



PAME
Protection of the Arctic Marine Environment

**A Review of the Need for
Amendments to the Arctic Council
Regional Programme of Action for
the Protection of the Arctic
Marine Environment from Land-
based Activities (RPA)**

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1 INTRODUCTION

A review of the *Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities (RPA)* is included in the on-going 2004-2006 work plan for PAME. Canada was requested to act as lead country and submitted a draft discussion paper to the Working Group. This report is a result of that initial review and the subsequent discussions by PAME. It has been prepared to help determine whether a review of the RPA should be included in the 2006-2008 PAME work plan.

This review considers the potential need to amend the RPA and does not suggest actual text or format changes.

The following contains preliminary findings and outlines factors to be taken into account if it is decided to bring the RPA up-to-date in light of new information and recent international developments.

2 GENERAL COMMENTS

2.1 *Goals and Objectives*

The rationale for the original negotiation and acceptance of a Regional Programme of Action for the Arctic has not changed, and is clearly stated in the first five paragraphs of the introduction to the existing document, and elaborated under Chapter 2.0 "Goals and Objectives".

2.2 *Evaluation*

A revision of the text of the RPA could include an evaluation of the usefulness of the existing Agreement, including elements dealing with technical co-operation, assistance, education and training. A schedule and process for obtaining this broader based input from Arctic Council Member States, Permanent Participants, and other related Working Groups should be an early task. An evaluation could address whether the existing RPA and the programme that it supports have functioned as originally intended and ask for suggestions to correct perceived weaknesses.

2.3 *The Global Programme of Action (GPA)*

A regional plan of action serves to bridge the gap between the global agreement and the national plans that give it substance. The Arctic RPA supports cooperation, regional compatibility and the sharing of knowledge. It demonstrates to the world a collective resolve to protect the Arctic waters and hence supports applications for global funding on Arctic issues. One example, where the presence of a regional approach proved very useful, was in the awarding of the Global Environment Facility (GEF) programme addressing "hot spots" sources in the Russian Federation.

The GPA itself has matured since the Arctic RPA was negotiated, and it is important to consider whether revisions to the RPA are needed to better reflect the stated needs of the global programme.

The RPA has proved to be an important tool in promoting integrated management and protection of our coastal and shared Arctic waters, and which needs to be maintained in a current form to provide the necessary regional link between the GPA and NPAs.

2.4 *Research and Monitoring*

There are provisions for reporting arrangements in Section 7.0 of the RPA, including the development of a Clearing House and a reporting procedure, but no details or schedules are given. Adopting revisions to the RPA requires an understanding of changes and trends in the marine environment that can be better understood with scientific research, observation and monitoring. Apart from the clearing house, the existing text makes little mention of arrangements needed for cooperation in the collection, exchange and analysis of related marine data. Additional paragraphs may be necessary to clarify how information is obtained, analyzed and shared.

2.5 *The RPA format*

The RPA was clearly intended to be a dynamic programme. For example, paragraph 1.6 refers to an “initial phase” and describes future work of the RPA to include a “...*definition of the coastal zone...*” and an expansion of the RPA to “...*more fully address impacts on this area...*”

In the existing format of the RPA, changes are only possible through negotiations that would take place over a period of several years. It could be useful to consider whether a revised RPA could take a form that would allow it to respond more rapidly to developments and opportunities. For example, to take advantage of transient research programmes, such as the IPY, or to respond to new challenges. Could the RPA be written in a form combining a general framework instrument with one or more implementation annexes that could be amended more easily as circumstances required?

2.6 *The legal regime for the Arctic*

An IUCN paper studying the legal regimes in the Arctic speculated that an Arctic Treaty could be negotiated that would have a similar sustainable development focus to that of the 1991 Protocol on Environmental Protection to the Antarctic Treaty. According to the IUCN, such a treaty would embody the existing objectives of the Arctic Council and make binding existing approaches already in use, such as the unique role of indigenous peoples. Arguments were given that a legal treaty would enforce government interest and ensure timetables for action.

The Arctic Council already has many governmental agreements, including the RPA, in place and it is very unlikely that a more elaborate legalized Arctic Treaty will be adopted in the foreseeable future. However, the RPA plays an important role in the control and regulation of harmful contaminants and, if governments wish, the wording of the RPA could be revised to strengthen its usefulness and application.

