shipping support and construction of port facilities. Longer term, trans-Arctic shipping via the Northwest Passage could become economically viable, and the U.S. has a significant interest in ensuring reliable and safe passage for international vessels according to uniform international rules.
Sustainable and productive fisheries	Uncertainty regarding the effect of climate change on fish stocks calls for precautionary management and a possible need for new management agreements should fisheries change dramatically. Alaska fisheries account for approximately half of the total U.S. fish catch[38] but there are no major commercial fisheries in the portion of the Arctic Ocean nearest Alaska.[39] The U.S. has urged a halt to fishing in the high seas of the Arctic Ocean, and seeks international discussions on fisheries management in the region.[40]
Resolution of boundary disputes	The U.S. and Canada have a boundary dispute over a wedge-shaped portion of the Beaufort Sea that is believed to have significant petroleum reserves. Generally, the U.S. has a significant interest in the orderly resolution of countries disputed claims on Arctic waters.
National and global security	U.S. and Canadian defense activities in the Arctic have reduced substantially since the end of the Cold War. The key security threats in the Arctic now relate largely to addressing threats related to increased accessibility and economic activity in the region. U.S. surface-ship capabilities are limited at the present, with only three polar icebreakers in its fleet.
Search and	The U.S. and its other neighbours have increased communications,

37 Borgerson (2008)

38 NMFS (2008)

39 Bolstad (2008)

40 S. J. RES. 17, October 4, 2007, 110th CONGRESS, 1st Session. A joint resolution 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.

Rescue and Emergency Response	planning, and exercises for coordinated response to accidents in adjoining Arctic marine areas including oil spills, and search and rescue operations.

U.S. and Canadian co-operation in the area of security is quite extensive, perhaps most notably through the North American Aerospace Defense Command (NORAD), which is an integral part the aerospace warning and defense systems of both countries. As ice retreats in the Arctic and ocean-going traffic becomes more commonplace, it is reasonable to expect American and Canadian security co-operation to increase in the region.

Resolving maritime boundary disputes will play a key role in Arctic governance. The U.S. and Canada have a boundary dispute over a wedge-shaped portion of the Beaufort Sea extending northward from the U.S.-Canada terrestrial border. Other Arctic states have filed (or will file) submissions under UNCLOS to overlapping portions of the Arctic Ocean sea-bed. Transport through the Arctic, and in particular through Canada's Arctic archipelago by way of the Northwest Passage, is a particularly sensitive issue for Canada and its implications for the country's national sovereignty. Canada maintains that the Northwest Passage is part of its historic internal waters and is entitled to those rights commensurate with such a designation under the law of the sea. On the other hand, the U.S. contends that the Northwest Passage is a strait traditionally used for international navigation. The countries have temporarily papered over the disagreement with the Arctic Cooperation Agreement signed in 1988, under which U.S. icebreakers must seek Canadian permission to enter the Northwest Passage and Canada must grant it. However, the issue of Canadian sovereignty will likely become more contentious as the Northwest Passage becomes an increasingly viable route for commercial ships.

3.2 Legal basis

The U.S. has extensive Arctic territory[41] in the state of Alaska and its surrounding waters. Governmental authority in the region is shared among federal, state and local levels, with the extent of involvement depending on the subject matter. Additionally, the Alaskan Arctic contains large tracts of both federal and state lands, with the federal government having sole authority over federal lands. Given that the U.S. Arctic is a relatively small portion of U.S. territory, most federal and state laws are not specific to the Arctic, but rather apply generally to the entire U.S. The implementation of the policies reflected in these laws and regulations is the responsibility of numerous federal and Alaskan government agencies. The Alaskan indigenous peoples' rights, interests and inclusion in decision-making are also key governance aspects. Lastly, international law is an important component of U.S. Arctic governance. Bilateral agreements, especially those with Canada and the Russian Federation, also play a key role.

[41] The Arctic Research and Policy Act of 1984 defines the Arctic as "all United States and foreign territory north of the Arctic Circle and all United States territory north and west of the boundary formed by the Porcupine, Yukon, and Kuskokwim Rivers; all contiguous seas, including the Arctic Ocean and the Beaufort, Bering, and Chukchi Seas, and the Aleutian chain" (P.L. No. 98-373 Sec. 112).

It is important to keep this complex governance structure in mind when evaluating American Arctic policy. Most policies require co-operation among multiple governmental bodies at multiple levels. Thus far, the judicial branches have been less involved in Arctic governance, except perhaps with regard to the rights of indigenous peoples and litigation related to hydrocarbon development. This is likely to change, as economic activity increases in the region and the impacts of climate change are more acutely felt by the region's inhabitants.

Annex A briefly describes the federal laws and institutions most relevant to the marine Arctic, while Annex B summarises the key U.S. research institutions, activities and funding levels.

3.2.1 Federal law

The United States Congress has primary legislative authority over the laws pertaining to the U.S. Arctic. Congress has passed laws related to all relevant aspects of the Arctic, including natural resources, environmental protection, shipping, fisheries and wildlife management, as well as the rights of indigenous peoples. The executive branch, generally consisting of the office of the President and many regulatory agencies, is responsible for both enforcing the law and promulgating regulations consistent with those laws. The President has both direct and indirect ways to influence Arctic governance. Most significantly, the President has primary authority over international relations. The President can also issue executive orders (such as the Arctic Region Policy released in January 2009 as National Security Presidential Directive 66). The President also exercises considerable indirect authority through the power to appoint the leadership of many executive agencies.

While there are likely hundreds of federal laws that have some relevance to the Arctic marine environment, only a small subset addresses the Arctic specifically. May et al. (2005) classified a total of 126 U.S. statutes enacted between 1988 and 2002 as having some relevance for the Arctic (compared to 36 in Canada). In over 60% of these laws, however, the Arctic component is fairly small and of limited importance. Most of this legislation applies to Arctic waters simply by virtue of being U.S. territory. However, this may be changing, as energy prices and global warming have drawn Washington's attention northward and the tensions between resource-based industrial development and environmental protection are being brought to the fore. The main pieces of U.S. federal legislation specific to the Arctic are the Alaska Statehood Act of 1958, the Alaska Native Claims Settlement Act (ANCSA) of 1971 and the Alaska National Interest Lands Conservation Act (ANILCA) of 1980. In addition, the Arctic Research and Policy Act of 1984 (amended in 1990) provides a comprehensive national policy dealing with U.S. research needs and objectives in the Arctic. Box 1 summarises key federal marine legislation.

Box 1. Key federal marine legislation

Marine resources and oceans in the U.S. are governed by a variety of laws, foremost the **Coastal Zone Management Act** of 1972 (last amended 1996), the **Marine Protection, Research and Sanctuaries Act (Ocean Dumping Act)** of 1972 (amended 1975, 1988, 1997) and the **Oceans Act** of 2000 (expired 2004). The Coastal Zone Management Act (CZMA) directs states and Native American tribes to preserve, protect, develop, restore and enhance the coastal resources of the U.S. and provides federal assistance to states to develop wise use of their land and water resources. Coastal states are given the responsibility for the development of management programmes and special area management programmes for areas deemed to be of special importance. In an attempt to develop comprehensive national ocean policy, the Oceans Act was passed in 2000, creating the U.S. Commission on Ocean Policy, which was tasked with assessing the status of U.S. ocean policy and making recommendations for future ocean policy. A final report was published in 2004, which was intended to be a comprehensive review of U.S. ocean policy. While the report makes short mention of organic pollutants migrating to the Far North and does mention the potentially large oil and natural gas reserves off the northern coast of Alaska, it does not discuss the Arctic in great depth. The Oceans Act expired in 2004.

In response to the Commission's report, the Bush administration created the Committee on Ocean Policy[42] and released its Ocean Action Plan in 2004. The Ocean Action Plan outlined several immediate and long-term objectives including greater use of market-based systems for regulating fisheries, creating a global Earth Observation Network, ratifying UNCLOS, and developing a research plan by the Joint Subcommittee on Ocean Science and Technology. Research priorities focus on the commercial and environmental implications of the Arctic as an increasingly viable transportation route and the role of the Arctic in regulating global climate patterns.[43]

3.2.2 State law (Alaska)

As in the federal government, the legislative and executive branches of state government are the most active in Arctic governance, with the state legislature holding primary legislative authority and the state regulatory agencies holding the relevant executive authority. While states have little authority over federal lands such as the Alaska National Wildlife Refuge (ANWR), especially when it comes to economic or conservation activities, their power overlaps significantly with federal law on state land. In general, powers not specifically granted to the federal government under the U.S. Constitution are reserved for the states. In practice, the power-sharing between state and federal government is much more complicated.

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42 Executive Order 13366

43 Charting the Course for Ocean Science in the United States for the Next Decade, an Ocean Research Priorities Plan and Implementation Strategy; January 26, 2007. Available at http://ocean.ceq.gov/about/docs/jsost_chartcourse_083006.pdf

Alaska, too, has few laws specific to the marine Arctic. This is likely to change as economic activity in the form of natural resource extraction, fishing, and shipping expands off Alaska's northern coast, as evidenced by the increasingly contentious debate in Congress regarding drilling for oil in ANWR and on the continental shelf.

Generally, the state of Alaska has management authority for salmon, herring, and shellfish fisheries as well as groundfish fisheries within three nautical miles of shore. The North Pacific Fishery Management Council does not currently have a comprehensive management plan covering the marine areas off Alaska's northern coast. The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 sets a deadline of 2011 to end overfishing in the U.S. Box 2 provides an overview of the Alaska Coastal Management Act, a key piece of Alaskan legislation governing marine policy in the state.

Box 2. Alaska Coastal Management Act

The Alaska Coastal Management Act (ACMA) was passed on June 4, 1977 pursuant to the federal Coastal Zone Management Act of 1972 and created the Alaska Coastal Management Program. Prior to the passage of ACMA, more than 60% of Alaska's coastal area was controlled by federal agencies.

The ACMA gave Alaskans the opportunity to govern the use of their coastal resources, especially fish, oil, gas, timber, mining and tourism. The Office of Project Management and Permitting (OPMP) of the Department of Natural Resources (DNR) administers the ACMP and coordinates the regulatory and permitting activities of various state agencies so that they are in compliance with the ACMP. In addition, many state agencies participate in the ACMP in various capacities, including technical assistance, advisory, review, and monitoring. The coastal zone governed by the ACMP extends seaward three nautical miles and to varying distances inland based on the classification of areas within the zone into two categories: 1) the "zone of direct interaction" and 2) the "zone of direct influence." The zone of direct interaction is defined as "the portion of the coastal area where physical and biological processes are a function of direct contact between land and sea."

Local participation in the ACMP is voluntary. There are currently 35 coastal districts, 33 of which have approved coastal management plans. District plans become part of the ACMP and are enforceable as state law once they are approved by the DNR.[44] State agencies are obligated to implement approved plans.[45] Two districts are located in Alaska's Arctic region, the North Slope Borough (NSB) and the Northwest Arctic Borough (NAB). The plans for both districts are currently being revised pursuant to state legislation passed in 2003 and revisions to the ACMP in 2004.

As its name implies, the North Slope Borough is located on Alaska's North Slope and includes 24,564 square miles of coastal zone and 8,031 miles of coastline. There are eight indigenous communities located in the NSB, and as such, the NSB district plan pays special concern to the protection of the traditional subsistence activities and cultural heritage of

[44] 11 AAC 114

[45] 11 AAC 112.020(b)

these communities. Development activities that risk damaging subsistence resources are largely prohibited under the Northwest Arctic Borough plan. The plan also sets rules for protecting the habitats of various marine and terrestrial animals. Resource extraction and transportation projects are regulated in the plan, and must include input from the local communities.

Similarly, the Northwest Arctic Borough plan gives subsistence uses of resources by its eleven indigenous communities priority over all other conflicting activities. A number of areas are designated as "subsistence use areas" in accordance with 11 AAC 114.250, which affords them special protections. Mining, drilling and transport development must be done in such a way so as to not adversely impact local fish and wildlife species.

3.2.3 Indigenous peoples in Alaska

In the United States, Native Americans have no explicit constitutional protection of their rights as indigenous peoples.[46] Instead, federal interaction with indigenous groups is guided by various legal mechanisms such as reserved right doctrines, executive orders, judicial mandates, and specific treaties between the federal government and Native American governments. In Alaska, two of the most important laws shaping the relationship between federal agencies and indigenous groups are the **1971 Alaska Natives Claims Settlement Act** (ANCSA) and the **1980 Alaska National Interest Lands Conservation Act** (ANILCA).[47] These two laws are summarised in Box 3.

The adoption of ANCSA was intended to resolve disputes over indigenous claims to land and rights to various natural resources. While ANCSA did accomplish some of these aims, the structures it developed led to new disagreements concerning hunting and fishing rights. ANILCA attempted to settle the new disputes that arose from ANCSA, most importantly by addressing its disregard for Native subsistence usage of fish and wildlife. The priority ANILCA gave to rural subsistence use over common use, however, conflicted with the Alaskan constitution. The controversy eventually led to a decision by the Alaskan Supreme Court, which required the federal government to assume responsibility for the management of subsistence uses on federal public lands and waters in Alaska. The Department of the Interior (DOI), in co-operation with several of the offices it administers, has been the main federal agency overseeing the subsistence use of natural resources in Alaska. Despite the Supreme Court decision and various programmes of the DOI, litigation by or on behalf of indigenous groups over subsistence rights has continued.

Providing for adequate input from indigenous groups when formulating governmental policy has been an enduring challenge. For example, under the Federal Subsistence Management Program, a programme established by the Secretaries of the Interior and Agriculture, Regional Advisory Councils (RAC) consisting of residents knowledgeable in subsistence uses of local fish and wildlife resources was formed to help formulate policies designed to protect subsistence opportunities and ways of life. As another example, the Minerals

[46] AHDR (2004), pp. 106.

[47] USFWS Native American Policy (1994), pp. 1.

Management Service (MMS), the branch of the Department of the Interior responsible for managing mineral resources of the Alaska Outer Continental Shelf (OCS), has an expressed commitment to integrating traditional knowledge in their work.[48] However, beyond the mention of a series of roundtable discussions held in 1996, there is no readily available public information about activities in this policy area, bringing into question its efficacy.

Evidence for Alaskan Native participation in resource management is more established within the policies of the U.S. Fish and Wildlife Service. This can partially be attributed to the 1994 amendment of the Marine Mammal Protection Act, which spawned a number of co-operative agreements between federal agencies and Alaskan Native Organisations (ANOs).[49] These co-operative agreements allow for the incorporation of indigenous knowledge in policies, as well as provide for co-management of resources and direct participation of Alaskan Natives in activities such as harvest monitoring, marine mammal research and development of local conservation plans for the species covered under the relevant act.

Box 3. Brief summary of the ANCSA and ANILCA legislation

Alaska Native Claims Settlement Act

The Alaska Native Claims Settlement Act was developed to resolve disputes over indigenous claims to land and hunting and fishing rights. As part of the settlement, the Alaskan Natives received rights to 11% of the lands they claimed and $962 million dollars in compensation.[50] The agreement also required that the Alaskan Natives give up their territorial rights on all other lands and waters in Alaska.[51] The Act did not explicitly protect subsistence usage rights, however the final House-Senate Conference Committee Report that accompanied ANCSA expressed Congress's expectation that the Secretaries of Interior and the State "take any action necessary to protect the subsistence needs of the Alaska Natives."[52]

Alaska National Interest Lands Conservation Act

The Alaska National Interest Lands Conservation Act (1980) attempted to settle disputes that arose from ANCSA and the disregard for Native subsistence usage of fish and wildlife. Title 8 of the act recognised that Native lands are an essential element for the traditional and cultural existence of Alaska Natives. Under the section "Preferences for Subsistence Use,"

48 MMS, online at http://www.mms.gov/alaska/native/tradknow/index.htm (viewed on 07.07.2008). The DOI and MMS are responsible for designating and leasing federal lands for mineral exploration and development.

49 Marine Mammal Cooperative Agreements in Alaska Amendments Act of 2008, H.R. 5429, online at http://thomas.loc.gov (viewed on 10.07.2008).

50 AHDR (2004), pp. 97.

51 ANCSA 1971, online at http://www.lbblawyers.com/ancsatoc.htm#toc2 (viewed 03.07.2008).

52 NARF, online at http://www.narf.org/pubs/justice/1999spring.html (viewed 22.07.2008).

ANILCA provided a rural and customary preference for the subsistence harvest of traditional Alaska resources.[53] However, the Alaska Constitution reserves fisheries, wildlife and waters for common use. Furthermore, the Constitution also states that laws governing natural resources must be applied to all persons equally.[54] Since Title 8 gave preference to rural residents and subsistence users of fisheries and wildlife, it discriminated against urban dwellers. Consequently, the Alaska Supreme Court ruled in 1989 that Title 8 was unconstitutional. As a result of the ruling, ANILCA required the federal government to assume responsibility for the management of subsistence uses on federal public lands and waters in Alaska, which covers about 60 percent of the state.[55]

3.2.4 U.S. bilateral agreements

The United States has concluded bilateral agreements relative to the marine Arctic with its two immediate Arctic neighbours, Canada and the Russian Federation. Key agreements on fisheries, species protection and security issues are described here.

Bilateral Arrangements between the U.S. and Canada. The United States and Canada share a border of nearly 9,000 kilometers and the world's largest trading relationship, which exceeded $560 billion in 2007.[56] The two countries have negotiated agreements on a wide range of issues, including water and air quality, wildlife preservation, security, transportation and trade, immigration, scientific research, and environmental protection.

Bilateral agreements govern the management of various fisheries and other living marine resources, including halibut, salmon, albacore tuna, and Pacific hake.[57] While there are currently few, if any, commercial fisheries in the Arctic waters off the northern coasts of Alaska and Canada, it is likely that existing fisheries in more southern regions will migrate north as the temperature of Arctic waters rise and many fisheries management agreements may need to be revisited. The U.S. Senate has already indicated its desire to explore the potential for a regional arrangement with the recent passage of a Joint Resolution.[58]

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56 U.S. Department of State (2008)

57 Convention for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea, International Pacific Halibut Commission 1953. Treaty between the Government of the United States and the Government of Canada concerning Pacific Salmon, Pacific Salmon Commission 1985. Treaty between the Government of the United States and the Government of Canada on Pacific Coast Albacore Tuna Vessels and Port Privileges. Treaty between the Government of the United States of America and the Government of Canada on Pacific Hake/Whiting.

