PAME

Protection of the Arctic Marine Environment

PAME II-2019: Agenda item 9.2

Regional Action Plan on Marine Litter in the Arctic

PROTECTION OF THE ARCTIC MARINE ENVIRONMENT

OUTLINE PREPARED BY THE PROJECT CO-LEADS

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Note: Table of Contents will need to be adjusted based on final changes made to outline.

Outstanding comments/questions:

Will the RAP incorporate progress on implementation/mechanism for review as part of the plan?

Will the RAP cover all activities? Priority activities (or prioritize activities)? Those unique to Arctic?

Will the RAP seek to complement international initiatives of other bodies such as IMO and FAO?

What is the most logical order of the sections e.g. should knowledge gaps/research needs be placed up front or at the end?

Executive Summary

The Executive Summary will go here.

Introduction

Note: Recommendation that Introduction should be followed by Objectives and Geographical Scope.

Like other regions in the world, marine litter exists in the Arctic Ocean despite the remote nature of the Arctic marine environment. PAME has a long history of addressing marine litter, dating back to 1998 and the adoption of the Regional Programme of Action on Protection of the Arctic Marine Environment from Land-based Activities. This Programme (and its 2004 and 2009 updates) outlined a step-wise approach for tackling land-based pollution. At the 2017 Fairbanks Ministerial, Arctic Council Ministers noted the, "increasing accumulation of marine debris in the Arctic, its effects on the environment and its impacts on Arctic communities…"[1] and approved PAME's project plan to conduct a 'Desktop Study On Marine Litter, including Microplastics, in the Arctic.'[2] Arctic Council Ministers welcomed the final Desktop Study in 2019. The results of the Desktop Study, including the identification of knowledge gaps, has prompted the Arctic Council and its working groups to address the growing issue of marine litter and led to the ultimate decision to develop a Regional Action Plan (RAP) on Marine Litter in the Arctic as part of PAME's 2019-2021 Work Plan.[3]

Desktop Study

The Desktop Study on Marine Litter, including microplastics, describes the current state of knowledge on marine litter in the Arctic. This report, which includes a thorough review of scientific literature, also highlights the many gaps in knowledge on marine litter sources, pathways, and impacts in the Arctic region. Part of any RAP on addressing marine litter should address ways in which to remedy those knowledge gaps and improve knowledge on how to combat marine litter.

The Desktop Study also highlights potential land-based and sea-based sources and pathways of marine litter, including microplastics, in the Arctic marine environment. It defines land-

[1] Arctic Council (2017). "Fairbanks Declaration." Arctic Council Secretariat (Fairbanks, USA. Accessed at: https://oaarchive.arctic-council.org/handle/11374/1910.

[2] PAME (2019), Desktop Study on Marine Litter including Microplastics in the Arctic (May 2019). Accessed at: https://pame.is/images/03_Projects/Arctic_Marine_Pollution/Litter/Desktop_study/Desktop_Study_on_marine_litter.pdf.

[3] PAME (2019). "PAME Work Plan 2019-2021." https://pame.is/index.php/document-library/pame-reports-new/pame-ministerial-deliverables/2019-11th-arctic-council-ministerial-meeting-rovaniemi-finland/426-pame-2019-2021-work-plan/file.

based sources as, "sources of pollution that originate from activities on land" and notes these sources of pollution are dependent on pathways to reach the ocean.[4] Some land-based sources of pollution include waste and wastewater mismanagement, plastic production and transportation, extractive industries, construction, and tourism. The Desktop Study also compiled potential sea-based sources of marine litter in the Arctic, defining them as "sources of pollution that originate from activities at sea."[5] Common sources of sea-based marine litter include fisheries, aquaculture, shipping, and resource exploration and extraction, among others.

Finally, the Desktop Study describes the current state of knowledge of transport of marine litter in the Arctic Ocean and identifies some of the pathways of distribution of marine litter from both within and outside of the Arctic marine environment. Specifically, some research has shown that marine litter, including microplastics, is transported via river systems, the atmosphere, and/or oceanic currents. Some evidence suggests that marine litter, including microplastics, is increasingly pervasive throughout the Arctic marine environment, including sea ice, sea floor sediments, and throughout the water column, although additional research is needed to further evaluate the extent and fate of marine litter in the Arctic environment.

Purpose and Objectives

Arctic Council Ministers representing the eight Arctic States and representatives from the six Permanent Participant organizations met in Rovaniemi, Finland on May 2019 and, "*… noted with concern that marine litter, including plastics and microplastics, represents a serious environmental problem on a global scale, including in the Arctic, welcomed the Desktop Study on Marine Litter, and supported the development of an Arctic regional action plan for reducing marine litter*."[6]

This Regional Action Plan (RAP) on Marine Litter will address identified knowledge gaps/research needs, actions for sea and land-based sources, monitoring, and outreach and education (including communications). PAME intends to include all relevant Arctic Council Working Groups in the development and implementation of the RAP (e.g., AMAP/marine litter monitoring; CAFF/impacts of marine litter on wildlife, ACAP/solid waste management).

