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2020

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**Regional Action Plan on Marine Litter in the Arctic**

**PROTECTION OF THE aRCTIC mARINE eNVIRONMENT**

***outline prepared by consultant***

**First Draft VERSION 14 Jan 2020**

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General Comments received

**Sweden:**

As stated previously, we think it is important to develop an implementation plan at an early stage to make it clear who has prime responsibility for the different actions/parts of actions in the actionplan. In that respect, it should also be clear who has a mandate to tackle the respective actions.

For this reason, but also to underpin efficient implementation of the actions and make our measures SMART, it might be useful to formulate some of the actions in a more concrete way, and divide more general actions into the different steps that need to be taken to achieve the overarching ambition. Our experiences from Ospar and Helcom show that actions may be harder to expected to implement, once you start to pull the different ingredients apart.

As we have also stated previously, we think it is important that the action plan clearly relates to ongoing work in IMO, with a focus on how IMO measures and regulations can aid the implementation of an Arctic actionplan and vice versa.

Finally, we have some general comments concerning the proposed research and outreach actions. It is a bit unclear to what extent new research in the Arctic is needed, or where there is relevant research and conclusions from other areas that could be drawn upon. As a basic outline for the research actions, we think the focus should be on what knowledge is available in relation to the proposed actions, respectively what is missing. We think the same reasoning could be applied to the outreach actions, i.e. we need to make it very clear what the benefit of a particular outreach action is in relation to our environmental objectives, and pinpoint the most relevant audience to that end.

**Norway:**

**General comments:**

For this version we have chosen not to provide detailed input on the technical-level questions (e.g. robustness of outlined actions, additional actions/frameworks etc.), as we will provide this information during the workshop along with more specific comments regarding each action.

We think that many of the actions are very similar og are duplicated throughout the document. A tidying-up of these duplications is needed. A suggestion would be to provide more general actions and provide "sub actions/points" that ensure reference to similar actions in relevant forums, e.g. IMO and FAO.

It is important to emphasise the short and long-term actions, as well as describing the actions that are easy and difficult to carry out.

Information needs to be provided where the different actions have come from (e.g. IMO). A solution may be to provide an overview of the actions that are managed in other fora, e.g. national actions, in order to see the relation between the different actions.

The document needs to identify which Arctic Council group that is "responsible" for the respective actions.

It is unclear what the difference is between report and review and implementation. From the agenda this is to be discussed during the workshop.

**Proposals/comments on specific actions:**

Suggestion for new action: Develop best practice guidelines for sewage treatment in the Arctic. This has not been mentioned in the draft.

Comments:

* We believe that some of the listed actions are not relevant actions for the Arctic, e.g. product development (strategic action 25) as well as Research Action (RA) 11 – socio-economic impacts, population level etc.

**Additional points from the LMEG co-chairs and the AMAP Secretariat:**

It would be good to see way more references to how Indigenous Knowledge can contribute, for example in identifying hotspots and prioritizing cleanups. I believe that the inclusion of IK is a priority for the AC WG, and this is a great place to show it.

It would be good to see some development of measurable outcomes. For example, for each one, what does PAME expect to see in the environment? This would then help define what monitoring would need to be done. For example, all the fishing gear removal you would expect to reduce the nets on shorelines, and therefore you would also expect to see this in the beach shorelines surveys. BUT you would also expect to see a reduction in microfibers in beach sediments because the nets are breaking down on the beaches. A good think through for each action, or group of actions, to what they would expect to see change in the environment would then pair with the monitoring that would be put in place. This might be a larger exercise to undertake with AMAP, but would be a really worthwhile one. Design of for instance a temporal trend monitoring programme would depend on the magnitude of change that you would like to detect.

There is a real lack of mention of tourism in the document. This is perhaps not the biggest contributor, but they are certainly a willing partner with a captive audience, and a group that would be a willing helper in implementing widespread monitoring. This should be recognised and a section of actions targeted at cruise operators would be relevant.

The dumping of waste and sewage sludge from cruise ships and other vessels into the sea is not addressed here. This needs to be one of the strategic actions. Sewage is dumped at sea and may contain large amounts of microplastics from washing of clothes, detergents, beauty products etc. IMOs guidelines should be followed up on here.

**Germany.**

As our own expertise is strongly focused on OSPAR and the EU, there are some comments in this regard. We would therefore like to point out that the OSPAR Action Plan is now 5 years old and therefore a first revision will come soon. This applies in particular to the actions included in this OSPAR plan that were not always SMART at that time, meaning that not always “their success can be measured”. Perhaps this could already be taken into account or kept in mind when drafting the Arctic Action Plan.