3 INTERNATIONAL CONVENTIONS AND PROTOCOLS

The RPA does not exist in a vacuum and the Arctic Council governments may want to consider whether RPA Articles should be compatible with related international Conventions and Protocols to which Arctic governments are Party. For, example, since the adoption of the RPA, one global and two similar regional agreements have entered into force. The Stockholm Convention on Persistent Organic Pollutants (POPs) was open for signature May 22, 2001, and entered into force May 17, 2004. The Convention now has 117 Parties and 151 Signatories. The UN Economic Commission for Europe (UNECE) LRTAP Protocol on POPs (25 Parties) and the UNECE LRTAP Protocol on Heavy Metals (27 Parties) were adopted on June 24,

1998 and came into force on October 23 and December 29, 2003 respectively. Most, but not all, Arctic governments have ratified these related instruments.

It is important to maintain an up-to-date RPA by monitoring and, where necessary, consider the research, technology, methodology and policies accepted by Arctic governments under these and other related international agreements. For example, the RPA Section 6.0 may need to be revisited to reflect developments and associated changes in strategic priorities for governmental action.

3.1 *The Stockholm Convention on (POPs)*

The Stockholm Convention on POPs deals with a selected list of chemicals and anticipates the addition of new pesticides or new industrial chemical compounds as necessary. In addition to limiting or restricting the production and use of certain listed chemicals, Parties (which include six of the eight Arctic countries, the other two being signatories) that have regulatory and assessment schemes for new pesticides or industrial chemicals, are also obligated to take measures to regulate, with the aim of preventing the production and use of such new compounds that exhibit the characteristics of persistent organic pollutants. Parties have obligations to develop and endeavour to implement a plan under the Convention, to transmit its implementation plan to the Conference of the Parties, and to review and update this plan on a regular basis, as necessary. Parties also undertake, where appropriate, to cooperate directly or through global, regional and sub-regional organizations, and consult their national stakeholders in order to facilitate the development, implementation and updating of their implementation plans.

Parties are called upon to develop an action plan or, where appropriate, a regional or sub-regional action plan designed to identify, characterize and address the release of persistent organic pollutants formed and released unintentionally from anthropogenic sources. There is also accommodation within the Convention for Parties to propose new chemicals to the adopted lists of banned and regulated compounds, along with periodic reviews and regular reports to the Convention Secretariat.

3.2 *UNECE LRTAP Protocol on POPs*

The UNECE LRTAP Protocol on POPs focuses on a list of 16 substances that have been singled out according to agreed risk criteria. The substances comprise eleven pesticides, two industrial chemicals and three by-products/contaminants. The ultimate objective is to eliminate any discharges, emissions and losses of POPs to the environment. The Protocol bans the production and use of some products outright, whilst others are scheduled for elimination at a later stage. The Protocol severely restricts the use of another list of chemicals and includes provisions for dealing with the wastes of products that will be banned.

The Protocol obliges Parties (which include five of the Arctic countries with two others being signatories) to reduce their emissions of dioxins, furans, PAHs and HCB below their 1990 levels (or an alternative year between 1985 and 1995), or apply emission reduction strategies and best available techniques, and lays down specific limit values for the incineration of municipal, hazardous and medical waste.

This Protocol also allows for proposals for additional compounds by Parties. Dossiers prepared by a submitting state Party are considered by the UNECE LRTAP Expert Group on persistent organic pollutants (POPs) based on criteria specified by the LRTAP Executive Body. This process may be relevant to the RPA.

3.3 *UNECE LRTAP Protocol on Heavy Metals*

The Protocol on Heavy Metals targets three particularly harmful metals: cadmium, lead and mercury. According to one of the basic obligations, Parties undertake to reduce their emissions for these three metals below 1990 levels (or an alternative year between 1985 and 1995), apply emission reduction strategies, product control measures, and best available techniques, or meet other reduction goals. The Protocol stipulates limit values for emissions from stationary sources and suggests best available techniques for these sources, such as special filters or scrubbers for combustion sources or mercury-free processes and aims to cut emissions from industrial sources.

Preventative measures in the Protocol require Parties (which include six of the Arctic countries with one other a signatory) to phase out leaded gasoline and introduces measures to lower heavy metal emissions from other products. For example, the Protocol tackles the problem of mercury in batteries, and proposes the introduction of management measures for other mercury-containing products. This may be relevant to the RPA.