58 S.J. Res. 17, August 3, 2007.

The International Joint Commission (IJC) was established as part of the Boundary Waters Treaty of 1909 to oversee cross-boundary water quality issues. The IJC's mandate was expanded to include air-quality issues with the enactment of the U.S.-Canada Air Quality Agreement, signed in 1991. Due to the fact that there has been very little industrial activity in the Alaska-Canada border, the IJC has traditionally had a sub-Arctic focus. However, it is likely that its attention will turn to the north should industrial development and research extraction expand in the Arctic. The IJC has recognised that many pollutants from the more densely populated areas of both countries migrate north and settle in the Arctic region.[59]

In a 1988 bilateral agreement,[60] the U.S. and Canada agreed that, *inter alia*, "all navigation by U.S. icebreakers within waters claimed by Canada to be internal will be undertaken with the consent of the Government of Canada."[61] The legal status of the Northwest Passage remains a debated point between the two countries.

U.S. and Canadian bilateral co-operation in the area of security is quite extensive, perhaps most notably through the North American Aerospace Defense Command (NORAD), which is an integral part the aerospace warning and defense systems of both countries. As ice retreats in the Arctic and ocean-going traffic becomes more commonplace, it is reasonable to expect American and Canadian security co-operation to increase in the region.

Bilateral Arrangements between the U.S. and Russia. Just 55 miles separate the mainland of Alaska from the mainland of Russia, with some Alaskan and Russian islands in the Bering Strait being mere miles apart. While U.S.-Russian relations throughout the last half of the 20th century were largely defined by the Cold War, such close proximity between the two countries necessitated co-operation on a broad range of issues. Throughout the Cold War, U.S.-Soviet communication focused primarily on arms-control negotiations[62], however during the Nixon Administration the two countries also signed a number of bilateral agreements covering fields such as energy[63], agriculture[64], science and technology[65], and

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59 John McDonald, Sea-to-Sea Overview of Transboundary Air Quality Issues, www.ijc.org/rel/focus/v23i3/feat03.html

60 Agreement between the Government of Canada and the Government of the United States of America on Arctic Cooperation, 11 January 1988. In force 11 January 1988, *Canada Treaty Series* 1988, No. 29.

61 Clause 3. See also the analysis by Rothwell (1996, pp. 158-159 and 191-196).

62 Woolf, Amy F. (2006). *Nuclear Arms Control: The U.S.-Russian Agenda.* CRS Issue Brief for Congress. p. CRS-1 Available online: http://fpc.state.gov/documents/organization/61464.pdf

63 United States of America and Union of Soviet Socialist Republics, Agreement on cooperation in the field of energy. Signed 28 June 1974. No. 13953. Available online: http://untreaty.un.org/unts/1_60000/27/3/00052143.pdf

64 United States of America and Union of Soviet Socialist Republics. Agreement on cooperation in the field of agriculture. Signed 19 June 1973. No. 13085. Available online: http://untreaty.un.org/unts/60001_120000/7/20/00012976.pdf

65 United States of America and Union of Soviet Socialist Republics. Agreement on co-operation in the fields of science and technology. Signed 24 May 1972. Available online: http://untreaty.un.org/unts/1_60000/24/32/00047559.pdf

environmental protection[66]. Since the fall of the Soviet Union, many of these agreements have been strengthened and serve as the cornerstone for U.S.-Russian co-operation.

Bilateral protection of the Arctic marine environment is coordinated under the *Agreement between the Government of the United States of America and the Government of the Russian Federation on Cooperation in the Field of Protection of the Environment and Natural Resources (1972)*, which was renegotiated in 1994.[67] This treaty updated the 1972 U.S.-U.S.S.R. Environmental Agreement reflecting that the Russian Federation was successor in interest to the U.S.S.R. The treaty sponsors co-operative activities between scientists from both countries researching plant and animal species, ecosystems, and wildlife refuges. Specifically, it provides for the implementation of the U.S.-Russia Convention Concerning the Conservation of Migratory Birds and their Environment (1976)[68] and the recent U.S.-Russia Agreement on the Conservation and Management of the Alaska-Chukotka Polar Bear Population (signed 2000, entered into force 2007). The polar bear agreement is unique in that it relies on the Alaska Nanuuq Commission and the Chukotka Association of Traditional Marine Mammal Hunters to establish regulations and set annual polar bear hunting quotas[69] rather than by the U.S. and Russian national governments.[70]

Bilateral co-operation of fisheries is coordinated through the *Agreement between the Government of the United States of America and the Government of the Union of Soviet Socialist Republics (now the Russian Federation) on Mutual Fisheries Relations* from 1988, which, most notably, established the U.S. Russia Intergovernmental Consultative Committee (ICC).[71] The ICC is currently helping to facilitate the negotiation of a comprehensive fisheries agreement for the Northern Bering Sea, however there is disagreement over the issue of cross-border fishing.[72]

3.2.5 Multilateral agreements

The U.S. has been an active participant in international fora and scientific research on Arctic issues. However, the U.S. relies (for now, at least) on existing laws and institutions to deal with the climate-adaptation challenge in the Arctic. Together with the four other states with Arctic Ocean coastlines, the U.S. adopted the Ilulissat Declaration in May 2008, wherein these states recognised the important impacts of climate change on the Arctic, while

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66 United States of America and Union of Soviet Socialist Republics. Agreement on cooperation in the field of environmental protection. Signed 23 May 1972. No. 12114. Available online: http://untreaty.un.org/unts/1_60000/24/24/00047172.pdf

67 See <http://www.fws.gov/international/pdf/Area%205%20Work%20Plan%202007-2008%20ENGLISH.pdf>

68 The CCCMBE contains many continuing obligations of the parties to exchange information, engage and research, and adopt measures regarding the protection of migratory bird species. The continuing "implementation" of these obligations is one of the fundamental objectives of the Area V intitiatives.

69 ADHR, Chapter 7, p. 132

70 Work plan http://www.fws.gov/international/pdf/Area%205%20Work%20Plan%202007-2008%20ENGLISH.pdf

71 See <http://www.nmfs.noaa.gov/ia/bilateral/docs/US-Russia_ICC_IA_Book.pdf>

72 Id.

reasserting both their sovereign rights and jurisdiction in portions of the Arctic Ocean. The declaration states that because the law of the sea provides an extensive international legal framework, the Arctic coastal states "see no need to develop a new comprehensive international legal regime to govern the Arctic Ocean". Conversely, the states also recognised the need for taking appropriate measures as a consequence of developments in the Arctic Ocean.

As mentioned previously, the key international agreement that the U.S. is not party to is the UNCLOS.[73] Though widespread support for the treaty exists (e.g. both the U.S. President and State Department support it), ratification of the treaty requires two-thirds majority approval of the U.S. Senate. The U.S. is also not a party to the Biodiversity Convention, which together with UNCLOS may play a future key role in establishing marine protected areas.

3.3 Key policies and initiatives

The State of Alaska is ahead of the federal government in addressing the issue of climate adaptation in the Arctic. The state is currently developing its Climate Change Strategy, which covers both mitigation and adaptation issues. The governor and state legislature have each engaged in efforts to understand the challenge and develop policy options, some of them specific to marine issues. The key development in federal policy is the recent release of the U.S. Arctic Region Policy, which adapts U.S. policy in part based on expectations regarding climate change and related increases in Arctic activity. This section provides an overview of recent policy developments and also outlines key current policies in three key economic sectors: fishing, offshore hydrocarbon activities, and shipping.

To date, at both the state and federal level, much of established marine-related policy is neither specific to the Arctic nor specific to the issue of climate change. To a certain extent, existing policies can incorporate climate-change impacts (e.g. the Environmental Impact Statements required for permitting offshore hydrocarbon development can be written and reviewed with climate-change concerns in mind). In other areas, new policies are likely to be required (e.g. Arctic fisheries). Significant increases in government budgets will undoubtedly be required to cope with increased levels of economic activity and to fund new public services and infrastructure (e.g. for shipping).

3.3.1 Adaptation policies

U.S. federal government

Adaptation to climate change has only recently received attention by federal government agencies and discussion remains fairly general at this point.[74] The U.S. Climate Change Science Program (CCSP), which coordinates the climate change research activities of U.S.

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[73] Note also that the U.S. is not a party to the Part XI Deep-Sea Mining Agreement linked to UNCLOS.

[74] See for example discussion by EPA: http://www.epa.gov/climatechange/effects/adaptation.html (viewed August 2008).

government agencies, is finalising a series of synthesis reports on climate change in the U.S. In its report dedicated to adaptation strategies, it defines six overarching types of response strategies to increase ecosystems' resilience to climate change, ranging from reducing anthropogenic stresses to restoration of ecosystems and relocation of climate-threatened organisms.[75] Although the final unified synthesis report is still pending, the draft report clearly shows that the contributing agencies have recognised the severe impacts climate change already has on the U.S. Among other impacts, the authors single out the faster-than-expected warming in Alaska and the resulting pressures for coastal communities and marine species.

More broadly, on 9 January 2009, in one of its last acts, the Bush Administration issued an updated Presidential Directive on Arctic Policy acknowledging the need for reform of the current international Arctic governance regime and indicating a willingness to consider "new or enhanced international arrangements" to address expected changes in the region. It was the first major Arctic policy update since 1994.

Of the federally funded Arctic research projects, there are hardly any projects dealing with policy options in the context of climate change adaptation and/or marine ecosystems. The vast majority of the projects deal with environmental change in the Arctic from a natural sciences point of view. (See Annex B for an overview of U.S. funding of Arctic research.)

Adaptation to climate change is beginning to draw attention in Congress. Senate Bill 2355 introduced by Democratic Senator Cantwell in November 2007 aimed at amending the National Climate Program Act to enhance the ability of the United States to develop and implement climate change adaptation programmes and policies.[76] However, the bill did not make it to a vote on the Senate floor. Meanwhile, several state governments are going ahead of the federal government by implementing adaptation plans, including the coastal states of California, Oregon, Washington, Maryland, Florida and Alaska.[77]

State of Alaska

The Alaskan state government is actively wrestling with the issue of climate change, including adaptation challenges in the marine Arctic. In September 2007, Alaska's governor created the Climate Change Sub-Cabinet, which advises the governor on preparation and implementation of Alaska's climate change strategy.[78] Four advisory groups have been created, one on adaptation.[79] Within the adaptation advisory group, four technical working

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75 U.S. Climate Change Science Program (2008). Preliminary review of adaptation options for climate-sensitive ecosystems and resources. Final Report, Synthesis and Assessment Product 4.4. Available online at: http://www.climatescience.gov/Library/sap/sap4-4/final-report/#finalreport (viewed August 2008).

76 For more on the bill, see http://www.govtrack.us/congress/bill.xpd?bill=s110-2355

77 Pew Center (2007). Adaptation Planning: What U.S. States and Localities are Doing. Available online at: http://www.pewclimate.org/working-papers/adaptation (viewed August 2008).

78 State of Alaska (2008). Alaska Climate Change Strategy. Available at http://www.climatechange.alaska.gov/

79 Alaska Climate Change Adaptation Advisory Group (2008). Available at http://www.akclimatechange.us/Adaptation.cfm

groups have been created, addressing the issues of public infrastructure, health and culture, natural systems, and economic activities, respectively. Each group is developing catalogues of proposed policy options.[80]

In addition, an Immediate Action Workgroup[81] was formed to develop policies requiring immediate implementation by the state of Alaska to prevent loss of life and property in those Alaska communities identified as being in the greatest peril (five of these six communities are coastal: Kivalina, Newtok Shaktoolik, Shishmaref, and Unalakleet). The recommendations of that group point to the complex co-ordination required among various stakeholders and levels of government to effectively address community protection and relocation issues.

The Alaska legislature established the Alaska Climate Impact Assessment Commission in 2006, which released its final report to the legislature in March 2008.[82] The Commission assessed the effects of climate change on the citizens, resources, economy and assets of the state. In the final report, an extensive number of impacts and associated policy recommendations are mentioned, some specifically aimed at regulating marine activity and protecting marine ecosystems.

3.3.2 Offshore hydrocarbon activities

The main drivers behind the increased interest in offshore oil and gas resources in Alaska are technological progress, possible increased accessibility due to climate change, the depletion of other fossil reserves and higher global prices for hydrocarbons.[83] At the moment, offshore oil and gas drilling in Alaska takes place relatively close to the coast. The most important fields currently in operation are Endicott, Point Macintyre and Northstar, all three of which are situated close to the shore in the Beaufort Sea. Over the coming decade, however, project development is scheduled to expand further offshore, with federal leasing plans now established for the Beaufort Sea, the Chukchi Sea, as well as for the North Aleutian Basin and the Cook Inlet off Alaska's southern coast.[84]

As regulated by the Submerged Lands Act, responsibility for managing offshore resources off the coast is divided among the federal and state governments. The state governments manage the near-shore area within a three-mile zone, while all submerged lands beyond the three-nautical-mile line fall under federal jurisdiction and are administered by the Minerals Management Service (MMS), a bureau of the U.S. Department of the Interior. The main

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80 The draft catalogues of policy options for each group are available online at http://www.akclimatechange.us/Adaptation.cfm

81 Immediate Action Workgroup (2008). Recommendations Report to the Governor's Subcabinet on Climate Change: Final Report. April 17. Available at http://www.akclimatechange.us/ewebeditpro/items/O97F17503.pdf

82 Alaska Climate Impact Assesment Commission (2008). Final Commission Report. 17 March. Available at http://www.akclimatechange.us/ewebeditpro/items/O97F17502.pdf

83 AMAP (2007). Arctic Oil and Gas 2007.

84 MMS (2007). Proposed Final Program Outer Continental Shelf Oil and Gas Leasing Program 2007-2012. April 2007. Available at: http://www.mms.gov/5-Year/PDFs/MMSProposedFinalProgram2007-2012.pdf (viewed July 2008).

responsibility of the MMS is the implementation of the Outer Continental Shelves Land Act (OCSLA), which regulates the mineral leasing of submerged outer continental shelf (OCS) lands and the supervision of offshore operations after lease issuance. On the state level, the Department of Natural Resources, and more specifically its Division of Oil and Gas, is in charge of managing Alaska's oil and gas leasing programme.

Within their respective jurisdictions, both agencies identify prospective lease areas and perform geological, economic, environmental and social analyses of the potential sites. The MMS then compiles Environmental Impact Statements (EIS) according to the National Environmental Policy Act (NEPA) and the sites judged adequate for leasing are subsequently grouped in a five-year leasing schedule and can then be offered in individual lease sales. The leasing procedure for each individual area requires a number of additional steps, including the development of another, more specific EIS.

The federal government's 2007-2012 Lease Program substantially extends offshore lease sales in the Chukchi and the Beaufort Seas—areas which have been experienced relatively low levels of human intervention before. It is therefore not surprising that the programming process has given rise to criticism from various stakeholders. One point of contention has been the scoping of the accompanying EIS[85], both in terms of the alternatives under consideration and in terms of environmental impacts covered. For instance, demands to prioritise renewable-energy production instead of oil and gas development have been rejected by MMS based on the grounds that renewable energies cannot replace the need for oil and gas.[86] Equally, the MMS has been criticised for not considering "the exclusion of all Alaskan planning areas" as a one possible alternative under the EIS.[87]

In the 2007-2012 environmental assessments, the MMS has explicitly addressed the impacts of climate change on the Arctic marine environment and the cumulative effects that might result when impacts of hydrocarbon development, increased maritime transportation and climate change effects combine. However, contrary to the approach taken in the U.S. fisheries sector, the MMS has not deemed uncertainty with respect to future impacts as a reason to halt hydrocarbon development until more knowledge is available. Instead, the 2007 Environmental Impact Statement refers to regular review, monitoring and effective mitigation measures as possible response strategies to the uncertainty of future environmental impacts.

The leasing process has given rise to strong stakeholder criticism that—as other lease sales in the past—is now leading to litigation.[88] Among other issues, the suits focus on expected pressures on polar bear habitat from oil and gas activities. Government officials, on the other hand, emphasise the need to tap national energy resources as a remedy against high prices and import dependency. The strong government commitment to offshore hydrocarbon development has been most evident in the ruling on the polar-bear listing. In May 2008, the species has been listed under the Endangered Species Act but at the same time the

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85 MMS (2007). Final Environmental Impact Statement. Available at http://www.mms.gov/5-year/2007-2012_FEIS.htm (viewed July 2008).

86 MMS (2007), Final EIS, p. V-46.

87 MMS (2007), Final EIS, pp. I-10 – I-14.

88 Reuters Press Release 9 July 2008. Suit seeks ban on oil companies disturbing wildlife. Available at: http://www.pacificenvironment.org/article.php?id=2811 (viewed August 2008)

Secretary of the Interior announced an additional rule according to Section 4(d) of the ESA stating that any activity permissible under the stricter standards imposed by the marine Mammal Protection Act is also permissible under the Endangered Species Act with respect to the polar bear. According to the Department of Interior, the rule will allow the U.S. "to continue to develop our natural resources in the Arctic region in an environmentally sound way." While welcoming the ESA listing, environmental groups such as the WWF have criticised this caveat to polar-bear habitat protection.[89]

The U.S. Arctic Region Policy requires relevant federal agencies to "work with other Arctic nations to ensure that hydrocarbon development is carried out in accordance with accepted best practices and internationally recognised standards and the 2006 G-8 Global Energy Security Principles".[90]

3.3.3 Fisheries

Unlike the highly productive Barents Sea, which has a long history of commercial fishing, only limited fishing occurs in Alaskan Arctic waters through indigenous subsistence harvest within the three-nautical-mile zone of Alaskan State waters. As melting of sea ice accelerates, commercial fishing off the northern coast of Alaska has entered into the realm of possibility. The North Pacific Fisheries Management Council (NPFMC), which is responsible for managing fisheries in federal waters, has therefore embarked on a process to preempt development of the area. Through an overarching Arctic Fisheries Management Plan, the Council intends to prohibit commercial fishing in the Alaskan EEZ north of the Bering Strait until adequate data for effective fisheries management exist.[91] Since October 2006, the NPFMC has also specifically focused its attention on Arctic fishery management. This eventually culminated in the adoption of the Arctic FMP on 5 February 2009.[92] The Arctic FMP entails, *inter alia*, to "close the Arctic to commercial fishing so that unregulated fishing does not occur and until information improves so that fishing can be conducted sustainably and with due concern to other ecosystem components".[93]

Lack of data and knowledge are the main reasons for the Council's precautionary approach. Considerable research will be needed to better understand ecosystem interactions in the Beaufort and Chukchi Sea and to forecast how climate change will impact the system in the future. Eventually, research will shed light on the level of fish stocks available for commercial

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89 WWF Press Release 14 May 2008. U.S. Government Affirms that Climate Change is Putting Polar Bears in Peril. Available at: http://www.worldwildlife.org/who/media/press/2008/WWFPresitem9010.html (viewed August 2008),

90 NSPD-66 (2009)

91 NPFMC (2007). Fishery Management Options for the Alaskan EEZ in the Chukchi and Beaufort Seas of the Arctic Ocean – A Revised Discussion Paper. Available online at http://www.fakr.noaa.gov/npfmc/current_issues/Arctic/arctic.htm [viewed August 2008].