# Executive Summary

***Note: To be provided***

# Introduction

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]](#footnote-2) and approved PAME’s project plan to conduct a ‘Desktop Study On Marine Litter, including Microplastics, in the Arctic.’[[2]](#footnote-3) Arctic Council Ministers welcomed the final Desktop Study in 2019. The results of the study, including the identification of knowledge gaps, prompted the Arctic Council and its working groups to address the growing issue of marine litter and led to the decision to develop a Regional Action Plan (RAP) on Marine Litter in the Arctic as part of PAME’s 2019–2021 Work Plan.[[3]](#footnote-4)

The Desktop Study highlights known and potential land-based and sea-based sources and pathways of marine litter, including microplastics, in the Arctic marine environment. It defines land-based sources as, “sources of pollution that originate from activities on land” and sea-based sources as “sources of pollution that originate from activities at sea.”[[4]](#footnote-5) The study identifies solid waste and wastewater management deficiencies as important localized land-based sources of marine litter. seafisheries-related activities are a major local source of marine litter into the Arctic, with other sea-based activities like aquaculture, passenger and goods shipping, and oil and gas exploration acting ascontributing additional of marine litter. and the leakage they cause

Finally, the Desktop Study describes the current state of knowledge of the transport of marine litter into and within the Arctic Ocean and identifies some of the distribution pathways within and outside of the Arctic marine environment. Sresearch has shown that marine litter, including microplastics, is transported via river systems, the atmosphere, ocean currents, and other mechanisms such as wildlife and icemelt, sea ice transportation and accumulation. Recent evidence suggests that marine litter, including microplastics, is increasingly pervasive throughout the Arctic marine environment, including in sea ice, sea floor sediments, and throughout the water column, as well as on land, although additional research is needed to further evaluate the extent, pathways, and fate of marine litter in the Arctic environment.

The Desktop Study identifies a number of knowledge gaps which may help identify future research needs related to marine litter in the Arctic. Generally speaking, the research needs highlighted in the Desktop Study fell into broad categories including:

* information on the distribution of marine litter including micorplastics geographically and physically (e.g. in the water column, sea floor, sea ice),
* information on the sources and pathways of marine litter, and
* information on the impacts of marine litter to Arctic wildlife and human populations.

Annex 1 further specifies some of the research needs highlighted in the study. Desktop Study.

# Purpose and Objectives

***Note: Consider adding text describing the purpose of the action plan. The purpose and objectives of the action plan (to reduce marine litter) should be clearer.***

Arctic Council Ministers representing the eight Arctic States and representatives from the six Permanent Participant organizations met in Rovaniemi, Finland in May 2019. At that time, the Finnish Chair released a statement that noted, among other things, the need to develop an Arctic regional action plan *(RAP)* for reducing marine litter.[[5]](#footnote-6)

The RAP outlines actions for Arctic States to consider taking to address Arctic marine litter, individually or collectively through the Working Groups. It encompasses all types of marine litter except nanoplastics [and microfibres][[6]](#footnote-7), including but not limited to, plastics, microplastics, wood, textiles, metal, glass, and rubber and other persistent and durable materials.[[7]](#footnote-8) 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.

This RAP covers the following types of actions to address marine litter, noting there is not a prescribed priority order to these themes and that not all strategic actions are expected to take place concurrently:

1. Prevention, reduction and removal of marine litter from sea-based sources
2. Prevention, reduction and removal of marine litter from land-based sources
3. Outreach and education , including communication
4. Addressing research needs
5. Monitoring and Risk Assessment

The RAP can be modified over time to address new and emerging information and priorities. The structure and scope of the RAP, therefore, is realistic and intended to be practical and adaptable.[[8]](#footnote-9)

## Geographical scope

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.)[[9]](#footnote-10)

# Actions for the prevention and reduction of Arctic marine litter (sea-based and land-based sources)

The actions identified in this RAP are based on the latest science and will help address the mainmost prevalent regional sources of marine litter, the marine litter types posing highest risk, the areas of highest accumulation due to Arctic-specific pathways, and the most sensitive ecosystems being impacted. The desktop study provides the science-based background for the actions in this RAP and are divided into actions to prevent, reduce, and remove sources of marine litter from both sea-based and land-based sources, actions for education and outreach on the subject of marine litter and actions to address research needs on this topic in the Arctic region.