4 NEW INFORMATION AND PRIORITIES

The RPA is intended, in part, to provide a mechanism for improving cooperation amongst existing and planned programmes that address the impact of various sources and activities on the Arctic marine and coastal environments, thus a periodic examination of the status of the RPA in terms of new information and priorities could be considered. Much of the new information will arise from the work of Arctic Council Working Groups, but other sources will also need to be considered. The following sections examine recent reports with respect to their possible impact on the RPA.

4.1 *Arctic Climate Impact Assessment (ACIA)*

This very extensive assessment was presented to the Arctic Council in November 2004. The Ministers welcomed the report and endorsed the ACIA policy recommendations for mitigation, adaptation, research, monitoring and outreach. Although there are no direct implications to the RPA, several of the findings indicate climate changes will impact on the marine environment. The Arctic Council also agreed on certain actions that need to be considered.

4.1.1 Technical considerations

The overview document of the ACIA identified the following ten key findings:

1. The Arctic climate is now warming rapidly and much larger changes are projected.
2. Arctic warming and its consequences have worldwide implications.
3. Arctic vegetation zones are projected to shift, bringing wide-ranging impacts.
4. Animal species' diversity ranges, and distribution will change.
5. Many coastal communities and facilities face increasing exposure to storms.
6. Reduced sea ice is very likely to increase marine transport and access to resources.
7. Thawing ground will disrupt transportation, buildings, and other infrastructure.

8. Indigenous communities are facing major economic and cultural impacts.
9. Elevated ultraviolet radiation levels will affect people, plants, and animals.
10. Multiple influences interact to cause impacts to people and ecosystems.

The report notes that such findings, as well as the underlying scientific assessment, will help inform governments as they implement and consider future policies on global climate change.

Climate warming would definitely impact the quality of the Arctic marine environment and changes and trends will need to be monitored. A reduction in sea ice could lead to increased shipping, with potentially higher risk of spills, introduction of exotic species and operating issues. There could be more tourism and the need may arise to regulate the operation of cruise ships on a regional basis. The need for additional infrastructure to service the marine transportation industry would also pose an indirect concern for coastal waters. The Arctic Council has requested a study on Arctic Marine Transportation that will be a valuable source of information.

A warming trend in the Arctic would lead to a loss of permafrost. Permafrost has been an effective barrier to the seepage of pollutants from dumps, mining operations and other activities. Mitigation measures to deal with potential hot spots could be examined and measures considered before potential problems arise. The impact of climate change on sensitive habitats and the need for adaptation policies for coastal communities could be amongst the highest priorities.

A higher risk of events such as storms, floods, in many cases in areas where there is no previous history of extreme types of weather, would increase threats of erosion, turbidity and the risk of higher concentrations of polluting run-off.

4.1.2 Policy considerations

The Arctic Council decided that it, along with its subsidiary bodies, should further organize their work based on the findings of the ACIA. The Council directed relevant technical working groups of the Arctic Council to review the scientific chapters of the ACIA in the context of their ongoing and future work programmes, and to report on the progress made at the 2006 Ministerial Meeting. PAME's review of possible future actions on the RPA is part of its ACIA follow up. For example, a revision of the RPA may need to consider additional threats from existing contamination sources due to environmental changes such as those arising from a warming climate, in particular those potentially impacting coastal communities.

4.2 *Arctic Human Development Report (AHDR)*

The AHDR findings indicate the importance of maintaining environmental quality as one of the elements in producing a more stable and sustainable Arctic economy. The report makes the very pertinent argument that governments need to recognise the economic strength of the Arctic and its resources, which, for example if taken as an integrated region, surpasses the GDP of Sweden and amounts to about a quarter of Canada's GDP.

In terms of human health, the transfer of man-made contaminants in the marine environment and contamination of traditional foods is noted as a continuous and serious problem. An immediate issue is the advice that Arctic residents receive about the risks of consuming contaminated food and therefore, the need to monitor closely

the success of programmes aimed at controlling the predominantly distant sources of the problem chemicals.

The report also states that *“We need to improve our understanding of the roles that modern industrial activities play in the pursuit of sustainable development at the regional level”*.