92 Council Motion of 5 February 2009 'Arctic Fishery Management Plan'. The United States Secretary of Commerce still has to act on this motion.

93 Arctic FMP EA/RIR/IRFA Public Review Draft, note 16 supra, at p. iii. By means of its Motion of 5 February 2009, note 92 supra, the Council opted for Alternative 2, Option 3.

exploitation, but results are not expected to be sufficient for management decisions within the next 10-20 years.[94]

In the meantime, the U.S. government is seeking to extend its precautionary policy to the high sea areas of the Arctic Ocean. In October 2007, the U.S. Senate passed a joint resolution[95] urging a "halt [to] the expansion of commercial fishing activities in the high seas of the Arctic Ocean" and calling for Arctic nations to negotiate a new plan for Arctic fisheries management. The resolution was signed by President Bush in June 2008, and the State Department is currently approaching other Arctic states to talk about future management of transboundary fish stocks in the Arctic Ocean. Analogous to the approach of the North Pacific Fisheries Management Council in the U.S. EEZ, the Senate Resolution urges the government to aim for a moratorium on commercial fishing in the Arctic high seas until an effective multilateral agreement is put in place. According to the resolution, one possible outcome of negotiations could be a new Regional Fisheries Management Organisation. The text of the resolution calls for an international rather than a purely regional agreement. Up to now, outreach for exploratory talks focuses on Arctic coastal states.

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 sets a deadline of 2011 to end overfishing in the U.S. generally.

The U.S. Arctic Region Policy requires relevant federal agencies to "seek to develop ways to address changing and expanding commercial fisheries in the Arctic, including through consideration of international agreements or organisations to govern future Arctic fisheries".[96]

The problem of overfishing in U.S. and EU waters

The U.S. has relatively good information on the status of fish stocks due to the reporting requirements laid down in the Magnuson-Stevens Fishery Conservation and Management Act. The 2007 status report for Congress shows that of the marine fish stocks in the U.S. Exclusive Economic Zone, 41 stocks have been subject to overfishing (17%) and 45 stocks were overfished (24%). A stock is defined as being subject to overfishing when it has a fishing mortality (harvest) rate above the level that provides for the maximum sustainable yield. A stock that is overfished has a biomass level below a biological threshold specified in its fishery management plan.[97]

This is a level of overfishing much lower than the global averaged recorded by the UN Food and Agriculture Organisation (FAO). For 2005, FAO estimated that about half of the global marine fish stocks (52%) were fully exploited and therefore producing catches that were at

94 Interview Bill Wison, NPFMC, 5 August 2008.

95 S. J. RES. 17, October 4, 2007, 110th CONGRESS, 1st Session. A joint resolution 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.

96 NSPD-66 (2009)

97 NOAA. National Marine Fisheries Service (2008). 2007 Status of U.S. Fisheries. Report to Congress. Available online at: http://www.nmfs.noaa.gov/sfa/domes_fish/StatusoFisheries/2007/2007StatusofUSFisheries_Report_to_Congress.pdf (viewed August 2008).

or close to their maximum sustainable limits (i.e. they are subject to overfishing). The other one quarter were either overexploited, depleted or recovering from depletion (17%, 7% and 1%, respectively).[98]

The situation is very different in the EU both in terms of data availability and in regard to overfishing. Due to problems of data transmission between Member States and the Commission[99], many commercial fish stocks in European waters remain non-assessed. As a consequence, statements on overfished stocks have a large uncertainty range. According to the European Environment Agency (EEA), 22-53% of assessed commercial stocks in the Northeast Atlantic, which deliver the lion share of EU catches, are outside safe biological limits, meaning that the fishing pressure exerted on them exceeds recruitment and growth. Of the assessed stocks in the Baltic Sea, the West Ireland Sea and the Irish Sea, 22%, 29% and 53%, respectively, are overfished.[100] By contrast, NGOs like WWF and Oceana judge the percentage of overfished stocks in the EU to be much higher, around 66-80%.[101]

Regardless of the exact numbers, the U.S. generally appears to be more successful in protecting its fisheries resources than the EU, which in some maritime regions suffers from an over-sized fishing fleet and difficulties concerning the enforcement of its Common Fisheries Policy.

3.3.4 Shipping

Data on current shipping activities in U.S. Arctic waters is scarce, an issue that characterises Arctic shipping data generally. Increased insights into the statistics and future trends of Arctic shipping are expected to result from the Arctic Marine Shipping Assessment (AMSA) being carried out by the Arctic Council under the leadership of the U.S., Canada and Finland. One important outcome of the report is likely to be that natural-resource exploration and development is a main driver of increased shipping activities[102]—a finding that is especially applicable to Alaskan waters given the high number of ongoing or planned leasing processes for oil and gas drilling sites. An increase in regional transportation of hydrocarbons is thus very likely. By contrast, the prospects for transportation of other goods across the Arctic

98 FAO (2007) The state of world fisheries and aquaculture 2006 (SOFIA). Available online at: http://www.fao.org/docrep/009/A0699e/A0699e00.htm (viewed August 2008).

99 EurActiv (2007). EU states warned about overfishing. 27 September 2007. Available online at: http://www.euractiv.com/en/environment/eu-states-warned-overfishing/article-167131 (viewed August 2008).

100 EEA Website (2008). Available online at: http://themes.eea.europa.eu/IMS/ISpecs/ISpecification20041007132227/IAssessment1116498234748/view_content (viewed August 2008).

101 WWF (2007). Manifesto for an European Maritime Policy; WWF International Website. Marine Programme. http://www.panda.org/about_wwf/what_we_do/marine/problems/problems_fishing/index.cfm (viewed August 2008); Oceana (2003). European Trawlers are destroying the oceans. Available online at: http://www.oceana.org/europe/publications/reports/european-trawlers-are-destroying-the-oceans/#c3959 (viewed August 2008).

102 Brigham, L. (2007). *Changing Marine Access and the Arctic Marine Shipping Assessment (AMSA).* Presentation held at the Symposium Impact of an Ice-Diminishing Arctic on Naval and Maritime Operations 11 July 2007. Available online at: http://www.star.nesdis.noaa.gov/star/IceSymposiumProgram.php (viewed August 2008).

Ocean or through the Northwest Passage remain uncertain owing to high inter-annual variability and increasing mobility of sea ice, short shipping seasons and generally harsh conditions for maritime transportation in the Arctic. What is more, a maritime infrastructure has yet to be developed in U.S. Arctic waters and in the Arctic high seas, where communications, satellite and radar coverage are not widely available, search and rescue capabilities are extremely limited, and routeing systems do not exist.[103]

With the help of several national research bodies as well as the U.S. Maritime Administration (MARAD) and the U.S. Coast Guard, the federal government is now in the process of identifying how best to respond to the future needs of maritime and naval operations in the Arctic. At the moment, two initiatives stand out. One is the sustained U.S. effort to put into place an Integrated Arctic Observing Network which, among other data, would also deliver weather and ice forecasts for maritime transportation. The U.S. has taken advantage of the International Polar Year to integrate various U.S. long-term observing projects in the Arctic under the umbrella of the SEARCH programme while, at the same time, seeking international co-operation in order to facilitate data exchange.[104] The other concrete step is a plan to replace two of the four U.S. polar class icebreakers (the plan is currently under review in Congress). After various government institutions as well as external commentators have voiced their concern about the ageing U.S. icebreaker fleet in a time of an increasingly accessible Arctic Ocean[105], the U.S. House and Senate are now debating the authorisation of two new vessels under the Coast Guard Authorization Act. Independent of the decision in Congress, the National Science Foundation is planning to commission an ice-strengthened Arctic Region Research Vessel for research purposes.[106]

The U.S. Arctic Region Policy requires relevant federal agencies to "develop additional measures, in co-operation with other nations, to address issues that are likely to arise from expected increases in [Arctic] shipping", improve pollution prevention and response capabilities, and develop better navigational systems and information.[107]

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103 Griffiths, F. (2003): The shipping news: Canada's Arctic sovereignty not on thinning ice, International Journal 58, 2: 257–282; Noble, P. (2007). *Oil and Gas Exploration, Development, Production and Transportation in Arctic Regions.* Presentation held at the Symposium on Impact of an Ice-Diminishing Arctic on Naval and Maritime Operations 12 July 2007. Available online at: http://www.star.nesdis.noaa.gov/star/IceSymposiumProgram.php (viewed August 2008).

104 Jeffries, M. (2007). *The Development of a U.S. Arctic Observing Network (AON) and its Integration with International Observing Systems*. Presentation held at the Symposium Impact of an Ice-Diminishing Arctic on Naval and Maritime Operations 11 July 2007. Available online at http://www.star.nesdis.noaa.gov/star/IceSymposiumProgram.php (viewed August 2008).

105 See for example Polar Research Board (2006). *Polar Icebreakers in a Changing World: An Assessment of U.S. Needs*. National Academy of Science: Washington DC; Congressional Research Service (2008). *Coast Guard Polar Icebreaking Modernization: Background, Issues and Options for Congress*. Congressional Research Service: Washington, DC and Borgerson, S. (2008). *Arctic Meltdown. The Economic and Security Implications of Global Warming*. Foreign Affairs 87,2: 63–77.

106 U.S. House of Representatives Committee of Transportation and Infrastructure (2008). Hearing of the Subcommittee on Coast Guard and Maritime Transportation on "Coast Guard Icebreaking" 16 July 2008. Summary available online at http://transportation.house.gov/News/PRArticle.aspx?NewsID=681 (viewed August 2008).

107 NSPD-66 (2009)

Should trans-Arctic shipping become a reality, the U.S. will also have to focus on a number of contentious legal issues, most notably the disagreement with Canada over the legal status of the Northwest Passage.[108]

3.3.5 Biodiversity Conservation

While not specifically focused on nature conservation and biodiversity in Alaska, the Marine Mammal Protection Act (MMPA) of 1972 (last amended in 1997) and the Endangered Species Act (ESA) of 1973 (last amended in 2004) require the federal government to conserve marine mammals and endangered and threatened species, respectively. MMPA bans the 'taking' of marine mammals by U.S. citizens in U.S. waters and in the high seas, with certain exceptions for indigenous subsistence purposes.[109]

Polar bears are protected under the MMPA, although taking of polar bears for subsistence purposes is monitored by the U.S. Fish and Wildlife Service (U.S. FWS) and regulated by a number of co-management arrangements with Alaskan, Russian and Canadian indigenous peoples. On May 14, 2008, the U.S. FWS listed the polar bear as a threatened species under the ESA. Although the listing should have ensured stronger protection, an additional administrative decision to allow activities already permitted in the MMPA weakened the ruling. Additionally, the Secretary of the Interior emphasised that the ESA should not be used as an instrument to influence federal policy on global warming, widely viewed to be the greatest threat to polar bear habitat. The actions taken by the Interior Department have angered industry and environmentalists alike, and the state of Alaska immediately threatened to sue FWS, with Alaska's Assistant Attorney General claiming that listing the polar bear as threatened based "on uncertain climate models" was "unprecedented."[110]

The U.S. Arctic Region Policy requires relevant federal agencies to "continue to identify ways to conserve, protect, and sustainably manage Arctic species and ensure adequate enforcement presence to safeguard living marine resources, taking account of the changing ranges or distribution of some species"; to "pursue marine ecosystem-based management in the Arctic"; and to "intensify efforts to develop scientific information on the adverse effects of pollutants on human health and the environment and work with other nations to reduce the introduction of key pollutants into the Arctic."[111]

4 EU Policy

This section briefly identifies the main economic and geopolitical interests of the EU, including an overview of the legal basis for its policies and measures, and identifies current

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[108] Huebert, R. (2003): The shipping news part II: How Canada's Arctic sovereignty is on thinning ice, International Journal 58, 3, 295–308.

[109] 'Taking' is defined in the MMPA as "harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any marine mammal."

[110] "Alaska to sue to block polar bear listing", Yereth Rosen, Reuters (http://www.reuters.com/article/domesticNews/idU.S.N2145097820080522)

[111] NSPD-66 (2009)

policies and initiatives that are of particular relevance for climate adaptation in the marine Arctic.

4.1 Key EU interests

As Greenland and the Faroe Islands do not belong to the EC, none of the current EU Member States are coastal states with respect to the Arctic marine area. However, EU law has considerable impact on parties to the European Economic Area (EEA) Agreement,[112] which include Iceland and Norway. The EEA countries adopt EC legislation in the areas set down in the EEA agreement, including the environment.[113] Up until now, Norway has decided not to extend the applicability of the EEA Agreement to Svalbard.[114] Greenland is part of the so-called overseas countries and territories (OCT),[115] and is linked to the EC by several agreements.[116] The key interests that have been pursued by the EU specifically with regard to this area so far have been research and fisheries. However, statements and papers by EU representatives have increasingly referred to the Arctic and particularly its special vulnerability to climate change and its role as an indicator for the rapid progress of global warming.[117] The climate change and security paper and the Commission's Green paper[118] on climate change adaptation were recent catalysts for the EU's recent specific focus on the Arctic, leading to the current effort to combine and coordinate relevant policies on the Arctic.

The Green Paper on adapting to climate change in Europe of June 2007[119] is the first comprehensive review of the discussion on climate adaptation in Europe and sets the scene

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112 Agreement on the European Economic Area, Brussels, 17 March 1993. In force 1 January 1994; <www.efta.int>.

113 Cf. Art. 7 and 73-75 of the EEA Agreement. In contrast, the common fisheries policy is not part of the EEA.

114 Cf. T. Koivurova, "Alternatives for an Arctic Treaty – Evaluation and a New Proposal", 17 *Review of European Community & International Environmental Law* 14-26 (2008), at p. 15.

115 Cf. Articles 188 and 299(3) and (6)(a), Annex II of the EC Treaty and Protocol on special arrangements for Greenland (1985). Special bilateral agreements have also been made between the Faroe Islands and the EC.

116 These include a comprehensive partnership agreement of 2006, a set of documents including a joint declaration and a fisheries agreement, see Joint Declaration by the European Community, on the one hand, and the Home Rule Government of Greenland and the Government of Denmark, on the other, on partnership between the European Community and Greenland, OJ L 208 of 29 July 2006, p. 32; Council Regulation No. 753/2007 of 28.06.2007 on the conclusion of the Fisheries Partnership Agreement between the European Community on the one hand, and the Government of Denmark and the Home Rule Government of Greenland, on the other hand, OJ L 172 of 30.06.2007.

117 See for instance Memo/07/515 of 27 November 2007: „Climate Change and the EU's response" and Speech/07/583 by Stavros Dimas of 1 October 2007 „The road to Bali and beyond", available at http://europa.eu/rapid/; Address of Margot Wallström to the European Parliament conference on the Northern dimension Speech on behalf of Commissioner Ferrero-Waldner at the EP Conference on Northern Dimension. 28 February 2007, Speech/07/111

118 Green Papers are documents published by the European Commission to stimulate discussion on given topics at European level.

119 European Commission, 2007a. Adapting to climate change in Europe – options for EU action. Green Paper. , COM(2007) 354 final.
http://ec.europa.eu/environment/climat/adaptation/index_en.htm.

for adaptation efforts in the EU. It makes repeated references to the Arctic region as an area that is particularly vulnerable to climate-change impacts. The Arctic is highlighted as one of several focus regions for integrating adaptation into the EU's external policy. The Green Paper also proposes specific research activities to improve understanding and prediction of climate change impacts in the Arctic Ocean.

Although primarily referring to internal EU policies and waters under the jurisdiction of the European Member States, the new Integrated Maritime Policy repeatedly refers to the Arctic as a neighbouring area of particular concern.[120] It also creates a framework as well as co-ordination instruments to achieve better integration of different sectoral policies concerning the Arctic, and instructs the Commission to present a report on strategic issues relating to the Arctic Ocean.

Another key reference document is the joint paper by the Commission and the Secretary-General/High Representative of March 2008 on "Climate change and international security"[121], which analyses climate change as a threat multiplier exacerbating existing trends, tensions and instability (see Box 4). The Arctic is one of several geographical examples given by the paper, listing major consequences of climate change that change the geo-strategic dynamics of the region.

Box 4. Arctic reference in the "Climate Change and International Security" Paper (2008)

"The rapid melting of the polar ice caps, in particular, the Arctic, is opening up new waterways and international trade routes. In addition, the increased accessibility of the enormous hydrocarbon resources in the Arctic region is changing the geo-strategic dynamics of the region with potential consequences for international stability and European security interests. The resulting new strategic interests are illustrated by the recent planting of the Russian flag under the North Pole. There is an increasing need to address the growing debate over territorial claims and access to new trade routes by different countries which challenge Europe's ability to effectively secure its trade and resource interests in the region and may put pressure on its relations with key partners."[122]

The report concludes that it is in Europe's self interest to address the security implications of climate change with a series of measures at all levels: EU, multilateral and bilateral relations. In its conclusions, the paper identifies one policy option to "develop an EU Arctic policy based on the evolving geo-strategy of the Arctic region, taking into account i.a. access to resources and the opening of new trade routes".[123] In October 2008, the European

[120] Communication from the Commission to the European Parliament, the Council, the European Economic and Social committee and the Committee of the Regions: An Integrated Maritime Policy for the European Union. COM(2007) 575, 10.10.2007, The European Council (Heads of State and President of the Commission) endorsed the policy in its conclusions of 14 December 2007, Council doc. 16616//1/07 Rev. 1, para 58.

[121] Council Doc. 7249/08 of 03.03.2008.

[122] Council Doc. 7249/08, p.6.

[123] Ibid., p. 11. See also p. 6

Parliament adopted a resolution on Arctic governance[124] that emphasises the EU's energy and security interests as well as the special role of climate change for the Arctic and its indigenous populations. It underlines the geographical link of three EU member states and two EEA states and calls for a standalone EU Arctic policy. The resolution calls upon the Commission to address these issues.