When suggested actions are covered in or connected to instruments developed by other regional and international organisations (e.g. FAO,IMO), these will be specifically mentioned ). Cooperation with these organisations or coordination with the work done under these organisations will be necessary to address the specific issue and avoid unnecessary duplication of instruments or actions.

This RAP does not provide an exhaustive list of actions. It is anticipated that additional actions may be required as new priorities emerge or new information becomes available through, for example, ongoing or new studies by the Arctic Council working groups and others.

***Notes:***

* ***The actions proposed below are based on an evaluation of other action plans and a selection was made based on the priorities described above to ensure that only those actions most relevant to the Arctic were selected. All provided documents by the leads were evaluated, but the HELCOM and OSPAR RAPs were utilized most.***
* ***So far, no effort was put into prioritizing within these suggested actions***

***Some comments from co-leads:***

* ***Whether or how best to include strategic actions from other fora (e.g. IMO, FAO, etc.) without causing redundancy (and while tailoring to the Arctic);***
* ***Some Strategic Actions are overly prescriptive and/or outside the remit of PAME/the AC.***
* ***Whether to develop an implementation plan;***
* ***The standard method, form and function of monitoring;***
* ***Methodology of environmental risk assessment***
* ***Whether or how to include reporting and review;***
* ***The periodicity of revision of the RAP;***
* ***Whether and how to apply the SMART goals (specific, measurable, achievable, realistic, timely) when developing Strategic Actions.***

### 1. Prevention and reduction of sea-based sources

Sea-based origin relates to marine litter that is directly (accidently or purposely) released into the sea by maritime activities such as from oil industry? shipping, fishing, aquaculture, offshore installations or dumping of refuse in Arctic waters.

#### 1.1 General (all offshore operations)

##### STRATEGIC ACTION 1

Develop guidelines for best practices in vessel inspections with regard waste management and disposal in support of MARPOL Annex V regulations, considering relevant guidance developed by the IMO,[[10]](#footnote-11) and investigate options for regional coordination and information sharing to strengthen implementation of best practices.

##### STRATEGIC ACTION 2

Review and promote best practices for waste management and disposal procedures for vessels and other offshore operations in the Arctic, including source reduction and alternative materials, to identify their role in preventing marine litter, including through effective delivery of waste to port reception facilities.

***Note: possibility of dividing into two separate actions***

##### STRATEGIC ACTION 3

Explore options for establishing and, where they exist, strengthening end-markets for plastic waste from fishing, aquaculture, shipping and off-shore activities, including recovered marine litter (e.g. by facilitating networking of waste producers, collectors and recycling companies).

***Note:***

* ***promote implementation of MARPOL Annex V on fishing and shipping wasteand on discharge to port reception facilities. Or too technical and delete?***
* ***Divide into two separate actions?***

##### STRATEGIC ACTION 4

Increase awareness by vessel operators using the Arctic Council Member States´ ports of updated information and best practices relevant to MARPOL Annex V measures.

#### 1.2 Fishing and aquaculture industry

##### STRATEGIC ACTION 5

Support ongoing efforts by the IMO, including to review **best practices within Arctic fishing and aquaculture industries in relation to** **all relevant aspects of waste management** (e.g. waste management on board, waste management at harbours, and operational losses/net cuttings).

##### STRATEGIC ACTION 6

Promote best practices for the **prevention of abandoned, lost or otherwise discarded fishing gear (ALDFG)** as developed under multinational projects on sustainable fisheries and as appropriate to the Arctic, such as the FAO and other international efforts, including but not limited to the FAO Voluntary Guidelines for the Marking of Fishing Gear.[[11]](#footnote-12)

##### STRATEGIC ACTION 7

Where relevant, strengthen **reporting requirements for ALDFG in** line with IMO recommendations as outlined in paragraphs 34-38 on Reporting of ALDFG within the FAO Voluntary Guidelines for the Marking of Fishing Gear.

[Consider including within vessel reporting requirements the **reporting by the flag State of discharge or accidental loss of fishing gear that poses a significant threat to the marine environment or navigation to IMO** via the Global Integrated Shipping Information System (GISIS).]).]

##### STRATEGIC ACTION 8

Study feasibility of fishing fleets **reporting** to fisheries authorities **purchases of fishing gear as well as disposals and losses** to assist in understanding regional waste management needs specific to fishing gear.

***Note. Maybe better suited under research needs?***

##### STRATEGIC ACTION 9

**IndentifyIndentify options Identifyoptions to reduce the operationaloperationaloperational release** of **dolly ropes** (bunches of polyethylene threads used to protect the cod end of demersal trawl nets from abrasions) in the Arctic Ocean in collaboration withwith relevant authorities and the ﬁshing industry.