The RPA is available for use by governments to act collectively to reduce threats to the marine environment from land-based activities. The RPA is a tool that contributes to sustainable development and appropriate changes to the text that would enhance this role could be considered. As the rate of development increases in the north, one of the goals of the RPA could be to assist in the prevention of new threats to the marine environment through encouraging national and regional environmental programmes.

4.3 Arctic Council Sustainable Development Action Plan

In 2002, Ministers of the Arctic States requested Senior Arctic Officials to develop an action plan (SDAP) on sustainable development incorporating previous decisions by the Arctic Council, the latest scientific knowledge and the decisions by the Johannesburg WSSD 2002.

The SDAP was completed during the Russian chairmanship and may be submitted to Ministers at the Salekhard Ministerial meeting in October 2006. The SDAP provides a useful list of Arctic Council programmes and their status, including the RPA:

- Monitoring and assessment of the state of the environment in the Arctic
- Prevention and elimination of environmental pollution in the Arctic.
- Arctic marine environment protection.
- Biodiversity conservation in the Arctic.
- Climate change impact assessment in the Arctic.
- Prevention and elimination of ecological emergencies in the Arctic, including those relating to climate change.

4.4 The Arctic Council Action Plan (ACAP)

The Arctic Council Action Plan (ACAP) to Eliminate Pollution in the Arctic is a Steering Committee established by the Arctic Council, to increase efforts to limit and reduce emissions of pollutants into the environment and promote international cooperation. The goal of ACAP is to reduce emissions of pollutants into the environment in order to reduce the identified pollution risks. In particular, ACAP has been dealing with serious contamination sources in Northern Russia.

The RPA, in considering these major sources of pollution, remarks in paragraph 5.4, *“...These potential sources would benefit from further assessment and verification to help identify areas of concern”*, and again in the following paragraph *“...there are several areas where marine contamination has been found or is suspected and the sources and impacts need to be confirmed...”*.

The ACAP report also examined specific contaminants and new information was presented concerning an emerging problem with Brominated Flame Retardants (BFRs). Flame retardants are used in many products including furniture, textiles,

electronic equipment. Many of these chemicals are suspected endocrine disruptors as well as being bioaccumulative and persistent in the environment. Brominated Flame Retardants are widely used. Bromine is an elemental halogen similar to chlorine and dioxins and furans are produced when substances containing either element are burned. There is no doubt that many fire deaths have been prevented from the use of flame retardants and, therefore, their use is being promoted to this end. The associated environmental problems of disposal and dispersal have not yet been adequately assessed nor addressed. ACAP has circulated a questionnaire to Arctic Council members and is compiling the responses.

“New” threats to the marine environment from land-based activities such as BFRs could be an important part of any consideration of amendments to the RPA.

It is clear that ACAP has significant efforts underway to identify, assess and take action on pollution sources. The overall reduction of emissions under ACAP would automatically benefit the goals of the RPA through reductions in marine contaminants. However, in the report of the ACAP meeting and the appended reports of its working groups, the RPA was not mentioned at all.

PAME could consider possible ways to bring the two plans into closer proximity, with advantages that could include:

- Early warning from ACAP on new sources and/or new contaminants that may cause problems in the marine environment.
- A dialogue on contaminants that may uniquely affect the marine environment and may otherwise have low priority.
- A communication channel that would enable newly identified marine problems to be tackled expeditiously at the source.
- A higher visibility for the RPA within government contaminant alleviation programmes.
- Cooperation could assist with compliance of GPA objectives and reporting.
- The identification and treatment under ACAP of marine dumping sites as a source of contamination if found to be a significant problem.

4.5 *AMAP Reports*

In 2002, AMAP prepared assessments on POPs, Radioactivity, Heavy Metals and Human Health that are directly pertinent to the consideration of RPA revisions. The following sections illustrate some of the new information that has become available over the past few years. PAME could take into account information from these extensive assessments in any consideration of amendments to the RPA.

4.5.1 2002 AMAP Assessment on POPs

This Assessment includes recommendations on the research and monitoring of existing and “new” contaminants. It notes that for many chemicals, the ocean presents the largest reservoir in the Arctic. Ocean transport may be more important than atmospheric transport in influencing observed levels of some chemicals in Arctic marine biota. The measurement of ‘new’ chemicals, in particular brominated and fluorinated compounds, in the Arctic environment and the evidence of biological effects of organic chemicals are highlights of the recent research carried out on POPs in the Arctic.