The Commission amalgamated these interests and developments in different policy areas in its Arctic Communication of 20 November 2008 on "The European Union and the Arctic region".[125] As a "first layer of an Arctic policy for the European Union",[126] the Arctic Communication is a comprehensive document, describing the EU's role and outlining EU interests. It sets policy objectives and recommends a series of steps in the fields of research, environment, indigenous peoples, fisheries, hydrocarbons, shipping, the Arctic legal/political framework and the co-operation with regional organisations. It proposes three main objectives: protecting and preserving the Arctic in unison with its population; promoting sustainable use of resources and improving Arctic multilateral governance.

4.2 Legal basis

The European Union (EU) and the European Community (EC) need a specific legal basis conferred by the founding treaties to act. Collectively, these treaties define the distribution of competences among the Member States, the EC and the EU. For ease of reference, the following text will generally use the term "EU" to denote measures at the European level. However, the European Union (EU), the European Community (EC) and the European Atomic Energy Community (EAEC) are separate legal entities each created under separate treaties with differing competences and measures at their disposal. One of the key distinctions relevant to the issues addressed in this paper is that the EC (and not the EU) enters into international agreements. See Annex 1 for a diagram of the EU structure and a list of key EU laws and institutions.

Foreign policy is a relatively new EU policy area, and the constitutional structure of EU international relations law is fragmented.[127] The EC Treaty does not provide for a foreign policy as such although in certain areas, such as trade, the EU has external competence. External competences can also be the corollary of the internal competences.[128] Areas not covered by this EC competence fall under the Common Foreign and Security Policy under the EU Treaty, which is the legal basis for the respective policy of the European Union. Decision-making procedures and instruments under the EU Treaty are considerably different from the EC Treaty. The fact that none of the current EU Member States are coastal states

[124] EP doc P6_TA(2008)0474 of 9 October 2008, for details see below.

[125] COM (2008) 763 of 20 November 2008.

[126] COM (2008) 763 of 20 November 2008, p.12.Also Council conclusions of 4 December 2008, doc. 16826/08

[127] Craig/De Burca (2008), EU Law, 4th ed., p. 169.

[128] ECJ, Case C-22/70 - *AETR*, judgment of 31 March 1971, and subsequent case law.

with regard to the Arctic marine area as defined in this project[129] is clearly a major feature and potential constraint of EU policy regarding the Arctic marine area.

While neither the EU nor its Member States can act as coastal states with respect to the Arctic marine area, they can still act in a wide range of other capacities. For instance, EU polices affecting the Arctic could be based by addressing its Member States as flag states, port states, common market states or with respect to their natural and legal persons.

The EC has clear internal and corresponding external competences regarding fisheries, environmental protection and shipping. The EC's competence is exclusive for fisheries conservation and management, leaving no room for measures by Member States. For environmental protection and shipping, competence is shared between the EU and its Member States. EU Member States are generally free to pursue their own policies alongside the EU unless a subject matter is dealt with exhaustively by the EU. The general external policy of the Northern Dimension and the relations with indigenous peoples are subject matters of external policy under the EU Treaty.

The Lisbon Treaty of 13 December 2007[130] is designed to modernise the EU's institutions and working methods. It will, if and when it enters into force, bring about changes relevant to an EU Arctic policy. Apart from a new competence on energy, institutional changes have been made to the EU's common foreign and security policy in order to focus Europe's voice and to ensure coherence.

Over the last years the EU has been building up its identity and role as an actor on the international stage. As the EU does not border the Arctic waters, there are no obvious key interests that have been pursued by the EU in this area, except for fisheries. However, the EU now recognises the central role the Arctic plays in three of its key interest areas: climate change, energy supply and the related security issues. From this perspective, the Arctic could be the testing ground for an EU foreign policy that is not directly related to its borders or its neighbours.

The Commission's Arctic Communication does not mention a specific legal basis. It points out the EU's territorial link with the Arctic via Denmark (and Greenland), Sweden and Finland as EC Member States, and Norway and Iceland as EEA States. It also mentions the bearing of EU policies on the Arctic and the EU's security interests.[131] The Council, in its conclusions on the communication,[132] states that the EU should address Arctic challenges in a systematic and coordinated manner because the effects of climate change and of human activities in the Arctic had significant repercussions for the European Union as a whole. Yet it also emphasises that EU policies should have due respect for and take into account the special position and interests of the Arctic areas of the three Arctic Member States and Greenland.

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129 The EC Treaty does not apply to Greenland and the Faroe Islands, although they are formally still part of Denmark.

130 Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, signed at Lisbon, 13 December 2007, OJ C 306 of 17 December 2007, p. 1.

131 These are the same points that the European Parliament draws upon in its resolution of 9 October 2008 on Arctic governance.

132 Council conclusions of 4 December 2008, doc. 16826/08.

There are no indications that any of the above-mentioned States has concerns about the legal legitimacy of the EU's Arctic policy.

4.3 Key policies and initiatives

4.3.1 Arctic policy

Two key constraints on the EU's Arctic strategy are the structure of the EU and its geographical location. The EU can only propose and implement measures that are within its competence. Based on the existing framework, the EU had already implemented a number of policies and measures prior to the Arctic Communication.

4.3.2 Northern Dimension

The Northern Dimension[133] policy is relatively new[134] and part of the external and cross-border policies of the European Union.[135] It is now a permanent framework that includes a broad range of actors:[136] the four partners are the EU, Iceland, Norway and Russia, with regional councils and a number of financing institutions as participants. Other actors include regional and sub-regional authorities and non-governmental organisations. The U.S. and Canada are observers.

The Northern Dimension increasingly focuses its activities in North West Russia and the geographical priority areas in the Baltic and the Barents Sea Regions, the Kaliningrad Oblast of the Russian Federation and the Arctic and Sub-Arctic regions.[137]

Recent policies[138] include the implementation of the projects in the Northern Dimension Environmental Partnership (NDEP), a means for mobilising and combining financial resources and for financing environmental investment projects. The main problems that have been addressed were located in the Russian Northern Dimension Area, including, for instance, nuclear waste in North West Russia and the Barents Sea, and the discharge of untreated sewage from St. Petersburg and Kaliningrad into the Baltic Sea.

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133 http://ec.europa.eu/external_relations/north_dim/index.htm

134 The northern area of Europe was virtually not on the political map of the EU and the EC until the Finnish and Swedish memberships in 1995.

135 As mentioned above, general foreign policy lies within the competence of the EU, as opposed to the EC.

136 Northern Dimension Framework Document 2006, Nr. 10 adopted at the EU – Russia Summit, Helsinki, 24 November 2006 - EU RAPID Press Release IP/06/1615 of 23 November 2006.

137 For instance, within the Commission's Directorate General on External Relations (DG RELEX), the Northern Dimension is part of the Directorate "E - Eastern Europe, Southern Caucasus, Central Asian Republics", which also chairs the Inter-service Group on Northern Dimension and the Arctic and provides its secretariat, see http://ec.europa.eu/dgs/external_relations/contacts/relex_directorate_en.htm and COM SEC(2007) 791, p. 4.

138 Commission staff working document 2006: Annual Progress Report on the Implementation of the Northern Dimension Action Plan, COM SEC (2007) 791.

Despite this clear focus on the areas close to Russia, the Northern Dimension of the external policy was, prior to the Arctic Communication, the most specific policy regarding the Arctic, with the protection of Arctic ecosystems as one of the Northern dimension's priority sectors. Although the Northern Dimension policy is also intended to be a frame of reference for intensified transatlantic co-operation,[139] transatlantic policy does not appear to play a major role.[140]

4.3.3 EU Maritime Policy

The EU's maritime policy is shaped by two recent key documents: In October 2007 the European Commission launched a new integrated maritime policy in its Communication[141] "An Integrated Maritime Policy for the European Union"[142] (IMP Communication). Explicitly endorsed by the European Council,[143] it aims to create an overarching framework to promote coherent and co-ordinated development of different sectoral policies related to maritime affairs. It includes environmental protection among its objectives.

Further details are set out in the accompanying Action Plan for different areas, including external affairs.[144] The tasks set out in the Action Plan include a report on strategic issues relating to the Arctic Ocean which should prepare the ground for a more detailed reflection.[145] The Commission also envisages a strategy for the external projection of the EU's Maritime Policy through a structured dialogue with major partners.[146] It further plans to produce a strategy for the protection of high seas biodiversity before the end of 2009 and specifically

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139 Northern Dimension Framework Document 2006, No. 8.

140 COMMISSION STAFF WORKING DOCUMENT 2006 Annual Progress Report on the Implementation of the Northern Dimension Action Plan SEC (2007) 791.

141 Communications from the European Commission are non-binding.

142 Communication from the Commission to the European Parliament, the Council, the European Economic and Social committee and the Committee of the Regions: An Integrated Maritime Policy for the European Union. COM(2007) 575, 10.10.2007, http://ec.europa.eu/maritimeaffairs/index_en.html.

143 European Council conclusions of 14 December 2007, Council doc. 16616//1/07 Rev. 1, para 58.

144 Commission staff working document – accompanying document to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social committee and the Committee of the Regions: An Integrated Maritime Policy for the European Union. SEC(2007) 1278 of 10.10.2007, para 28, http://ec.europa.eu/maritimeaffairs/index_en.html.

145 Action Plan (SEC(2007) 1278) and Impact Assessment of the Integrated Maritime Policy: Commission Staff Working Document – Accompanying document to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social committee and the Committee of the Regions: An Integrated Maritime Policy for the European Union: Impact Assessment. SEC(2007)1279 of 10.10.2007.

146 COM(2007) 575, s. 4.4. The Action Plan also stresses that negotiations are ongoing in global fora, SEC(2007) 1278, para 7.4

states the Commission's intention to propose an implementing agreement under UNCLOS on marine biodiversity in areas beyond national jurisdiction.[147]

The Action Plan also includes support for research on prediction, mitigation and adaptation to the effects of climate change on maritime activities, the marine environment, coastal zones and islands. The marine environment is covered more specifically by a separate policy initiative, the **EU Thematic Strategy on the Protection and Conservation of the Marine Environment** and the Framework Directive for the protection of European oceans and seas. The **Marine Strategy Framework Directive (MSFD)**[148] entered into force on 15 July 2008 and forms the "environmental pillar" of the European Maritime Policy.[149] It requires Member States to take measures to achieve or maintain "good environmental status" (GES) in the marine environment by 2020. To this end, they have to develop Marine Strategies for their marine waters that apply an ecosystem-based approach and are based on adaptive management. The MSFD makes direct reference to climate-change impacts on the marine environment and the necessity to adapt[150] although it does not suggest any specific measures.

The Marine Strategy Framework Directive is primarily an internal EU policy and mainly refers to waters under the jurisdiction of the European Member States.[151] However, recital 42 to the Directive highlights that the Arctic waters are a neighbouring marine environment of particular importance for the EU, and that the "serious environmental concerns, in particular those due to climate change, […] need to be assessed by the Community institutions and may require action to ensure the environmental protection of the Arctic." The MSFD also links to the Arctic region in particular through activities of the Arctic Council and the OSPAR Convention.

Given the objective of promoting EU leadership in international maritime affairs, the EU will likely aim at promoting principles and mechanisms of EU policies at the international level as part of a dialogue on best practices. Adaptation efforts and strategies developed by the EU and its Member States, as foreseen by the Maritime Policy and the Adaptation Green Paper, may serve as models for other regions or may contain approaches and elements that may be transferable to other world regions including the Arctic.

4.3.4 Shipping

The Arctic Communication indicates potential commercial and environmental advantages from trans-Arctic traffic, although obstacles and risks remain. It states an EU interest to

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147 On the state of negotiations see Hart, *Elements of a Possible Implementation Agreement to UNCLOS for the Conservation and Sustainable,* IUCN 2008. See also *Use of Marine Biodiversity in Areas beyond National Jurisdiction,* IUCN 2008

148 Directive of the European Parliament and of the Council establishing a Framework for Community Action in the field of Marine Environmental Policy (Marine Strategy Framework Directive). Official Journal of the European Union L 164, 19-40, 25.6.2008.

149 The European Council (Heads of State and President of the Commission) endorsed the policy in its conclusions of 14 December 2007, Council doc. 16616//1/07 Rev. 1, para 58

150 Recital 34.

151 European Commission 2006. Commission staff working document: Annual Progress Report on the Implementation of the Northern Dimension Action Plan, SEC (2007) 791.

explore and improve conditions for gradually introducing Arctic commercial navigation, while promoting stricter safety and environmental standards as well as avoiding detrimental effects. The Commission calls upon Member States and the EC to defend the navigational rights and freedoms in the newly opened routes and areas—an objective following from the fact the EU needs to rely on these rules.

Relevant recent measures adopted by the EU in the field of maritime transportation include measures for maritime safety, environmental protection and the promotion of shipping. Recent research projects show an interest of the EU in shipping routes for European vessels in the Arctic. In order to reduce pollution from shipping, the EU passed several packages of acts in implementation of, and in addition to standards of the International Maritime Organisation (IMO),[152] and established the European Maritime Safety Agency (EMSA).[153] Safety and environmental measures under the Erika I and Erika II package[154] have already been adopted, and a third package comprising several instruments is currently being passed through the legislative procedure.[155] The measures include liability of carriers, strengthened port state control and a European surveillance and information system of European vessels.[156]

4.3.5 Fisheries

The waters in the European Arctic are an important source of fish for the European market. According to the European Environment Agency (EEA), about half of the fish consumed within the EU comes from the European Arctic.[157] The main EU policy framework for the management of fisheries is the **Common Fisheries Policy** (CFP).[158] The conservation of marine biological resources within the context of the CFP is one of the few areas in which the EC exercises exclusive competence.[159] After several reforms, most recently in 2002,[160] the

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[152] See <http://europa.eu/scadplus/leg/de/s13005.htm>

[153] Maritime Safety, Euractive, 28.06.2006.

[154] Following the accidents of the oil tankers “Erika” and “Prestige” in 1999 and 2002.

[155] The package went into conciliation procedure, where an agreement was reached on five legislative proposals in December 2008, Council press release 16939/08 of 9 December 2008.

[156] For instance, the EU is exploring space-based systems for automatic ship identification, cf. call for tenders MARE/2008/06 “Preparatory Action for assessment of the capacity of spaceborne Automatic Identification System receivers to support EU maritime policy”, <www.ec.europa.eu/fisheries/press_corner/calls/2008_06/specifications_en.doc>.

[157] Arctic Environment: European Perspectives – Why should Europe care?, Environmental Issue Report, EEA, 2004, page 20.

[158] Some of the problems concerning fishery in the Arctic region are also addressed through the Northern Dimension framework of the European Union’s external policy, cf. Northern Dimension Framework Document of 24.11.2006.

[159] See the section above on legal basis. The exclusive competence is not stipulated in the EC Treaty. It follows from the ECJ judgment in case 804/79 - Commission of the European Communities v UK , European Court reports 1981, p. 1045, para 17-18; and Article 102 Act of Accession 1972 . The Treaty of Lisbon would codify this case law in the new Art. 3 of the Treaty on the Functioning of the European Union.

[160] Cf. Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy, OJ L 358, 31.12.2002, p. 59.

CFP today aims at ensuring sustainable exploitation of resources. For instance, the ecosystem approach and limiting the effects of fisheries on the environment are part of the CFP regulation.[161] In June 2008, the Council adopted a Regulation on the protection of vulnerable marine ecosystems in the high seas from the adverse impacts of bottom fishing.[162] On the institutional side, the former DG Fish was restructured and renamed DG Mare in 2008 in order to highlight the integrated approach that the EC takes to maritime policy.[163]

Despite the CFP reform, EU fisheries policy remains one of the most heavily criticised EU policies from an environmental point of view.[164] One of the main criticisms is that the Fisheries Council sets quotas higher than those proposed by its scientific advisers.[165] In addition, a special report by the European Court of Auditors in 2007[166] found serious shortcomings in implementation and enforcement. In this respect the EU in June 2008 adopted a Regulation on illegal, unreported and unregulated fishing.[167]

The Commission's green paper on adaptation to climate change recommends taking into account the problems for the CFP arising from rising sea temperatures and changing distribution patterns of species.[168]

Based on its exclusive competence for these fisheries aspects, the EC also concludes international fisheries agreements with third countries or with other international

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161 Recent measures under the CFP in this respect include emergency measures closing the bluefin tuna fishery in the Mediterranean and Eastern Atlantic for the purse seine fleets, Commission Regulation (EC) No 530/2008 of 12 June 2008 establishing emergency measures as regards purse seiners fishing for bluefin tuna in the Atlantic Ocean, east of longitude 45 °W, and in the Mediterranean Sea, OJ L 155, 13.6.2008, p. 9, adopted pursuant to Article 7(1) of the CFP regulation. See also EU RAPID press release IP/08/937 of 13 June 2008.

162 Proposal for a Regulation on the protection of vulnerable marine ecosystems in the high seas from the adverse impacts of bottom fishing gears, COM(2007)605. The Council reached political agreement on the text on 23 June 2008 (Council Doc. C/08/169), but the Regulation was not yet formally adopted and published at the time of writing.

163 Euractive, EU revamps fisheries department in sustainability drive, 28.03.2008.

164 "EU fisheries management plans under NGO fire", Euractiv, 29 June 2007;„Fisheries aid deal blocked in Council", Euractiv, 24 May 2006; „EU closes bluefin tuna fishery early - time for more radical steps, WWF, 13 June 2008; „EU must close tuna fishery", WWF, 08 May 2007; „Close it or lose it: Bluefin tuna fishery ravaged by illegal fishing", WWF, 05 Jul 2006; „Greenpeace shuts down EU fisheries meeting", Greenpeace, 17 December 2007; „EU forces Sweden to overfish", Greenpeace, 11 February 2003; „Trawlermen cling on as oceans empty of fish - and the ecosystem is gasping -Europe is propping up an unsustainable industry in an extreme example of short-termism that our children will pay for", The Guardian, 8 July 2008; Cod fishing to continue amid conservation fears, The Guardian, 23 December 2004.

165 "Trawlermen cling on as oceans empty of fish - and the ecosystem is gasping", The Guardian, 8 July 2008.

166 Special Report on the control, inspection and sanction systems relating to the rules on conservation of Community fisheries resources, No 7/2007, (2007/C 317/01) of 28.12.2007.

167 Proposal for a Regulation establishing a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing (IUU), COM(2007)602. The Council reached political agreement on the text on 23 June 2008 (Council Doc. C/08/169), but the Regulation was not yet formally adopted and published at the time of writing.

168 Green Paper, Adapting to Climate Change in Europe, COM (2007) 354, p. 17.

organisations.[169] For instance, the EC ratified the Fish Stocks Agreement in 2003, a treaty also ratified by all States in the Arctic Council.[170] The EC is also member of several Regional Fisheries Organisations (RFO) and has concluded several bilateral fisheries agreements.