The RAP will encompass all types of marine litter, including but not limited to, plastics, microplastics, wood, textiles, metal, glass, and rubber and other persistent and durable

[4] Ibid.

[5] Ibid.

[6] Arctic Council (2019). "Statement by the Chair; 11TH Ministerial Meeting of the Arctic Council." Rovaniemi, Finland. Accessed at:https://arctic-council.org/images/PDF_attachments/Rovaniemi-Statement-from-the-chair_FINAL_840AM-7MAY.pdf.

materials.[7] Implementation will play an important role in demonstrating Arctic States' stewardship efforts to reduce negative impacts of marine litter on Arctic marine species and ecosystems as well as the human communities that depend on these species. The RAP will outline a suite of actions for Arctic States to consider taking in the Arctic to address marine litter.

The geographic scope of the RAP mirrors that of the Desktop Study, encompassing the waters and surrounding seas of the Arctic Ocean. (The exact boundaries include the Central Arctic Ocean, Bering Sea, Chukchi Sea, Beaufort Sea, Northwestern Passages, Hudson Bay, the Hudson Straight, Baffin Bay, Davis Strait, Labrador Sea, Greenland Sea, the waters around Iceland and the Faroe Islands, northern parts of the Norwegian Sea, Barents Sea, Kara Sea, Laptev Sea and East Siberian Sea.)[8]

This RAP will cover the following streams of work to address marine litter, noting there is not a priority order to these themes and that actions will take place concurrently not sequentially:

1. Addressing Knowledge Gaps/Research
2. Actions for the Prevention, Reduction, and Removal of Arctic Marine Litter (sea and land-based sources)
3. Monitoring
4. Outreach and Education, including Communications

The RAP can be modified over time to address new and emerging information and priorities; therefore, the structure and scope is realistic and adaptable.[9]

Note: the paragraph above is taken from the Desktop Study. However, PAME has not discussed the periodicity with which this would take place or how.

Knowledge Gaps

Importantly, the Desktop Study identified a number of knowledge gaps which may help identify future research needs related to marine litter in the Arctic. Generally speaking, the knowledge gaps highlighted in the Desktop Study fell into broad categories including; lack of information on the distribution of marine litter geographically and physically (e.g. in the water column, sea floor, sea ice), lack of information on the sources and pathways of marine litter,

[7] PAME (2019), Desktop Study on Marine Litter including Microplastics in the Arctic (May 2019). Accessed at: https://pame.is/images/03_Projects/Arctic_Marine_Pollution/Litter/Desktop_study/Desktop_Study_on_marine_litter.pdf

[8] PAME, The Arctic Ocean Review Project, Final Report (Phase II 2011-2013) Kiruna May 2013. Protection of the Arctic Marine Environment (PAME) Secretariat, Akureyri (2013). <https://www.pame.is/images/03_Projects/AOR/Reports/126082_pame_sept_2.pdf>

[9] PAME (2019). "PAME Work Plan 2019-2021."Accessed at: https://pame.is/index.php/document-library/pame-reports-new/pame-ministerial-deliverables/2019-11th-arctic-council-ministerial-meeting-rovaniemi-finland/426-pame-2019-2021-work-plan/file.

and the dearth of information available on the impacts of marine litter to Arctic wildlife and human populations.

Table 1 further specifies some of the knowledge gaps highlighted in the study.

Note: Recommendations made to move the placement of this table to later in the document or as an Annex.

Table 1: Selected Knowledge Gaps from the Desktop Study on Marine Litter.

General	Types of marine litter	Information on non-plastic marine debris
Sources	Land-based	Input associated with domestic/industrial waste in arctic watershed. Socio-economic proxies (e.g. population, waste management, transportation) Information on locally-originating marine litter and distant sources
	Sea-based	Sea-based activities by sector
Pathways and distribution (quantity and composition)	Pathways	Atmospheric transport (e.g. wind, precipitation)
		Riverine input
		Oceanic transport
	Distribution	Distribution of marine litter in the Central Arctic Ocean, and along and off the shores of Arctic Alaska, Siberia, Canadian Arctic Archipelago, and mainland Canada
		Quantifying marine litter in compartments (e.g. water column, sea ice, beach and shorelines, sea floor)
Impacts	Biotic interaction and impacts	Residence time of plastic in digestive tract
		Potential transfer of toxic substances to seabird tissues
		Systematic assessment of ingestion of plastic debris
		Ingestion of plastic by fish and invertebrates
		Population-level effects

		Consequences of entanglement and ingestion (e.g. sublethal and lethal effects)
	Human dimensions	Socio-economic impacts of marine litter

Regional Action Plan for Marine Litter Management in the Arctic

Note: The order and content of the following sections is up for discussion

1. Addressing Knowledge Gaps/Research

1.1. Priority research needs

Research efforts targeting knowledge gaps should be prioritized according to which are the most necessary to understand the sources, pathways, and distribution of marine litter in order to better identify actions for the prevention of leakage of marine litter and microplastics in the Arctic. (See Table 1 for potential research opportunities.)