Recent information shows that toxaphene is widespread throughout the Arctic, although only limited temporal trend data exist. Beluga, narwhal and some seal species have particularly high toxaphene levels. The Assessment recommends that monitoring of toxaphene should be extended and temporal trend monitoring studies of toxaphene established. It also recommends that monitoring of organic chemicals in seawater continue and encompass a greater geographical range, with particular emphasis on the European Arctic and that “new” chemicals should be incorporated in this monitoring, especially those that are considered persistent but non-volatile. The Assessment recommends that sites for long-term monitoring of temporal trends should be selected.

Based on recent studies in Norway and the Kola Peninsula, there appears to be a need to assess the role of harbours as a source of organic chemicals to oceans and the local coastal environment. The potential for northern harbors to be continuing sources of contamination to the Arctic Ocean, or to contaminate biota that migrate to other more pristine areas, is mentioned as needing further study, particularly for ‘new’ chemicals.

While broad ranges of ‘new’ chemicals are being investigated in Arctic biota, the Assessment recognizes that models are necessary to predict the kinds of compounds that are in commercial use, and that may have ‘Arctic accumulation potential’. Much progress in modeling has been made in this regard, but a strategy for developing a list of possible chemical contaminants could be considered in order to anticipate new chemical threats, rather than focusing most resources on the list of ‘legacy’ organic chemicals.

4.5.2 2002 AMAP Assessment on Radioactivity

This Assessment finds that, in general, levels of radionuclides in the Arctic are declining. The exceptions are seawater concentrations of the long-lived water-soluble fission products ⁹⁹Tc and ¹²⁹I. This is due to increased releases from nuclear fuel reprocessing in Western Europe and the Assessment reaffirms the 2000 AMAP recommendation that the Arctic Council encourage the United Kingdom to reduce the releases from Sellafield to the marine environment of technetium, by implementing best available technology.

Despite the decline in current levels, there is continuing uncertainty about the amount of radionuclides present at a number of sources and potential sources in the Arctic. Access to information about civilian and military sources continues to be a problem.

4.5.3 2002 AMAP Assessment on Heavy Metals

The Assessment has extended the understanding of anthropogenic sources, transport processes, trends, and effects of metals in the Arctic. It notes that the distribution of heavy metals among the various environmental compartments of the Arctic is dynamic and reflects natural sources, environmental processes, and a range of environmental factors that affect biological uptake. A continuing challenge in assessing the levels, trends, and effects of heavy metal contamination in the Arctic is showing the extent to which observed patterns reflect natural processes or anthropogenic inputs.

The metals in the Arctic biosphere of greatest toxicological concern continue to be mercury (Hg) and cadmium (Cd). These metals occur in some Arctic biota at concentrations that may have health implications for individual animals or for human consumption.

There is now evidence that in certain regions of the Arctic, mercury environmental levels are increasing, which reflects the apparent increases in global emissions, despite temporary reductions in the 1990s from the implementation of better emission controls in some regions. The new data will enable assessment of whether the measures taken in accordance with the LRTAP (Long-range Transboundary Air Pollution) Protocol are effective in reducing mercury levels in the Arctic. Current mercury exposures may pose a health risk to some people and animals in the Arctic. Reducing exposure to mercury must be addressed at all levels to reduce worldwide emissions.

The reduction of lead emissions through the decreased use of leaded gasoline around the globe is among the more successful regulatory actions in recent times. As a result, lead deposition has decreased, although lead levels in Arctic biota do not yet reflect this change. Lead shot from hunting remains a problem. The Assessment recommends a complete ban on the use of lead shot by hunters.

Cadmium levels in the Arctic environment have increased since pre-industrial times but, where higher concentrations are found in wildlife, it remains difficult to separate anthropogenic and natural sources. The Assessment recommends Cadmium monitoring be continued in the Arctic to support human and wildlife exposure estimates.

Although atmospheric transport represents a major transport mechanism to the Arctic, particularly for mercury, rivers provide another major transport mechanism for some metals reaching the Arctic Ocean. Significant alterations in metal transport pathways would be expected on Arctic hydrology, currents, ice, winds, and temperature under a warming climate scenario.