4.3.6 Offshore hydrocarbon activities

The EU has recently begun to address the increased potential for Arctic natural resources exploration and development and its geo-political implications. The "Climate Change and International Security" Paper of 2008 mentions the "increased accessibility of the enormous hydrocarbon resources in the Arctic region" and the potential consequences for European security interests (see above).[171]

Other recent key documents on energy policy do not show a specific EU policy on offshore hydrocarbon exploration and development.[172] The EU's current offshore interest is focused on renewable energy, in particular wind power,[173] following its ambitious renewable energy aims as stated in the energy and climate change package of January 2008.[174]

The Arctic Communication explicitly states that Arctic resources could contribute to European energy security. However, it predicts slow development due to harsh conditions and costs. It also advocates strict environmental standards taking into account the particular vulnerability of the Arctic and proposes to press for binding international standards. While the environmental commitment is ambitious, the intention to press for internationally binding standards may have to be reconciled with the governance objective of implementing the existing legal framework and rules rather than introducing new ones.[175]

In addition to the extraction of resources, carbon capture and storage (CCS) in the seabed is a potentially important future development. At the international level, UNCLOS provides only general and rudimentary provisions on the use of the seabed. OSPAR has started to address CCS by amending its Annex II and III and adopting decisions laying down minimum requirements before CCS activities can be carried out.[176] At EU level, the Integrated Maritime

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169 cf. http://ec.europa.eu/fisheries/cfp/external_relations_en.htm for examples.

170 Canada, Finland and Denmark ratified the agreement in 2003, whereas the U.S. had ratified the agreement already in 1996, Russia and Iceland followed one year later and Canada three years later, in 2003

171 Council Doc. 7249/08, p.6.

172 See Commission Green Paper to a new European Strategy for Energy, COM (2006) 105; Strategic Energy Review, COM (2007) 1; Action plan for an energy policy for Europe, Council Conclusions of 8/9 March 2007, 7224/1/07 REV 1 para. 36 and Annex I; Commission Communication "20 20 by 2020 - Europe's climate change opportunity", COM (2008) 30.

173 See „Commission launches consultation to prepare an EU Offshore Wind Energy Action Plan", EU RAPID press release IP/08/645 of 25 April 2008.

174 Rapid Press Release IP/08/80 of 23 January 2008; Commission Communication "20 20 by 2020 - Europe's climate change opportunity", COM(2008) 30.

175 COM (2008) 763, p. 10.

176 OSPAR Decision 2007/1 to Prohibit the Storage of Carbon Dioxide Streams in the Water Column or on the Sea-bed; OSPAR Decision 2007/2 to ensure environmentally safe storage of carbon dioxide streams in geological formations; OSPAR Guidelines for Risk Assessment and Management of Storage of CO2 Streams in Geological Formations; available at www.ospar.org.

Policy mentions CCS as essential to meet the Community's objectives on climate change and also as providing significant economic opportunities.[177] In this context, it is interesting to note that the Commission's proposal for a directive on CCS[178] prohibits the storage of CO_2 in the water column as well as in geological formations extending beyond the territory of the Member States, their exclusive economic zones and on their continental shelves.[179]

Although the EU's climate change and security paper stresses that the EU's response will be conditioned by the impact of climate change on Europe itself, pursuing hydrocarbon resources may irritate Arctic States, depending on the extent to which the EU is seen as raising an interest in the quest for natural resources. There might also the possibility that the EU's environmental ambitions in this respect will be met with reluctance. Regarding areas beyond national jurisdiction, a likely option for the EU is to pursue international consensus on the implementation of UNCLOS and its implementing agreement that deals with the exploitation of the seabed resources (the 1994 Part XI Deep-Sea Mining Agreement).

4.3.7 Indigenous peoples

The development of European Union policy on Indigenous Peoples is relatively recent.[180] Within the EU area, the Saami people in Finland and Sweden[181] are the only Arctic indigenous people. EC law includes some fundamental freedoms that are directly applicable to individuals, including the principle of non-discrimination.[182]

Related risk management framework was also adopted under the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972 London Convention).

177 Action Plan to the IMP, SEC (2007) 1278, para 6.3

178 Proposal for a Directive of the European Parliament and of the Council on the geological storage of carbon dioxide and amending Council Directives 85/337/EEC, 96/61/EC, Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC and Regulation (EC) No 1013/2006, COM (2008) 18 of 23 January 2008.

179 The European Parliament considered exceptions to this prohibition. At first reading at the committee stage, the draft report by the European Parliament's committee responsible permitted such storage provided that it is carried out in a manner consistent with international agreements, EP doc PE407.716 of 5 June 2008. Another option would be to deny credits under the ETS for such storage, thus providing little incentive to store carbon dioxide in this way, see EU press release MEMO/08/36 of 23 January 2008. The final committee report contained an exception to the prohibition where a level of protection comparable to that provided by the directive is guaranteed for the entire storage complex, EP doc. A6-0414/2008, amendment 31. However, the position eventually adopted by the EP at first reading did not include exceptions and kept the prohibition proposed by the Commission, EP doc T6-0612/2008 of 17 December 2008,

180 Statement by the Commission on its homepage on indigenous peoples. http://ec.europa.eu/external_relations/human_rights/ip/.

181 Saami peoples live in Norway, Sweden, Finland and Russia, see http://boreale.konto.itv.se/samieng.htm.

182 Some fundamental rights are provided by the EC Treaty, some by legislation, e.g. Council Directive 2000/43/EC of 29 June 2000 implementing the principle of equal treatment between persons irrespective of racial or ethnic origin, OJ L 180, p. 22. In addition, the ECJ has established that a set of fundamental rights and freedoms, similar to the European Convention on Human Rights, is part of EC law and applies to the EC as well as the Member States when implementing EC law, see, for instance, in case C-292/97 - Karlsson, judgment of 13.04.2000, para 37.

The Council has also provided directions on mainstreaming concern for indigenous peoples in EU policies[183] and monitors implementation.[184] Human rights and indigenous peoples are part of the external policy of the EU and indigenous peoples' issues are included in the Northern Dimension.[185] However, the EU has no specific policy on minorities or indigenous people with respect to the Arctic in general.

[183] Council conclusions of 18.11.2002 on indigenous peoples, not published in the OJ, summary at http://europa.eu/scadplus/leg/en/lvb/r12006.htm. The resolution followed a review by the Commission, Report from the Commission to the Council of 11.06.2002, Review of progress of working with indigenous peoples COM(2002) 291 - not published in the Official Journal. The draft resolution 13466/02 of 11.11.2002 noted that "there is no common EU position on the use of term indigenous peoples. Some Member States are of the view that indigenous peoples are not to be regarded as having the right of self-determination for the purposes of Article 1 of the ICCPR and the ICESCR, and that use of the term does not imply that indigenous people or peoples are entitled to exercise collective rights."

[184] See European Commission, Report on Stocktaking of main activities related to indigenous peoples conducted in 2006 by Commission services in Headquarters, ER/B/1/PA D(2007)

[185] See Political Declaration by the EU, Iceland, Norway, and Russia on adopting the Northern Dimension policy Framework Document, 24 November 2006, http://ec.europa.eu/external_relations/north_dim/doc/pol_dec_1106.pdf

5 Conclusions: Key Challenges and Opportunities

The U.S. and the EU share many common interests and concerns regarding the marine Arctic, mainly in shipping, fisheries and in their current focus on energy security. Given these parallels, there is likely to be much common ground regarding what types of domestic and international policies make sense. At the same time, significant differences in jurisdictional aspects point to a possible difference of opinion across the Atlantic regarding the desired approaches to marine Arctic governance. In this section, we provide a comparative analysis of key opportunities and challenges for transatlantic co-operation on climate adaptation in the marine Arctic. Both the EU and the U.S. released Arctic policy statements in 2008. These statements officially clarify their respective positions, and provide an Arctic policy context that is broader than the climate-adaptation issues and marine-specific policies considered in Arctic TRANSFORM. The policy statements were remarkable in their level of agreement, with clear areas for potential policy co-operation. Areas of agreement include the following:

- Both affirmed their commitment to the extensive law of the sea framework already in place.
- Both indicated a preference for working within existing institutions and frameworks rather than creating a new overarching governance regime, though they both indicated a willingness to modify some of these frameworks to fit the unique conditions in the Arctic.
- Both recognised the threats posed to indigenous communities by rapid environmental change and poorly regulated economic expansion, and supported efforts to include indigenous peoples in the decisions that affect them.
- Both indicated a commitment to greater co-operation in scientific research and monitoring.
- Both highlighted the need for greater coordination on matters of safety and emergency response.

The EU and U.S. also appear to agree that marine Arctic governance should be informed by the principles of ecosystem-based management. The Arctic Communication states that “holistic, ecosystem-based management of human activities” should complement any efforts to mitigate and adapt to the changes in the Arctic caused by climate change. Similarly, the U.S. Presidential Directive states that the relevant executive agencies should “pursue marine ecosystem-based management in the Arctic.” Both the EU and the U.S. have experience with ecosystem-based management regimes within their own territorial waters and could push for their wider application in transboundary Arctic marine governance.

For the EU, Arctic policy in general as well as specific environmental and energy security concerns have so far been mainly linked to its relations with Russia. Its interest in the whole Arctic region – beyond the domain of research – is relatively new and related to a significant policy concern about the impacts of climate change and its recent adoption of an overall integrated maritime policy that aims to ensure that all EU policies acting within a given sea basin are coherent and contribute towards sustainable development. The Commission has

proposed a strategy to ensure that its different policies – on fishing, the environment, and transport – are coherent and that the sum of the parts can contribute towards a future for the Arctic consistent with its overall aim of sustainable growth and mitigation of climate change. In order to ensure that this is indeed the case it needs to increase its communication with key Arctic stakeholders. To help achieve this aim, the EU has applied to join the Arctic Council as a permanent observer.

In contrast to the EU, the U.S. is a member of the Arctic Council and an Arctic coastal state and thereby entitled to the associated sovereignty, sovereign rights and jurisdiction in its respective parts of the Arctic marine area. The State of Alaska is now engaged in a policy development process regarding climate adaptation, which is a truly urgent issue for some Alaskan communities and is now widely recognised in the state as an important consideration for government, affecting a wide range of public-sector responsibilities and activities. The federal government is not yet engaged in Arctic adaptation issues to the same degree, though policy initiatives are now underway regarding climate adaptation generally. The State of Alaska and its various stakeholders have significant influence over U.S. Arctic policy. For this reason, it makes sense to include State of Alaska stakeholders in transatlantic discussions on climate adaptation, as it would increase the depth of knowledge and experience on the issue and bring in a governmental entity with significant interests at stake.

5.1 International governance

Despite the prominent roles of the UNCLOS and the Arctic Council, Arctic marine governance at present is a patchwork of rules, measures and polices at various levels and institutions. A key question is how better co-ordination among the current sectoral and regional approaches can be achieved to address future governance needs. A second question is whether even better co-ordination among these approaches will suffice to meet these needs, or whether a more comprehensive approach is required. In particular, it is uncertain whether the existing governance structures can facilitate international policy leadership effectively geared to dealing with climate adaptation. With regard to institutions, the Arctic Council has obvious achievements and merits, but its future role on climate change issues will depend on whether its members agree to expand its mandate from a current focus on sustainable development and environmental protection and on whether it will allow meaningful participation by non-Arctic states. There are limits to what the Arctic Council can achieve without strengthening its institutional structure, funding mechanisms, legal status and mandate.

Core challenges within the current international governance framework stem mainly from the fact that the international conventions that currently apply to the Arctic are generally not specific to Arctic conditions. Another key issue is that not all Arctic states are parties to these most important treaties—most importantly U.S. non-ratification of the UNCLOS and the Biodiversity Convention. Many international agreements relevant to the marine Arctic provide only very general frameworks. This has been a key factor in leading the littoral states of most of the other semi-enclosed and other sea areas to adopt their own regional standards on the basis of the UNCLOS or regional seas programme. The establishment of an Arctic regional

seas agreement, perhaps modeled on OSPAR Convention or the Helsinki Convention, might be a possible approach for improving governance of the Arctic Ocean. It is also important to note that among the international treaties, only the Biodiversity Convention accords any special status to the Arctic marine region's indigenous peoples.

With regard to international instruments, the idea of a comprehensive, stand-alone and binding Arctic legal governance arrangement[186] has run into significant political opposition from the Arctic Ocean coastal states[187] and is not pursued by the Commission in its Arctic Communication adopted on 20 November 2008. A frequent key argument used to support the idea of an Arctic Treaty is the Antarctic Treaty regime, which is regarded by some as a successful model for international governance of polar issues.[188] However, the Antarctic is quite different from the Arctic, as it is mostly land mass, not a marine area and, more importantly, unlike the Antarctic there is no fundamental disagreement on sovereignty over territory in the Arctic. Further, several regimes are already in place covering Arctic areas or activities, as well as international waters generally. In view of the difficulties of achieving a new binding instrument, it could be argued that effort is better spent in revising the current patchwork into an integrated and *effective* patchwork of policies capable of addressing climate adaptation issues. To the extent such an approach is inadequate or unmanageable, however, a more comprehensive and binding instrument would become necessary.

Whatever the forum, exercising policy leadership for a coherent Arctic policy may be an appropriate role for the EU as a means of representing European interests in the marine Arctic. Yet such an increase in EU involvement must not impinge on the coastal states' sovereignty, sovereign rights and jurisdiction. The EU could aim at more active participation in the Arctic Council, depending on the latter's potential future role. However, this is a sensitive issue, as some states are unwilling to change the so far successful structure of the Arctic Council. The EU is becoming more active at a time when international concerns and sensitivity about energy supply are high. Though climate change in the Arctic is an issue of global concern, the five Arctic coastal states would not accept having the region as a whole viewed (and governed) as a global commons. From a U.S. perspective, the basis for the EU defining and pursuing its interests in the Arctic may not be as self-evident as it may seem to the EU. The EU must move carefully in order to avoid causing concern about its motives.

On the other hand, there is also concern about recent initiatives by Arctic Ocean coastal states, including the U.S., acting without other Arctic states and key global players. This incipient form of co-operation may over time challenge the Arctic Council in that the other three members of the Council have not been invited to recent high-level meetings of the Arctic Ocean coastal states. It may be that with the melting ice, the Arctic Ocean coastal

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186 Proposed by the European Parliament's resolution of 9 October 2008on Arctic governance; Nowlan IUCN 2001; Nordregio 4/2007, p. 10. A protocol under UNCLOS for the Polar Ocean has also been suggested in order to address concerns about new shipping routes, Jacqueline McGlade, Executive Director new fishing grounds and gas and oil exploration, speech of the EEA, at Arctic Frontiers Conference, Tromsø, 23 January 2007, http://www.eea.europa.eu/pressroom/speeches/23-01-2007.

187 See, for instance the Ilulissat Declaration of the five Arctic coastal states of May 2008.

188 However, the Antarctic regime is complex and not free from criticism, in particular with regard to sharing resources, see Birnie/Boyle, International Law and the Environment, 2nd ed., 2002, p. 144 and 214. Further, the territorial claims by seven states are merely put on hold, but still exist.

state co-operation will grow stronger, given that there is need to take stronger policy actions in higher stake policy areas (fisheries, continental-shelf delimitation) than those that can be pursued in the Arctic Council with respect to the Arctic marine area.

5.2 Fisheries

Even though they have different entitlements to fisheries resources in the Arctic marine area, the U.S. and EU share a common interest in avoiding over-exploitation of target species and impacts on non-target species. Fisheries management is typically exercised at the regional rather than at the global level. It is significant that a large part of the Arctic marine area is not covered by regional fisheries instruments (with the exception of two agreements covering only tuna, tuna-like and anadromous species). More research is needed on how the spatial distribution of fish stocks may change due to climate change. Climate change may bring the current regional fisheries management regimes and the allocation of fishing opportunities out of sync with changing and migrating fish stocks; a similar challenge occurs in defining and networking marine protected areas. Renegotiating allocations of fishing opportunities is likely to be a difficult process.

The U.S. and EU are not similarly situated regarding Arctic fisheries. The U.S., as a coastal state, has a portion of the Arctic Ocean subject to its fisheries jurisdiction. The U.S. also participates in a number of regional fisheries management organisations (RFMOs) and arrangements that regulate fisheries in the Bering Sea, North Pacific and North Atlantic. The EU is not a coastal state of the Arctic Ocean but does participate in a number of North Atlantic fisheries management organisations. The EU may also have a future interest in having its fishing vessels operate in more northerly areas, either in waters under the jurisdiction of Arctic coastal states or in areas of the Arctic Ocean beyond national jurisdiction.

An opportunity for transatlantic co-operation has emerged from the U.S. Senate's Joint Resolution (SJ RES. No. 17 of 2007), which has been signed into law and directs the U.S. to initiate international discussions and begin steps toward negotiating an agreement for managing the Arctic Ocean's transboundary fish stocks. The EU position is that "in principle, extending the mandate of existing management organisations such as NEACF is preferable to creating new ones. Until a conservation and management regime is in place for the areas not yet covered by such a regime, no new fisheries should commence"[189].

Although regional fisheries management regimes apply to different parts of the Arctic marine area, a comparative analysis of the effectiveness of the respective fisheries policies would be useful. Harmonising policies and measures on illegal, unreported and unregulated (IUU) fishing is also a clear opportunity for transatlantic co-operation. Other issues warranting co-operative discussion include: 1) combined efforts on Arctic fisheries research; 2) improved domestic regulations and impact-assessment procedures; 3) the prospect for new bilateral

[189] Communication from The Commission to the European Parliament and the Council "The European Union and the Arctic Region" COM (2008) 763 of 20 November 2008, p.8

fishing agreements[190]; 4) new or modified RFMOs or arrangements; and 5) shortcomings in international fisheries instruments generally.

5.3 Shipping

Shipping activity in the marine Arctic remains primarily intra-Arctic, with truly trans-Arctic shipping routes still some way off from commercially significant utilisation. If Arctic sea-borne tourism continues to grow in popularity, tourism safety has to be considered in addition to, and perhaps with more urgency than merchant shipping. A comprehensive ships' routeing system or other navigational measures could be negotiated within the International Maritime Organization (IMO), which would require the consent of both Arctic Ocean coastal states and non-Arctic states with significant shipping interests. The availability of search and rescue services could be an important factor in deciding on the location of the main routes within this system. The technical level of co-ordinating shipping at this level is a good starting point for increased transatlantic co-operation, as political considerations should play a minor role.