##### STRATEGIC ACTION 10

Work with fishing and aquaculture industries to promote environmentally friendly design and choice of products such as lifecycle assessments, CO2 accounting from ‘cradle to grave’, reduction of packaging, recoverability and use of recycled content, abelling of material composition, best disposal practices and prevention of leakage to the marine environment.

***Note: Divide into separate actions e.g. action on ecological footprint of fishing gear? Or too Technical? Delete?***

##### STRATEGIC ACTION 11

Work with fishing and aquaculture industries to investigate and share information on the use of economic incentives, including deposit/ return schemes and other means to report on gear collected and dispatched for recycling, to address key waste items which could contribute to marine litter in the Arctic.

#### 1.3 Port reception facilities

##### STRATEGIC ACTION 12

Implement the ISO standard (ISO 201070:2013) in relation to port reception facilities. Promote the development of regional statistics on waste collected in ports based on existing information as far as possible.

##### STRATEGIC ACTION 13

Support ongoing work by PAME to develop a Regional Reception Facilities Plan for the Arctic in accordance with IMO guidance.

##### STRATEGIC ACTION 14

Review various pricing frameworks, cost recovery and other relevant incentive schemes in use (regional, national, port-specific) to encourage the use of reception facilities by ships, including fishing vessels, in order to assess and compare the efficacy of incentives in reducing marine litter. and make recommendations.

##### STRATEGIC ACTION 15

Explore options for regional arrangements,.

##### STRATEGIC ACTION 16

Assess available port reception facilities to determine their ability to receive plastics (including recycling).

##### STRATEGIC ACTION 17

Consider options for separation at source and promote the provisioning at port reception facilities of separate collection facilities for plastic waste from ships, including fishing gear, to facilitate reuse and recycling., where available.

### 2. Prevention and reduction from land-based sources

Improved waste management, including advanced centralized and decentralized wastewater treatment, is key to prevent litter from entering the marine environment, and marine litter prevention needs to be integrated into national waste management plans and strategies to reduce the generation of waste. In parts of the Arctic, population density is very low, and communities are not connected by road. Arctic weather and climate circumstances and geography make proper solid waste management processes challenging. In addition, natural disasters and extreme weather events can increase the amount of waste entering the marine environment from land.

Land-based sources of marine litter include the large Arctic watersheds with several large rivers that deliver substantial amounts of freshwater to the Arctic Ocean. Arctic watersheds are under the jurisdiction of the eight Arctic Council member states, with few exception of some headwaters of large rivers extending beyond them.

#### 2.1 Improved solid waste management

##### STRATEGIC ACTION 17

Develop best practices guidelines and share best practices to improve national solid waste management strategies in the region (e.g. state, municipal), based on the waste hierarchy and taking into consideration the unique characteristics of the Arctic, including remote communities and seasonal weather patterns.

##### STRATEGIC ACTION 18

Establish a dialogue with the private sector and relevant government authorities to (i) actively promote design of products that take into account the waste hierarchy, (ii) advance approaches for resource efficiency, and (iii) improve sustainable materials management across the supply chain, with the overall objective of long-term reduction of waste, including from pellet loss, packaging and microplastics, and any associated negative impacts on ecosystem health.

***Note: Divide into separate actions??***

##### STRATEGIC ACTION 19

Share and promote best practices and techniques to prevent litter, including microlitter, from entering the marine environment through sewage, stormwater and wastewater outlets.

##### STRATEGIC ACTION 20

Assist communities, particularly in remote areas, to improve the collection and sustainable management of solid waste.

, and to reduce the use of disposable products.

##### STRATEGIC ACTION 21

Promote cooperation with river basin authorities in and between the Arctic states to reduce inputs of litter from upstream regions into the Arctic and to reduce inputs to waterways within the Arctic, including from point sources.

##### STRATEGIC ACTION 22

Identify landfills and dumpsites in close proximity to coastal zones and waterways, particularly where these might be at risk of coastal erosion, and develop guidelines, as appropriate, on remedial action to prevent discharge of waste into the environment.

##### STRATEGIC ACTION 23

Promote best practice within the waste industry to reduce leakage of waste into the environment.

#### 2.2 Sewage and wastewater management

##### STRATEGIC ACTION 24

Improve stormwater management in order to prevent litter, including microplastic, from entering the marine environment through sewage, stormwater and wastewater outlets during heavy weather events and natural hazards.