AMAP recommends that the assessment for global action undertaken by the United Nations Environmental Programme and its resulting proposals should be acknowledged and appropriate steps taken to ensure that Arctic concerns are adequately addressed through the development of regional and global actions.

4.5.4 2002 AMAP Assessment on Human Health

Recent findings confirmed and strengthened previous conclusions concerning the impacts of pollution on human health, through exposure and through consumption of contaminated traditional foods. The existing concerns on the impact of POPs, especially on the immune system, fertility, fetal and child development and pregnancy outcome, are restated as is the need to continue to reduce human exposure. There now is strong evidence of an exponential increase in polybrominated diphenylethers and the Assessment considered it necessary to include these compounds and other “new” chemicals in future studies.

New calculations of dioxin toxic equivalents from data provided in the earlier assessment indicate that human intake of substances with dioxin-like effects (dioxins/furans, dioxin-like PCBs, and some organochlorine pesticides) is indeed a matter of concern and the Assessment recommends that analyses of dioxin and dioxin-like compounds be included in future human effect studies to enable further risk assessments.

Contaminants of anthropogenic origin are spread globally and contaminate the Arctic. The combination of environmental conditions and biomagnification in the marine and freshwater aquatic food webs results in accumulation of certain persistent contaminants in local food at levels which are often in excess of contaminant

concentrations in the mid-latitudes where these contaminants originate. Consumed fish, marine mammals, terrestrial mammals, and birds are the major sources of human exposure to environmental contaminants in the Arctic.

The Assessment recommends strengthening international efforts to control production, use and emissions to the environment of persistent organic pollutants and mercury and the initiation of measures to reduce and control regional industrial emissions of contaminants. Amongst other actions it encourages Arctic governments to participate in the global monitoring of human exposure to be established under the Stockholm Convention and to support a global assessment of the linkages between health and the environment.

4.6 *Other Sources*

Sources of important new information relevant to the RPA are not limited to the Working Groups of the Arctic Council. Maintaining a Clearing House which has access to all research pertaining to the aims and goals of the RPA could be a way to stay informed of new information. For example, the International Polar Year (IPY) is expected to be a major source of new information about the health of the Arctic Ocean and coastal waters.

5 INITIAL FINDINGS

This report considers the potential need to amend the RPA and does not suggest actual text or format changes. Any such changes would need to be promulgated and negotiated by governments before adoption. This report summarizes some of the new information made available since adoption of the RPA that could be used when considering revision of the RPA.

Any study could include an evaluation of the implementation and effectiveness of the existing RPA. In any proposed amendments to the RPA text, consideration could be given to the cause of any perceived shortcomings and whether these could be reduced or removed through changes to the present wording or whether there were external reasons that needed to be addressed. Therefore, a study could include a process and schedule for obtaining input from governments and stakeholders and information obtained could be used in any proposed revisions to the RPA text. These revisions would be discussed by the PAME Working Group and then passed as recommendations to the SAOs and Ministers for decision.

This report reached the following preliminary findings that could be taken into account in any review of the RPA:

- **No changes appear necessary to the purpose and intent of the Arctic RPA.**
- **Changes to the format of the RPA could be considered, for example, whether the RPA could be more easily kept up-to-date through the inclusion of Implementation Annexes to the RPA, and whose content could be amended by decision of the Arctic Council, as and when required.**
- **The responsibilities for monitoring and evaluating programmes important for the execution and continuing usefulness of the RPA could be addressed and possibly reflected in the text. In this regard, the role and function of an RPA Clearing House in acquiring and exchanging new and relevant information from all sources could be assessed.**

- **Consideration could be given to the inclusion of more details on the process and schedule for a regular evaluation and assessment of the RPA.**
- **The compatibility of Articles in the RPA that correspond to related governmental obligations under the GPA, the Stockholm Convention and other pertinent intergovernmental agreements could be considered.**
- **PAME may consider undertaking projects in follow-up to the ACIA and this could be relevant to potential changes to the RPA text.**
- **The work of several other Arctic Council Working Groups is relevant to the RPA and PAME could consider how these sources of expertise could be incorporated.**
- **The RPA could be a part of the Arctic Council thrust led by AHDR to improve the economic, social and cultural development of the Arctic.**

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