Oil spills would have particularly severe environmental consequences in Arctic conditions and noise from increased ship traffic may also have effects on marine living resources (especially mammals). As this to a large extent depends on the area affected, it could be an argument for agreed routes as a complementary measure besides marine protected areas. Subsistence activities of indigenous peoples will also need increased levels of protection from oil spills and marine pollution. For safety requirements, the measures included in the EU's legislative packages "Erika I - III" could provide a model.

Other specific issues warranting co-operative discussion include: 1) aspects not currently part of the international legal framework (e.g. no special IMO discharge, emission or ballast water exchange standards for the Arctic marine area; no comprehensive mandatory or voluntary IMO ships' routeing system for the Arctic marine area; and no legally binding fuel content and ballast water treatment standards for the Arctic marine area); 2) absence of regional agreements on search and rescue, as well as pollution response; and 3) regional approaches to compliance and enforcement of shipping regulations in the Arctic.

The completion of the Arctic Council's Arctic Marine Shipping Assessment (expected in 2009) will shed more light on marine shipping issues.

5.4 Offshore hydrocarbon activities

Both the U.S. and EU have significant energy security interests regarding Arctic offshore hydrocarbon activities. The key difference is that the U.S. is a coastal state entitled to significant potential reserves off the coast of Alaska (perhaps 30% of total Arctic reserves).

Public opinion in both the EU and the US is very sensitive to the environmental risks of petroleum exploration and development. This might be an area for exchange of good practice.

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[190] The most important bilateral discussions seem to be Canada - United States (Beaufort Sea), Canada – Greenland, and Russian Federation - United States (Chukchi Sea).

Apart from the development of natural resources, carbon capture and storage (CCS) in geological formations of the Arctic seabed might become a future environmental concern. Although this technology might take some more time to be used at a larger scale, its environmental impacts and the current regulatory framework need to be carefully assessed.[191]

5.5 Indigenous peoples

Indigenous communities will be among the most affected by climate change. For this reason, their participation in governance on these issues is essential. The full participation of indigenous peoples is commonly acknowledged as one of the key ingredients of the Arctic Council's work and acceptance. Any future governance option should take this into account. In particular, the participation of indigenous peoples should be considered if a different key policy forum for the Arctic emerges. The EU Treaty already takes into account the special rights of Saami people.

The EU could learn from U.S. experience with indigenous peoples, especially with respect to co-management of resource and environmental issues, which could be valuable input for EU Arctic policy. The State of Alaska's efforts to identify communities especially impacted by climate change and develop near- and long-term policy responses are useful to examine and discuss in a transatlantic context.

5.6 Environmental Outlook

Arctic governance obviously extends beyond EU-U.S. relations, but transatlantic co-operation is needed, not least because of the region's connection with climate-change mitigation and adaptation. In contrast to the U.S., the EU already has an ambitious climate policy it can use as a background and driving force for its Arctic policy. The U.S. has first-hand experience in managing Arctic marine areas. A joint effort at establishing marine protected areas could be one means of achieving an approach to environmental governance that represents an integrated, cross-sectoral ecosystem-based management of the Arctic marine area. [192]

Over the history of modern environmental policy, both the U.S. and European countries have often been front-runners in developing certain environmental policies and instruments. Some of their current policies and instruments could serve as models for an Arctic policy. There is a broader need for political leadership capable of addressing adaptation challenges in the marine Arctic.

The marine Arctic is of global importance and affected by global activities. Defining appropriate governance in the region must also address the balancing of the rights and

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191 Currently, UNCLOS does provide general and rudimentary provisions on the use of the seabed. OSPAR has started to address CCS by amending its Annex II and III and adopting decisions laying down minimum requirements before CCS activities can be carried out.

192 See the Arctic Council's initiative "Circumpolar Protected Areas Network (CPAN)". http://arcticportal.org/en/caff/cpan, Integrated Ocean Management Project and the Arctic Marine Strategic Plan http://arctic-council.org/working_group/pame.

interests of Arctic states with other states and the interests of the international community generally. In this context, addressing the unique challenges facing the marine Arctic could be an opportunity for both the EU and U.S. to revitalise their co-operation and show combined environmental leadership.

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Annex A: Key U.S. Institutions and Laws

Table A-1: Key U.S. Institutions

Institution	Responsibilities
State Institutions	
Alaska Department of Fish and Game www.adfg.state.ak.us/	Responsible for managing the use and development of fish, game, and aquatic plant resources of the state. Also co-ordinates the state's response to changes in federal ocean policy.
Alaska Department of Natural Resources www.dnr.state.ak.us/	The Alaskan department responsible for managing all state-owned land, water and natural resources, except for fish and game. The state owns approximately 65 million acres of tidelands, shorelands, and submerged lands and manages 34,000 miles of coastline. The state also owns the freshwater resources of the state, a resource that equals about 40% of the entire nation's fresh water.
Alaska Oil and Gas Conservation Commission www.aogcc.alaska.gov	Oversees development and production of oil and gas drilling on private and state lands and waters. Their mission is to “ensure conservation practices, and increase ultimate recovery, while protecting health, safety, the environment, and property rights.”
Federal Institutions	
Energy Information Administration www.eia.doe.gov	The statistical agency of the U.S. Department of Energy responsible for providing energy forecasts and analyses. They have conducted a number of studies regarding oil extraction in Alaska’s North Slope. The most recent study was released in May 2008.
Environmental Protection Agency www.epa.gov	The EPA’s mission is to protect human health and the environment. It is also responsible for issuing environmental permits that allow for hydrocarbon exploration and extraction.
Interagency Arctic Research Policy Committee www.nsf.gov/od/opp/arctic/iarpc/start.jsp	The IARPC was established by the Arctic Research and Policy Act of 1984. It includes representatives from 15 different federal agencies and is responsible for issuing the five-year plan to implement national Arctic research policy.

National Oceanic and Atmospheric Agency http://www.arctic.noaa.gov/	The branch of the U.S. Department of Commerce whose mission is "to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs." The NOAA Marine Fisheries Service is responsible for the management, conservation and protection of living marine resources within the United States' Exclusive Economic Zone.
Office of Polar Programs www.nsf.gov	Located within the National Science Foundation, OPP is responsible for managing funds for basic research and operational support in the polar regions.
National Snow and Ice Data Center www.nsidc.org	NSIDC is part of the Cooperative Institute for Research in Environmental Sciences at the University of Colorado at Boulder. It archives and makes available data pertaining to ice, glaciers, frozen ground, and climate interactions that make up Earth's cryosphere.
U.S. Arctic Research Commission www.arctic.gov	The USARC was established by the Arctic Research and Policy Act of 1984. Its primary duty is to make Arctic research policy recommendations and support interagency Arctic research collaboration.
U.S. Department of the Interior (DOI) www.doi.gov	The U.S. Department responsible for protecting and developing natural, cultural and heritage resources. Five of the eight bureaus within the DOI directly influence activities in Arctic Alaska.
U.S. DOI Bureau of Indian Affairs www.doi.gov/bia/	The bureau within the DOI that is responsible for the administration and management of 66 million acres of land held in trust by the United States for American Indian, Indian tribes, and Alaska Natives.
U.S. DOI Bureau of Land Management www.blm.gov	Located within the DOI, this bureau is responsible for administering nearly 80 million acres of federal public lands in Alaska. Some of their activities include transferring lands to the state of Alaska and the Native Regional Corporations and for planning the development of the National Petroleum Reserve-Alaska.
U.S. DOI Fish and Wildlife Service www.fws.gov	The bureau within the DOI responsible for conserving, protecting, and enhancing fish, wildlife, and plants and their habitats. It is the primary agency responsible for managing the mammals listed under the Marine Mammal Protection Act. It is also the primary agency managing the Endangered Species Act.

U.S. DOI U.S. Geological Survey www.usgs.gov	Located within the DOI, the USGS responsible for collecting, monitoring, analyzing, and providing scientific understanding about natural resource conditions, issues, and problems. Activities in Alaska include, but are not limited to, researching marine mammals and fisheries, assessing mineral resources and identifying natural and emerging hazards.
U.S. DOI Minerals Management Service www.mms.gov	The bureau in the U.S. Department of the Interior (DOI) responsible for evaluating and leasing lands containing natural gas, oil and other mineral resources on the outer continental shelf (OCS). MMS collects and disburses more than $8 billion per year in mineral resource revenues. The Alaska OCS region encompasses 600 million acres and more than 6,000 miles of coastline.
U.S. Department of State www.state.gov	The State Department is the lead foreign affairs agency of the U.S. government, led by the U.S. Secretary of State, and responsible for developing and implementing the foreign policy of the Executive Branch.

Table A-2: Key U.S. Laws

Law	**Description**
State Laws	
Alaska Coastal Management Act (1977)	Created the Alaska Coastal Management Program. The ACMA gave Alaskans the opportunity to govern the use of their coastal resources, especially fish, oil, gas, timber, mining and tourism.
Alaska Statutes, Title 16: Fish and Game Code	Regulates hunting and fishing activities throughout Alaska, including subsistence use.
Alaska Statutes, Title 41: Natural Resources	Empowers the Department of Natural Resources to manage all state parks including state marine parks. (At the time of writing, Alaska had not established any marine parks in the Arctic.) The statute also establishes the Alaska Natural Gas Development Authority for the purpose of bringing natural gas from the North Slope to market.
Federal Laws	
Outer Continental Shelf Lands Act (1953)	Established environmental protection measures, including environmental impact assessments and an oil spill liability fund. Gave the Secretary of the Interior the responsibility for the administration of mineral exploration and development of the OCS.

Alaska Statehood Act (1958)	Admitted Alaska as a state and reserved over a quarter of the land for the state.
Anadromous Fish Conservation Act (1965)	Authorised the Secretary of the Interior to enter into co-management agreements with the states for the conservation and development of anadromous fish resources that could be depleted.
Alaska Native Claims Settlement Act (1971)	Settled the land claims of indigenous peoples in Alaska and extinguished aboriginal rights to the land. The Act also established a system of Native corporations, designed to manage the lands and money awarded.
Clean Air Act (1970)	Established minimum air quality standards and provided enforcement authority. Amendments in 1990 created the permit programmes requirement for activities that release regulated pollutants into the air. The clean air permit is required for offshore hydrocarbon exploration and extraction.
Clean Water Act (1972)	Regulates the discharge of pollution into waterways and also finances municipal wastewater treatment facilities. The Clean Water Act (CWA) requires states to develop a programme to monitor the quality of its surface and groundwaters.
Coastal Zone Management Act (1972)	Directs states and Native American tribes to preserve, protect, develop, restore and enhance the coastal resources of the U.S. as well as provides federal assistance to states to develop wise use of their land and water resources. Coastal states are given the responsibility for the development of management programmes and special area management programmes for areas deemed to be of special importance. State participation is voluntary, but Alaska enacted the programme in 1979.
Marine Mammal Protection Act (1972)	Requires the federal government to conserve marine mammals. MMPA furthermore bans the 'taking' of marine mammals by U.S. citizens in U.S. waters and in high seas, with certain exceptions for indigenous subsistence purposes.
Endangered Species Act (1973)	Requires the federal government to conserve endangered species.
Magnuson Fishery Conservation and Management Act (1976)	Established the conservation and management framework for fisheries on the coasts of the U.S. The purpose of the Act is to prevent overfishing and to rebuild overfished stocks.

Alaska National Interests Land Conservation Act (1980)	Designated additional lands for the National Parks, National Wildlife Refuges, Wild and Scenic Rivers, National Wilderness Preservation and National Forest Systems. ANILCA also contains several provisions regarding the use and development of federal land in Alaska, particularly for mining, logging and oil and gas. Additionally, the Act established a preference for rural residents in the harvesting of subsistence hunting and fishing resources.
Fish and Wildlife Conservation Act (Nongame Act) (1980)	Encourages federal departments to take action to conserve non-game fish and wildlife along with their habitats (not including marine mammals), and furthermore provides financial and technical assistance to states in their inventories and conservation plans. Alaska's nongame programme has been in operation since 2002.
Arctic Research and Policy Act (1984)	Established a framework for prioritising and co-ordinating research in the Arctic concerning natural resources and materials, physical, biological and health sciences, and the social and behavioural sciences.
Ocean Dumping Act (1988)	Regulates the disposal and dumping of all materials within U.S. jurisdiction and prohibits the dumping of material that could endanger human health or the state of the marine environment.
Coastal Wetlands Planning, Protection and Restoration Act (1990)	Provides federal financial assistance to states for coastal wetlands conservation measures.
Oil Pollution Act (1990)	Delegated the responsibility of preventing and responding to catastrophic oil spills to the EPA. The Act furthermore requires oil-storage facilities and vessels to develop and submit plans to the federal government as to how they would respond to a large oil spill.
Marine Mineral Resources Research Act (1996)	Promotes research, identification, assessment, and exploration of marine mineral resources through grants, contracts and co-operative agreements.
U.S. Arctic Region Policy (2009)	Establishes the policy of the U.S. with respect to the Arctic region and directs related implementation actions. Published as National Security Presidential Directive 66 (NSPD-66), it is a form of executive order that has the full force and effect of law.

Annex B: U.S. Research Programmes and Funding

The United States federal government has been studying the Arctic long before the terms "melting glaciers" or "climate change" entered into the vernacular. Institutions providing the federal government with analysis on matters of science and technology research needs, environmental quality and natural resources in the Arctic have been in existence as early as 1958 when the Polar Research Board was established.[193] In the 1980s, Congress recognised that federal Arctic research was too fragmented and uncoordinated, and that this led to a duplication of research in some areas, and a lack of research in others. In response, Congress passed the **Arctic Research and Policy Act** in 1984. The act pointed out the strategic importance of the Arctic region for national security, as it was the only common border between the U.S. and the Soviet Union. The act also highlighted the potential for onshore and offshore oil and gas recovery and the influence of Arctic conditions on global climate patterns, both of which are issues that persist today.[194]

Arctic Research and Policy Act and Arctic Research Co-ordination

The Arctic Research and Policy Act set the framework for interagency coordination on scientific research in the Arctic. The instruments established by the act to identify national policy, priorities and goals in the Arctic include the **U.S. Arctic Research Commission** (USARC) and the **Interagency Arctic Research Policy Committee** (IARPC). Furthermore, the National Science Foundation was designated as the lead agency responsible for implementing Arctic research policy.

The Research Commission is composed of seven members appointed by the President and includes individuals from academic or research institutions, the indigenous community and private industry involved in Arctic resource development. The Director of the National Science Foundation serves as a non-voting, *ex officio* member to the Commission. Primary responsibilities of the Commission are to work with the IARPC and make recommendations for Arctic research and research policy.[195]

The Interagency Arctic Research Policy Committee (IARPC) is comprised of representatives from at least ten federal agencies and is charged with developing a national Arctic research policy and a five-year implementation plan. The policies set by the IARPC guide federal agencies in developing Arctic research programmes and facilitate research co-operation among federal, state and local governments. In addition to setting national research policies, the Committee also surveys Arctic research by federal, state and local agencies, universities, and other public and private institutions to determine future Arctic research priorities. The

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193 Polar Research Board, online at <http://dels.nas.edu/prb/mission.shtml> (viewed on 28.07.2008). The Polar Research Board is part of the National Academies and was established to provide independent scientific guidance to federal agencies and the nation on science issues in the Polar Regions.

194 Arctic Research and Policy Act of 1984, online at <http://www.nsf.gov/od/opp/arctic/iarpc/arc_res_pol_act.jsp> (viewed on 28.07.2008).

195 Ibid.

results of the IARPC's survey, which include summaries of current and planned projects by the U.S. government and other institutions, are presented in the *Arctic Research of the United States,* a journal published by the NSF.[196]

Current goals

The last *Report on Goals and Objectives* for U.S. research in the Arctic was released by the USARC in 2007. The report suggested that Environmental Change of the Arctic Ocean and Bering Sea; Arctic Human Health; Civil Infrastructure; Natural Resource Assessment and Earth Science; and Indigenous Language, Identity and Culture be included in the next five-year plan as research priorities. USARC also expressed the need to renew and strengthen scientific research programmes in the Arctic. They identified a number of areas that require attention in order for the U.S. to maintain a competitive lead in Arctic research. Among those areas include cataloguing and expanding Arctic research infrastructure and engaging Arctic residents, particularly indigenous peoples. Budgeting issues was cited as a major challenge to accomplishing U.S. research goals.[197]

The five-year U.S. *Arctic Research Plan* is the IARPC's response to the USARC's *Report on Goals and Objectives.* The current plan covers the period from 2006-2010 and was revised in 2007. The plan includes two broad focus areas that outline the areas for inter-agency co-operation and categorises the objectives of federal agencies.[198] All of the USARC research priority recommendations were all incorporated into the IARPC's five-year plan; however, the Indigenous Language, Identity and Culture research recommendation was de-emphasised and broadened into the Social Sciences category.

Key Research and Funding

The Division of Arctic Sciences (ARC), located within the Office of Polar Programs (OPP) (itself an office within the National Science Foundation), manages the NSF funds for basic research and operational support in the Arctic. Funding for the ARC is included in the OPP budget and its share of the budget has been increasing steadily over the past few years. If the OPP's budget request is approved for 2009, ARC's funding will have increased by about 40% over the FY 2006 budget. Additionally, funds for the USARC are provided by Congress in the National Science Foundation budget.

Overall U.S. agency Arctic funding is currently around $320 million a year. A review of funding information showed that there has been an increase by about 30% since 2000, but there are also inter-year fluctuations. Nearly two-thirds of this amount is spent by the NSF, the Department of the Interior and the Department of Health & Human Services. A large part of the funds are awarded to U.S. universities and as co-operative agreements to support

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196 NSF: IARPC, online at <http://www.nsf.gov/od/opp/arctic/iarpc/start.jsp> (viewed on 28 July 2008).

197 USARC, *Report on Goals and Objectives for Arctic Research 2007*, online at <www.arctic.gov/files/goals2007.pdf> (viewed 30 July 2008).

198 *Arctic Research in the United States* journal (2006), online at <http://www.nsf.gov/od/opp/arctic/arctrsch/start.jsp> (viewed 29 July 2008).

contractors and the U.S. military. Since 2001, there have been over $420 million in grants awarded to over 500 projects within the ARC programmes.