1.2. Other research needs

Other research needs will investigate the impact marine litter and microplastics are having on the Arctic marine ecosystem, its wildlife, and indigenous people and local communities, including socio-economic impacts. These needs and their relevancy for the reduction of marine litter and microplastics in the Arctic should be described here. (See Table 1 for potential research opportunities)

Note: Suggestion to move Addressing Knowledge Gaps/Research after Actions.

1.3. Potential Partnerships/stakeholder involvement

a. Other Arctic Council Working Groups
b. Arctic Indigenous Peoples and Local Communities
c. Observers
d. Citizen science efforts

Note: This section is unclear. Is it meant to identify stakeholders for involvement in research? Or is it meant to be stakeholder involvement in general which the RAP should promote?

2. Actions for the Prevention, Reduction and Removal of Arctic Marine Litter (sea-based and land-based sources)

2.1. Prevention and Reduction

This subsection will describe the actions proposed to prevent (and reduce) leakage of objects and fragments into the environment that will contribute to the stock of marine litter and microplastics in the Arctic. The actions will be divided between those targeting sea-based sources and land-based sources.

2.1.1. Leakage from sea-based sources

Possible actions to be described here will address litter and microplastics leakage connected to activities within fishing, aquaculture, shipping and offshore resource exploration and exploitation. Proposed actions for discussion by States and Permanent Participants could be amongst others:

Note: More discussion should take place amongst member states regarding what would be appropriate to include here. Ensure these are state led actions that do not overlap with mandates of international organizations. The text needs to reflect this.

- Review relevant and develop harbor waste management plans
- Improve adequacy of port waste reception facilities.
- Best practices to avoid lost and discarded aquaculture gear
- Investigate the waste 6R hierarchy (Reduce, Redesign, Refuse, Reuse, Recycle and Recover) in maritime industries, including the economic opportunities behind plastic gear and waste.

2.1.2. Leakage from land-based sources

Possible actions to be described here will address litter and microplastics leakage connected to activities on land with emphasis on solid waste and wastewater management, transportation and logistics and the extractive sector, construction and tourism. Proposed actions for discussion by States and Permanent Participants could be amongst others e.g. include:

Note: More discussion should take place amongst member states regarding what would be appropriate to include here.

- Compilation of relevant domestic legislation (waste management and littering)
- Develop best practices for wastewater and stormwater management and infrastructure
- Develop best practices for solid waste management
- Promote infrastructure for river mouth trash-capture devices
- Develop best practices for prevention for leakage of objects or fragments from other sectors identified as potentially leading to marine litter and microplastics such as plastic production and manufacturing, transportation and logistics, the extractive sector and tourism.
- Compile examples of industry innovation

2.2. Removal

Possible actions to be described here will address the environmentally sound and cost effective removal of litter from waterways, shorelines, surface water and seafloor. Proposed actions for discussion by Member States, Permanent Participants and Observers could be amongst others:

- Publish national and regional systematic and factual information regarding marine litter accumulation hotspots to allow prioritization of cleanup resources
- Promote mid to long-term volunteer beach and coastal seafloor cleanups
- Establish regional partnerships for other removal projects requiring significant resources as removal of fishing gear or other large objects and accumulation of objects

- Engage private sector and stakeholders in removal activities including through financial incentives. This includes, but is not limited to, fishing for litter initiatives as this could be expanded to shipping, etc.
- Develop preparedness plans for shipping accidents, natural disasters and extreme weather events to be able to respond to high intensity arrival of litter to the coastal zone through emergency cleanup operations

3. Monitoring (From AMAP project plan; will evolve based on their work)

Note: This information was pulled from a draft AMAP document that is actively under development. The intent is to merely to show that AMAP is developing this and PAME should further engage with AMAP to determine how to best incorporate Monitoring into the RAP; and also, to engage with AMAP (and CAFF) as relevant to provide input to this work.

3.1. Importance of standardized monitoring approaches

3.2. Existing frameworks for monitoring marine litter, including microplastics (e.g., OSPAR, NOAA, UNEP, etc.)

3.3. The need for harmonized sampling procedures and standardized processing and reporting procedures

3.4. Abiotic compartments for litter and plastics monitoring

3.5. Biotic compartments for litter and plastics monitoring

3.6. Cross-cutting issues

4. Outreach and Education

This section will list the actions for education and outreach on the topic of marine litter, including the target audience groups and their roles (e.g. Promoting education programmes for professional seafarers and fishermen on marine litter). The audience groups below are identified as the main ones to be targeted by the education and outreach activities:

- Governments
- Indigenous Peoples and Local Communities
- Public stakeholders/sector (e.g. school children, civil society)
- Private sector (e.g. fishing, shipping, plastics and waste industry)

The development of a communication plan for the RAP could be a major action under this heading. This action will describe the potential products needed such as summaries, policy briefs, brochures, graphics and infographics, website and webpages, power point presentations, videos and podcasts, as well as the demographic parameters such as audience size, age range, gender aspects, education level, optimal and minimal language requirements.