Several of the projects focus on climate change and refer to ecosystems, but only few projects consider human adaptation to climate change or marine ecosystems from a social sciences point of view. Moreover, several projects cover ethnographic aspects, researching Inuit-populations or historical aspects, treating earlier populations and their adaptation to climate change. There are hardly any projects funded which are dealing with policy options in the context of climate change adaptation and/or marine ecosystems. The vast majority of the projects deal with environmental change in the Arctic from a natural sciences point of view.

In addition to the programmes administered under the NSF, there are a number of other Arctic research initiatives in operation. One notable programme is the **Study of Environmental Arctic Change (SEARCH)**, which was started as an initiative in the mid-1990s by a group of scientists to track and understand changes in the Arctic environment through measurement, data analysis, and modelling. The project has since expanded into an interagency effort with a growing international component.

Other Arctic programmes are included in Box C-1 and C-2 below. Box C-1 is a summary of the National Science Foundation's Arctic programmes. Box C-2 includes other programmes not directly funded by the NSF.

Box B-1: Summary of NSF Arctic programmes

Arctic Natural Sciences Program (ANS): ANS is a programme under the Division of Arctic Sciences of the National Science Foundation. The programme supports research in glaciology and in the atmospheric, biological, earth, and ocean sciences. Its support of Arctic research is coordinated with the Directorates for Geosciences, Mathematical and Physical Sciences, Social and Behavioural, and Biological Sciences. Special interest areas include marine and terrestrial ecosystems, Arctic atmospheric and oceanic dynamics and climatology, and Arctic geological and glaciological processes.
Link:
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13424&org=NSF&sel_org=NSF&from=fund.

Arctic Research and Education Program: Supports activities that bridge research and education. Most common awards are made as supplements to research grants or as small grants.
Link:
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13448&org=NSF&sel_org=NSF&from=fund.

Arctic Research Support and Logistics Program (RSL): The Arctic Research and Education Program operates under the Division of Arctic Sciences of the National Science Foundation. Supports the field component of research projects funded through NSF. Examples of current awards are for the Arctic Logistics Contractor, VECO Polar Resources; base support of the Arctic Research Consortium of the United States (ARCUS)[199]; Toolik Field Station; the Barrow Arctic Science Consortium (BASC)[200]; procurement and maintenance of

[199] See <http://www.arcus.org>.

[200] See <http://www.arcticscience.org/>.

instrumentation on the USCGC *Healy;* and the development of a digital elevation model of the Kuparuk Watershed in northern Alaska.
Link: http://www.nsf.gov/od/opp/arctic/res_log_sup.jsp.

Arctic Social Sciences Program (ASSP): Encompasses all social sciences supported by NSF. (i.e., anthropology, archaeology, economics, geography, linguistics, political science, psychology, science and technology studies, sociology, traditional knowledge and related subjects). Areas of particular interest include culture and environment, resources and economic change, development of social and political institutions, ethnic (cultural) and regional identities, and knowledge systems.
Link: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13425&org=ARC.

Arctic System Science (ARCSS) Program: Studies changes in the Arctic system and the implications on the future.
Link: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13426&org=ARC.

Synthesis of Arctic System Science: Works to understand the behaviour of the Arctic system and its role in the global system and society. Currently funded, but no longer receiving proposals.
Link: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13462&org=ARC&from=home.

Study of the Northern Alaska Coastal System (SNACS): Research is focused on the Arctic coastal zone of Alaska. An emphasis is placed on how coastal ecosystems respond to changes originating from outside sources. Currently Funded, but No Longer Receiving Proposals.
Link: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12758&org=ARC&from=home.

Arctic Observing Network (AON): Part of the SEARCH programme. The goal of AON is to improve the environmental observing infrastructure required for the investigation of Arctic environmental change and its global connections. Physical, biological and human observations, such as indigenous knowledge, of the land, ocean and atmosphere are included in AON research.
Link: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503222&org=ARC&from=home.

Bering Ecosystem Study (BEST): Focused on the ecosystem of the eastern continental shelf of the Bering Sea and on understanding the effects of a varying sea-ice cover on the shelf ecosystem. Research also includes assessing the vulnerability and sustainability of the local communities to changes in response to climate change.

Link: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501060&org=ARC&from=home.

Changing Seasonality in the Arctic System (CSAS): Aimed at understanding changing seasonality in the Arctic system.
Link: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503195&org=ARC&from=home.

Ice Coring and Drilling Services for the Office of Polar Programs: Current programmes include development of drill systems that can obtain ice-cores, embed instruments in the ice, carry out geophysical borehole logging, and provide access to the ice-sheet bed.
Link: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503228&org=ARC&from=home.

Western Arctic Shelf-Basin Interactions (SBI): Aimed at understanding how the Arctic Ocean margins (from the shore to the basin) function within the Arctic system as a whole. Priority is

placed on research efforts that focus on data integration, synthesis, and modelling activities that lead to new system-level understanding, rather than projects that generate new data from field studies.
Link: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501012&org=ARC&from=home.

Arctic Research Opportunities: Supports research about the Arctic or that is best done in the Arctic, including field and modelling studies and data analysis.
Link:
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5521&org=OPP&sel_org=OPP&from=fund.

International Polar Year, 2007: The "International Polar Year 2007-2008" (IPY) will extend from March 2007 through March 2009. Goals are to explore new frontiers in polar science, improve our understanding of the role of Polar Regions in global processes, and educate the public about the Polar Regions. Special emphasis is placed on understanding environmental change in Polar Regions, human and biotic systems in Polar Regions, and education and outreach.
Link:
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501036&org=OPP&sel_org=OPP&from=fund.

Box B-2: Summary of additional Arctic programmes

North Pacific Research Board (NPRB) Purpose is to make marine research initiative recommendations to the U.S. Secretary of Commerce. The Board is authorised to "conduct research activities *on* or relating to the fisheries or marine ecosystems in the north Pacific Ocean, Bering Sea, and Arctic Ocean (including any lesser related bodies of water).... [with]...priority on co-operative research efforts designed to address pressing fishery management or marine ecosystem information needs."

Link: http://www.nprb.org/. The NPRB has a programme on Integrated Ecosystem Research.

Link: http://www.nprb.org/science/ierp.html.

North Slope Science Initiative (NSSI) Maintains research programmes on Ecosystems and Habitats; Mammals; Birds; and Technical Programs.

Link: http://mtri.org/QuickPlace/northslope/Main.nsf/h_Toc/c5babd578ff33f68852572ac005004f4/ and http://www.northslope.org.

National Oceanic and Atmospheric Administration (NOAA) within the U.S. Department of Commerce Provides Arctic information that describe the present state of the Arctic ecosystem and climate. Mission is to "understand and predict changes in the Earth's environment, and conserve and manage coastal and marine resources to meet the Nation's economic, social and environmental needs." NOAA is one of eight federal agencies participating in the implementation of the Study of Environmental Arctic Change (SEARCH).

Link: http://www.noaa.gov/ and http://www.arctic.noaa.gov/index.shtml.

Council on Environmental Quality (CEQ), Committee on Ocean Policy No explicit Arctic (funding) programme, but overlaps between Ocean Policy and policy concerning the Arctic.

Link: http://ocean.ceq.gov/.

Table B-1: U.S. Government-financed Arctic research activities[201]

U.S. Government-financed Arctic research activities (in thousands of dollars)		
	FY 04	**FY 05**
National Science Foundation	$100,753	$101,630
Department of the Interior		
Minerals Management Service	6,349	5,743
Fish and Wildlife Service	19,198	18,485
National Park Service	1512	2666
Bureau of Land Management	5,610	5,320
U.S. Geological Survey	19,621	18,068
Department of Defense	12,209	8,664
National Aeronautics and Space Administration	34,200	37,000
Department of Commerce (NOAA)	35,841	36,115
Department of Agriculture	4,302	4,302
Department of Energy	11,891	17,677
Department of Health and Human Services	54,300	46,900
Smithsonian Institute	500	600
Environmental Protection Agency	750	850
Department of Transportation	21	28
Department of Homeland Security	21,721	16,838
Department of State	175	173
Total	$328,953	$321,059

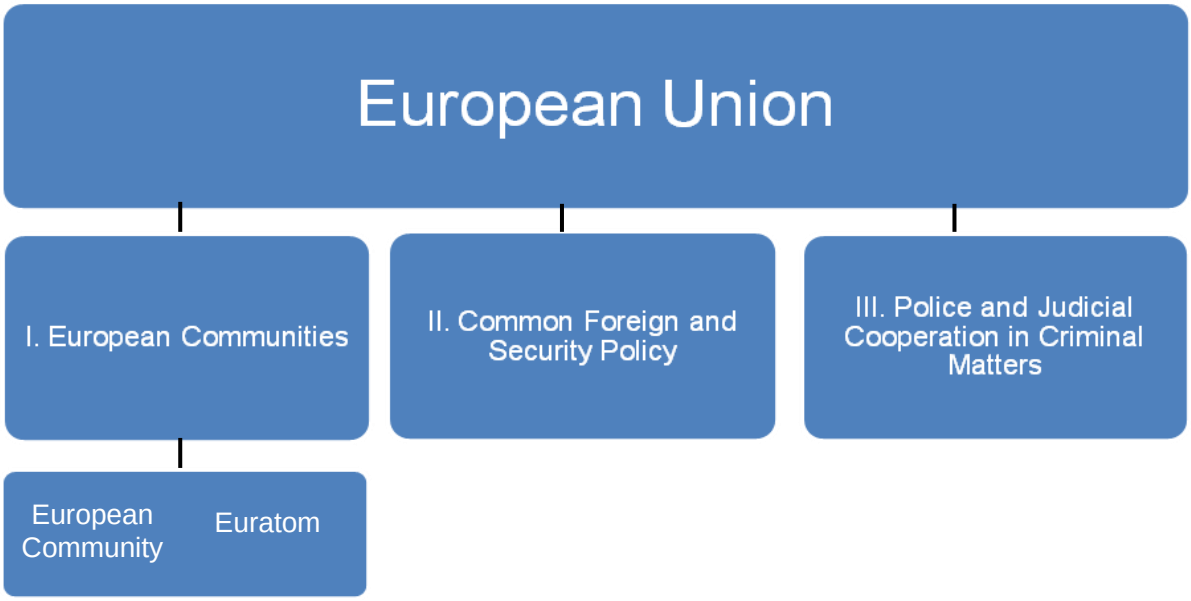
[201] *Arctic Research of the United States* (2006), online at <http://www.nsf.gov/od/opp/arctic/arctrsch/start.jsp> (viewed on 29 July 2008).

Annex C: Key EU Institutions and Laws

Key EU Institutions

The European Union is founded upon three pillars. The first pillar, which is also called the supra-national pillar, entails all policies which are linked to the single European market. The second and third pillars, which are also called the intergovernmental pillars, remain outside the structures of the European Communities. There are a number of key institutions, which determine policy-making under the three pillars.

Figure C-1 – The structure of the European Union



European Council – http://europa.eu/european-council/

The European Council consists of the heads of states of the 27 Member States and the Commission president. Strictly speaking, the European Council is not an EU institution and can thus not adopt any legally binding texts. However, the biannual summits often conclude with landmark decisions, which determine the EU's political agenda.

Council of Ministers (Council of the European Union) – http://ue.eu.int/

The Council of Ministers, which is also called the Council of the European Union, consists of government ministers from the 27 Member States and a European commissioner. Depending on the issue on the agenda (e.g. foreign affairs, social affairs, trade, environment), Member States are represented by the relevant minister. The Council of Ministers exclusively determines policy under the second and third pillars of the EU. Under the first pillar, it shares legislative powers with the European Parliament.

European Parliament – http://www.europarl.europa.eu/

The European Parliament consists of 785 members, which are elected once every five years by voters across the 27 Member States. Under the first pillar of the EU (i.e. the EC), the European Parliament has legislative powers equal to that of the Council of Ministers. Under the second and third pillars, its legislative powers are significantly limited.

European Commission – http://ec.europa.eu/

The European Commission, formally known as the Commission of the European Communities, is currently made up of 27 commissioners. It proposes legislation, implements EU policies, to some extent enforces European law (together with the European Court of Justice and the Member States), and represents the EU at the international stage. The Commission may propose legislation under the first and second pillars of the EU, but has no such powers under the third pillar.

European Environment Agency – http://www.eea.europa.eu/

The European Environment Agency (EEA) plays an important role in the formulation and implementation of key environmental policies. Its main task is to help the Community and the Member States make informed decisions about improving the environment and integrating environmental considerations into economic policies.

Key EU policy documents

Climate Change and International Security. Paper from the High Representative and the European Commission to the European Council. 14 March 2008.
http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/reports/99387.pdf

Northern Dimension Framework Document. 24 November 2006.
http://ec.europa.eu/external_relations/north_dim/doc/frame_pol_1106.pdf

White Paper. European Transport Policy for 2010: time to decide. 12 June 2001.
http://ec.europa.eu/transport/white_paper/documents/doc/lb_com_2001_0370_en.pdf

Directive of the European Parliament and of the Council of 17 June 2008 establishing a Framework for Community Action in the field of Marine Environmental Policy (Marine Strategy Framework Directive).
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:164:0019:0040:EN:PDF

Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:358:0059:0080:EN:PDF

Council Regulation (EC) No 1198/2006 of 27 July 2006 on the European Fisheries Fund.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:223:0001:0044:EN:PDF

Council Directive of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1985L0337:20030625:EN:PDF

Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2001:197:0030:0037:EN:PDF

ERIKA-I package
Directive 2001/106/EC of the European Parliament and of the Council of 19 December 2001 amending Council Directive 95/21/EC concerning the enforcement, in respect of shipping using Community ports and sailing in the waters under the jurisdiction of the Member States, of international

standards for ship safety, pollution prevention and shipboard living and working conditions (port State control). http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:019:0017:0031:EN:PDF

Directive 2001/105/EC of the European Parliament and of the Council of 19 December 2001 amending Council Directive 94/57/EC on common rules and standards for ship inspection and survey organisations and for the relevant activities of maritime administrations. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:019:0009:0016:EN:PDF

Regulation (EC) No 417/2002 of the European Parliament and of the Council of 18 February 2002 on the accelerated phasing-in of double hull or equivalent design requirements for single hull oil tankers and repealing Council Regulation (EC) No 2978/94. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:064:0001:0005:EN:PDF

ERIKA-II package:

Regulation (EC) No 1406/2002 of the European Parliament and of the Council of 27 June 2002 establishing a European Maritime Safety Agency. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:208:0001:0009:EN:PDF

Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:208:0010:0027:EN:PDF

ERIKA-III package

Proposal for a Directive of the European Parliament and the Council on compliance with flag State requirements. 23 November 2006. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0586:FIN:EN:PDF

Proposal for a Directive of the European Parliament and of the Council on common rules and standards for ship inspection and survey organisations and for the relevant activities of maritime administration. 23 November 2005.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0587:FIN:EN:PDF

Proposal for a Directive of the European Parliament and of the Council on port State control. 23 November 2005.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0588:FIN:EN:PDF

Proposal for a Directive of the European Parliament and of the Council amending Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system. 23 November 2005.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0589:FIN:EN:PDF

Proposal for a Directive of the European Parliament and of the Council establishing the fundamental principles governing the investigation of accidents in the maritime transport sector and amending Directives 1999/35/EC and 2002/59/EC. 23 November 2005.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0590:FIN:EN:PDF

Proposal for a Regulation of the European Parliament and of the Council on the liability of carriers of passengers by sea and inland waterways in the event of accidents. 23 November 2005.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0592:FIN:EN:PDF

Proposal for a Directive of the European Parliament and the Council on the civil liability and financial guarantees of shipowners. 23 November 2005.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0593:FIN:EN:PDF

Fifth Framework Programme for research and technological development (FP5).
http://cordis.europa.eu/fp5/

Sixth Framework Programme for research and technological development (FP6).
http://cordis.europa.eu/fp6/

Seventh Framework Programme for research and technological development (FP7).
http://cordis.europa.eu/fp7/

Annex D: Marine Arctic Country Profiles

Canada – Key Facts

Offshore hydrocarbon activities

- Canada was the world's seventh biggest oil producing country in 2007 (3,424,580 barrels of oil per day).[202]
- Canada was the world's third biggest producer and second biggest exporter of natural gas in 2006.[203]
- Canada is the top foreign supplier of oil and natural gas to the United States.[204]
- In the Arctic, the McKenzie River Delta and the surrounding islands hold potentially large reserves of hydrocarbons, especially natural gas.
- Canada is currently debating whether or not to begin construction on the McKenzie Gas Project, a proposed pipeline that would run through the McKenzie River Basin and deliver gas to other parts of Canada and the United States.

Fisheries

- Canadian fishing interests captured 1,080,982 tonnes of fish in 2005.
- Canada was the world's 6th largest exporter of fish and fishery products in 2004.[205]
- Fishing accounted for 14% of Canada's total agriculture exports and 1% of its total merchandise exports in 2005.[206]
- Canada's New Emerging Fisheries Policy, adopted in 2001, governs new fisheries and purports to operate under the precautionary principle.[207]

Shipping

- Canada controls the Northwest Passage (NWP), a shipping route through its Arctic archipelago, which is about 4,000 miles shorter from Europe to Asia than through the Panama Canal.
- The NWP was largely ice-free for a short time in the summer of 2007, the first time in recorded history, and was declared navigable by the Canadian ice authority in mid-August 2008.
- The NWP can handle ships too large to travel through the Panama Canal, such as super-tankers and many container vessels.[208]

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202 Energy Information Administration, Canada Energy Profile (<http://tonto.eia.doe.gov/country/country_energy_data.cfm?fips=CA>).

203 Id.

204 Id.

205 The State of World Fisheries and Aquaculture, Food and Agriculture Organization, 2006.

206 Food and Agriculture Organization, The relative importance of trade in fishery products in 2005, (<ftp://ftp.fao.org/fi/stat/summary/summ_05/a7ybc.pdf>).

207 Available at <www.dfo-mpo.gc.ca/communic/fish_man/nefp_e.htm> (viewed 7 August 2008).

- Arctic Waters Pollution Prevention Act, passed in 1971, contains numerous environmental regulations and would govern shipping in the NWP, though it is not clear that compliance by international ships would be mandatory.
- Debate is brewing as to whether the NWP, along with Russia's Northern Sea Route, are internal waters or a strait used for international navigation under UNCLOS.
- Canada is planning to increase its military presence in the Arctic to bolster its claim of sovereignty over Arctic waterways.[209]
- Canadian nationals controlled the 28th largest oceangoing fleet in the world as measured in deadweight tonnage as of Jan 1 2007.

Indigenous People

- Approximately half of Canada's 130,000 Arctic inhabitants are indigenous.[210]
- There are three agreements particularly significant for the Arctic:
  - 1984 Inuvialuit Final Agreement[211],
  - 1993 Nunavut Land Claim Agreement[212] (with Nunavut Act[213])
  - James Bay and Northern Quebec Agreement from 1975[214].[215]
- The agreements established aboriginal ownership on the part of traditionally used lands[216] and resource co-management in broader settlement areas (usually with status of public, crown lands).[217]

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208 Allison Doyle, "Shrinking Arctic Ice to Open Shipping Short-Cuts," Reuters News Service. 28 January 2003.

209 Canada to Stregthen Arctic Claim, BBC News, 10 August 2007, (<http://news.bbc.co.uk/2/hi/americas/6941426.stm>).

210 AHDR.

211 The Inuvialuit Land Claims Settlement of the Western Arctic Region in Canada, Tuktoyaktuk, 5 June1984, between The Committee for Original Peoples' Entitlement and the Government of Canada. With House of Commons Bill C-49 and Bill C-102, available at Indian and Northern Affairs Canada at <http://www.ainc-inac.gc.ca/pr/agr/inu/wesar_e.pdf> (viewed 24 June 2008).

212 The Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in the right of Canada. Iqualuit, 25 May 1993- Available at Indian and Northern Affairs Canada at <http://www.ainc-inac.gc.ca/pr/agr/pdf/nunav_e.pdf> (viewed 24 June 2008).

213 Nunavut Act c. 28, N – 28.6. Available at <http://laws.justice.gc.ca/en/ShowFullDoc/cs/N-28.6///en> (viewed 24 June 2008).

214 James Bay and Northern Quebec Agreement between the Grand Council of the Crees (of Quebec), The Northern Quebec Inuit Association, The Government of Quebec, The Government of Canada at al., Northern Quebec, 11 November 1975. Available at <http://www.gcc.ca/pdf/LEG000000006.pdf> (viewed 25 June 2008).

215 See also Joks, 2003, pp. 21, 29.

216 On the land owned by particular groups, they exercise direct authority through indigenous institutions, especially indigenous corporations (land claims organisations), like Nunavut Tunngavik Incorporated or Inuvialuit Regional Corporation. See more Joks, 2003, pp. 23-24; *Beaufort Offshore Guide*, pp. III-8 to III-9., at <www.oilandgasguidelines/guides/nwt-bft/nwt.pdf>, (viewed 16 June 2008).

217 In other, broader settlement areas, including the Arctic waters, indigenous institutions have an advisory role and aboriginal representatives are members of various management boards, equipped with advisory or decision-making powers. See *Beaufort Offshore Guide*, pp. III-3 to III-6.

- The Inuit Final Agreement (IFA) established Inuvialuit Settlement Region (ISR), located in the northern parts of both Northwest Territories and Yukon Territory. ISR includes not only land areas (partly directly owned by the Inuvialuit) but also significant part of the Beaufort Sea. The Inuvialuit have a special right to fish and hunt in the ISR and a considerable influence on nature, wildlife and resource management.[218] The ISR is home to approximately 6,000 people living in six communities.[219]
- Nunavut Settlement Area (NSA) encompasses 1.9 mln sq km with 43 % of Canada's coastline and includes the 12-mile of adjacent territorial sea.[220,221] In the NSA Nunavut Wildlife Management Board (NWMB)[222], which is composed in half of indigenous-local representatives, has the supervisory role over the living resource use, including fisheries.[223] It was the largest land claim ever settled in Canadian history. The settlement gives Inuit control of more than 350,000 square kilometres of land, of which 36,000 square kilometres include mineral rights. In addition, the land claim settlement gives Inuit more than $1 billion over 14 years, and guaranteed participation in making decisions for managing lands and resources.[224]

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218 In IFA special role in nature management is played by such bodies as Hunters and Trappers Associations, Inuvialuit Game Council Committee and various mixed indigenous-governmental committees and boards (Environmental Impact Screening Committee, Environmental Impact Review Board, Wildlife Management Advisory Councils separately for Yukon and Northwest Territories and Fisheries Joint Management Committees). See Joks, 2003, p. 30; Inuit Regional Corporation website at <www.irc.inuvialuit.com/about/finalagreement.html> (viewed 17 June 2008).

219 See <http://www.bmmda.nt.ca/background.htm>.

220 Different Nunavut agencies may jointly form a Nunavut Marine Council, and make recommendation to other governmental agencies regarding the marine areas. See Nunavut Land Claims Agreement, section 15.4.1.

221 NWMB website at <www.nwmb.com/english/about_nwmb/responsibilities,php> (viewed 16 June 2008). For the process of including the marine areas within the scope of the agreement, see Jull (1998), pp. 12-13.

222 Nunavut Wildlife Management Board is an Institution of Public Government composed of representatives of Inuit institutions and the Government of Canada equipped in decision-making powers in the area of wild-life management (within the NSA), traditional harvesting and nature conservation. NWMB has various advisory responsibilities, decision-making powers and special role in research on Arctic wildlife in Nunavut. See more NWMB website at <www.nwmb.com/english/about_nwmb/responsibilities.php> (viewed 16 June 2008); Joks, 2003, p. 21.

223 NWMB is responsible for such marine species as seals, walruses, narwhal, beluga, bowhead whales, arctic char turbot and shrimp as well as birds and terrestrial animals including those closely connected with the marine environment, for example polar bears. Among the main responsibilities of the NWMB are: developing a system of wildlife management complementing Inuit harvesting rights and implementing aboriginal , approving decisions on nature conservation, participating in research and quotas management. See NWMB website at <www.nwmb.com/english/about_nwmb/responsibilities.php> (viewed 16 June 2008). See also Nunavut Land Claims Agreement, art. 15.

224 See <http://www.ainc-inac.gc.ca/pr/info/info100_e.html>.

Greenland – Key Facts

- Greenland is a self-governing province in the Kingdom of Denmark.
- Maritime zone falls entirely within the Arctic marine area

Offshore hydrocarbon activities

- Greenland did not produce any oil or natural gas in 2007.
- USGS estimates the mean undiscovered oil reserves in the East Greenland Rift Basins to be approximately 8,902,000,000 barrels of oil and 86,180 billion cubic feet of natural gas.
- USGS estimates that smaller reserves are located in the West Canada-East Greenland (7.274 billion barrels of oil and 51.818 billion cubic feet of natural gas) and in the North Greenland Sheared Margin (1.349 billion barrels of oil and 10.207 billion cubic feet of natural gas).[225]
- Greenland began offering exploration leases to foreign oil companies in 2007.
- There was a successful referendum on 25th November 2008 for expanded self-rule. Once implemented by the Danish, it will, inter alia, give Greenland more control over hydrocarbon resources.[226]
- Co-operation between the Home Rule Government and the Danish Government is required for granting hydrocarbon exploration and exploitation licenses.

Fisheries

- Greenland fishing interests captured 216,302 tonnes of fish in 2005.[227]
- Greenland exports of fish and fishery product exports totaled US$ 453,763 in 2005, accounting for over 90% of Greenland's total exports.[228]
- Greenland does not fully utilise all fishing opportunities available to it by means of its own vessels or chartered vessels, but also gives access to foreign vessels by means of its bilateral fisheries partnership agreement with the EU.[229]
- Agreements providing for reciprocal fisheries access have been concluded between Greenland and Norway and Greenland and the Russian Federation.

Shipping

- The number of cruise ships visiting Greenland is increasing rapidly.
- In 2007, the town of Nuuk alone was visited by 34 cruise ships, a 100% increase over the previous year.

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225 Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle, USGS, May 2008 (<http://pubs.usgs.gov/fs/2008/3049/fs2008-3049.pdf>).

226 The Copenhagen Post: Greenland readies itself for November autonomy vote. Published on 17.01.2008, available online at <http://www.cphpost.dk/get/105188.html> (viewed 27 June 2008); on the outcome see <http://www.denmark.dk>.

227 For comparison, the United States captures 4,888,621 tonnes.

228 Food and Agriculture Organization, The relative importance of trade in fishery products in 2005, (<ftp://ftp.fao.org/fi/stat/summary/summ_05/a7ybc.pdf>).

229 See <http://ec.europa.eu/fisheries/cfp/external_relations/bilateral_agreements_en.htm>.

Indigenous People

- Out of the total population of approximately 57,000 inhabitants in Greenland, nearly 90% are indigenous (the Inuit).[230]
- Ethnicity is an insignificant factor in the Greenlandic public governance system but because the Inuit are a majority, they have a great deal of decision-making power. In 2004, there was only one Danish member out of 31 members in the Greenland Home Rule Parliament.[231]
- The people of Greenland live in more than 80 communities spread along the vast coast of West, East and North Greenland.[232]
- The Greenlanders are historically and linguistically related to the Inuit of northern Canada, Alaska and Siberia, however, the colonisation of the Arctic by Denmark, Canada, the U.S. and Russia established lasting political, social and economic borders that remain to this day. It was not long after World War II that contact between the Greenlanders and the Inuit of Canada was resumed and, in 1977, an organisation of all Inuit, the Inuit Circumpolar Conference (ICC), was established.[233]

230 AHDR, 2004, p. 29.

231 AHDR, 2004, pp. 94 - 95.

232 <http://www.iwgia.org/sw15469.asp>.

233 Ibid.

Iceland – Key Facts

General

- Maritime zone falls entirely within the Arctic marine area
- Maritime zone is generally ice free year-round and have considerably higher temperatures than those of Canada, Greenland and the Russian Federation

Offshore hydrocarbon activities

- Iceland did not produce any oil or natural gas in 2007.[234]
- Over 93% of Iceland's electricity comes from a mix of hydro and geothermal power.[235]
- About 90% of all heating for buildings comes from geothermal energy.[236]
- Iceland's oil imports are used mainly for transportation.[237]
- The Jan Mayen Ridge north of Iceland holds some promise for holding commercially viable reserves.
- Exclusive licenses for oil and gas exploration are expected to be awarded in 2009.[238]
- The Hydrocarbon Act of 2001 (as amended in 2007) regulates oil and gas exploration and production in Iceland's territorial sea, exclusive economic zone and continental shelf .[239]

Fisheries

- The Arctic waters surrounding Iceland are generally warmer than other parts of the Arctic, making them more conducive to commercial fishing.
- Icelandic fishing interests captured 1,661,031 tonnes of fish in 2005.
- Iceland's fish capture in 2004 was 13th largest in the world measured by tonnage. [240]
- Fish and fish products accounted for 51% of the value of Iceland's exported products in 2006.
- Fishing accounted for over 5% of Iceland's GDP in 2005 (7.5% if fish processing is included).
- Iceland has a reciprocal fisheries access agreement with the EU.[241]

Shipping

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234 Energy Statistics in Iceland 2007, (<http://os.is/soloweb/myndir/8499>).

235 Id.

236 Id.

237 Id.

238 Iceland Ministry of Industry Energy and Tourism, 18 December 2007, (<http://eng.idnadarraduneyti.is/Publications/nr/2535>).

239 National Energy Authority (Orkustofnun), (<http://www.nea.is/Apps/WebObjects/Orkustofnun.woa/1/wa/dp?id=2347&wosid=bCvWm24nTDvyjiq03PZ86g>).

240 The State of World Fisheries and Aquaculture – 2006, Food and Agriculture Organization of the United Nations.

241 See <http://ec.europa.eu/fisheries/cfp/external_relations/bilateral_agreements_en.htm>.

- As of 1 Jan 2007, Iceland had a small fleet of 184 ships registered under its flag.[242]

Indigenous people

- There are no indigenous peoples in Iceland.

[242] Review of Maritime Transport 2007, p. 146, United Nations Conference on Trade and Development (<http://www.unctad.org/Templates/WebFlyer.asp?intItemID=4398&lang=1>).

Norway – Key Facts

- Norway's Arctic territory includes parts of mainland Norway, the Svalbard archipelago and the island of Jan Mayen.
- The Barents Sea off the coast of Norway and Russia is one of the warmest parts of the Arctic Ocean and therefore one of the most accessible for most of the year.
- Norway established the world's first environmental protection agency in 1972[243]

Offshore hydrocarbon activities

- Norway, a non-OPEC country, was the world's 10th largest oil producer in 2007 (2.565 million barrels per day).[244]
- Norway was the world's 4th largest oil exporter in 2007 (2.321 million barrels per day).[245]
- Norway was the world's 7th largest producer and 3rd largest exporter of natural gas.[246]
- The oil and natural gas sector is largest single contributor to Norway's GDP and to government revenue.
- Norway has an oil and gas management plan for the Barents Sea and the sea areas off the Lofoten Islands which aims to establish "a holistic and ecosystem-based management of the activities in the Barents Sea – Lofoten area".[247]

Fisheries

- The Arctic waters surrounding Norway are generally warmer and ice-free all year, making them more conducive to commercial fishing.
- Norwegian fishing interests captured 2,392,934 tonnes of fish in 2005.
- Norway's fish capture in 2004 was 10th largest in the world measured by tonnage.[248]
- Norway has a reciprocal fisheries access agreement with the EU.[249]

Shipping

- As of 1 Jan 2007, Norwegian nationals controlled the 5th largest fleet in the world as measured in deadweight tonnage.[250]

Indigenous People

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243 See Lafferty et. al., 2005.

244 Energy Information Administration, Norway Energy Profile (<http://tonto.eia.doe.gov/country/country_energy_data.cfm?fips=NO>).

245 Id.

246 Id.

247 Norway Ministry of the Environment <http://www.regjeringen.no/en/dep/md/kampanjer/Integrated-Management-of-the-Barents-Sea/Integrated-Management-of-the-Barents-Sea.html?id=426510>.

248 The State of World Fisheries and Aquaculture – 2006, Food and Agriculture Organization of the United Nations.

249 See <http://ec.europa.eu/fisheries/cfp/external_relations/bilateral_agreements_en.htm>.

250 Review of Maritime Transport, United Nations Conference on Trade and Development, 2007.

- The traditional Saami settlement area extends into four countries: Finland, Norway, Russia and Sweden.[251]
- The Saami people inhabited these areas long before the establishment of state boundaries, and they are therefore recognised as an indigenous people in Norway.
- No exact numbers are available regarding the size of the Saami population in Norway, but estimates place it somewhere between 60,000 and 100,000. Approximately 15-25,000 Saami people live in Sweden, while there are over 6,000 in Finland and 2,000 in Russia.
- The traditional sources of livelihood of the Saami people comprise include husbandry, hunting and fishing, farming and duodji, or Saami handicrafts.
- Establishment of the Norwegian Saami parliament in 1989 was the first concrete step towards recognition of the Saami rights. The Saami parliament exists in parallel to the Norwegian public government.[252]

[251] See <http://www.norway.org.uk/facts/sami/sami/sami.htm>.

[252] AHDR 2004, pp. 95 - 96.

Russian Federation – Key Facts

- Russia has the Arctic's longest coastline.

Offshore hydrocarbon activities

- Russia was the world's second biggest oil producing country in 2007 (9,875,700 barrels of oil per day) with daily production occasionally exceeding that of the number one producer Saudi Arabia.[253]
- Russia is the world's biggest producer and exporter of natural gas and holds the world's largest reserves.[254]
- Resource extraction industries accounted for 50.1% of all foreign direct investment in Russia and about 60% of export revenues in 2007.[255]
- The USGS estimated that as much as 30% of the world's undiscovered natural gas reserves reside in the Arctic and over half of this gas is likely located in regions under Russian control.[256]

Fisheries

- Russian fishing interests captured 3,190,946 tonnes of fish in 2005.
- Russia's fish capture in 2004 was 8th largest in the world in measured by tonnage.[257]

Shipping

- The Russian Federation controls the Northern Sea Route (part of the Northeast Passage), which refers to the sea lanes running north of Siberia connecting the northern Atlantic and Pacific Oceans.
- The Northern Sea Route can shorten the distance for cargo ships traveling between Europe and northeast Asia by as much as 50%.
- A large portion of the shipping in the Northern Sea Route is expected to be oil and gas transport from Russia's oil and gas fields in the Arctic to Europe.
- A joint EU – Russian Federation study from 1993 to 1999 called Arctic Demonstration and Exploratory Voyage found that the "NSR's technological and environmental challenges are no longer absolute obstacles to commercial shipping…"[258]
- A subsequent three-year study conducted by the EU and Russia, called the Arctic Operational Platform (ARCOP), investigated the most economically efficient ways for

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253 Energy Information Administration, Russia Energy Profile (<http://tonto.eia.doe.gov/country/country_energy_data.cfm?fips=RS>).

254 Id.

255 The World Bank in Russia, Russian Economic Report No. 16, June 2008 (<http://siteresources.worldbank.org/INTRUSSIANFEDERATION/Resources/rer16_Eng.pdf>).

256 Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle, 23 July 2008 (<http://pubs.usgs.gov/fs/2008/3049/>).

257 The State of World Fisheries and Aquaculture – 2006, Food and Agriculture Organization of the United Nations.

258 The 21st Century--Turning Point for the Northern Sea Route?, 1999, By Claes Lykke Ragner, page xxx.

transporting oil and natural gas from Russia's Arctic fields to continental Europe, as well as the associated environmental impacts.[259]

- Debate is brewing as to whether the Northern Sea Route, along with Canada's Northwest Passage, are internal waters or a strait used for international navigation under UNCLOS.
- Russian nationals controlled the 13th largest fleet in the world as measured in deadweight tonnage as of Jan 1 2007.[260]

Indigenous People

- In Russia, the rights of indigenous groups larger than 50 000 people are protected at the same level as other ethnic minorities; however, numerically small indigenous peoples (less than 50 000 people), with a special concern for those inhabiting Russia's North, are embraced with unique protection and specific legal provisions concerning exclusively these groups have been adopted.[261]
- About 90,000 indigenous people live in the Arctic regions of Russia.[262]
- The Russian census lists the following indigenous groups: Saami, Nenets, Khanty, Sel'kup, Enets, Nganasan, Dolgan, Evenk, Even, Yukagir, Chukchi, Chuvan, and Eskimo/Inuit-Yupik.[263]

259 ARCOP Final Report, 30.04.2006, (<http://www.arcop.fi/reports/D016.pdf>).

260 Review of Maritime Transport 2007, pg 32, United Nations Conference on Trade and Development (<http://www.unctad.org/Templates/WebFlyer.asp?intItemID=4398&lang=1>).

261 See Osherenko, 2001, para. II-A. However, in some regions also other groups are protected, for example Sakha Republic gives special safeguards to all people traditionally engaged in renewable resource use. See Osherenko, 2001, paras. IV-A.

262 Human Development Report.

263 Id.