#### 2.3 Microplastics

***Note: Is this Arctic specific?***

#### 2.4 Encouraging sustainable behaviours and products

***Note: consider rewording the title of this section***

##### STRATEGIC ACTION 26

Explore options to implement economic incentives that encourage behaviour change appropriate to the local context in communities, commercial establishments and industry sectors, including tourism, agriculture, construction and maritime sectors. This includes deposit refund schemes.

##### STRATEGIC ACTION 27

Encouraging the development and implementation of Sustainable Procurement Policies that promote end-markets for recycled products.

eco-labelling***Note: Is this Arctic specific? ?***

### 3. Removal

The remote and harsh nature of the Arctic can make removal of marine litter a particular challenge. However, there are also numerous opportunities to engage both civil society and the private sector in removal activities. Removal activities around communities can be educational and motivating for residents as they can see an immediate positive effect on the local environment and the resources they use. Programs may also target particular sectors such as fisheries or shipping. Clean up activities may also provide an opportunity for data collection, depending on the indicators that are developed for monitoring marine litter in the Arctic.

***Note: Should the paragraph above be moved to introduction section??***

#### 3.1 Fishing industry led removal

##### STRATEGIC ACTION 34

Where relevant, develop guidelines, best practices and tools appropriate for the Arctic to promote and strengthen cost-effective, safe and environmentally sound removal and disposal of ALDFG in accordance with IMO recommendations as outlined in paragraphs 39-45 on Recovery of ALDFG within the *FAO Voluntary Guidelines for the Marking of Fishing Gear*. Consider including all relevant sectors, including boaters and aquaculture operators, in promotion of relevant schemes in the Arctic for reporting and removal practices.

Identify hotspot areas of ALDFG through mapping of snagging sites or historic dumping grounds working with other initiatives, research programmes and with ﬁshing organisations.

***Note: Should this be divided into two or more actions?*** ***How does this relate to Research Actions (e.g. 5)?***

##### STRATEGIC ACTION 35

Remove barriers to the collection, processing and adequate disposal of marine litter collected by vessels.

Review the option of amending MARPOL and other regulations to allow vessels involved in the collection of marine litter at sea to dispose of this non-operational waste in port reception facilities.

***Note: Divide into two separate actions – one disposal facilities for fishing vessels. Second other ship related waste?***

##### STRATEGIC ACTION 36

Support the development of incentives for fishing vessels to retrieve or collect derelict fishing gear and deliver to port reception facilities, as per Action 5 of the IMO Action plan to address marine plastic litter from ships.

##### STRATEGIC ACTION 37

Consider implementing nationalprogrammes for the regular environmentally sound removal and disposal of marine litter, based on collaboration with relevant stakeholders, rights-holders and academia to identify accumulation hotspots.

##### STRATEGIC ACTION 38

Share experiences and promote national regulations and schemes to prevent, identify and remove abandoned derelict vessels (ADVs), particularly in ecologically sensitive and culturally important areas, for example by:

* Developing a priority list of derelict vessels for removal
* Compiling a clear set of existing responsibilities and capabilities for agencies addressing derelict vessels and share publicly
* Identifying successful models for sustainable funding of ADV removal programs
* Promoting owner Vessel Turn-In Programs
* Promoting reporting of ADVs and maintain a database
* Supporting collaboration of derelict vessel removal with appropriate authorities
* Developingbest practices for the intentional disposal at sea or in coastal zones of end-of-life boats, ships and offshore constructions.

#### 3.2 Coastal clean-ups

##### STRATEGIC ACTION 39

Develop best practices and programmes for the participation of citizens in reporting and clean-up activities, such as adopt-a-beach programmes, that are appropriate to Arctic settlements and remote communities and consider safety and logistical feasibility.

##### STRATEGIC ACTION 40

Establish an exchange platform, possibly in collaboration with Regional Seas Programmes and other relevant fora, for sharing experiences and development of best practices and environmentally sound techniques for removal of marine litter from relevant land and marine compartments, including by local communities.

##### STRATEGIC ACTION 41

Develop removal and safety best management practices for both public and private debris removal efforts that minimize adverse environmental, health, and cultural effects and mitigate impacts to coastal economies. Work with disposal companies to install proper disposal sites and ensure collected marine debris is appropriately managed.

### 4. Addressing research needs

Research efforts targeting identified knowledge gaps should be prioritized according to those 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).

At the same time, investigation into the impact of marine litter and microplastics on the Arctic marine ecosystem, its wildlife, and Indigenous peoples and local communities, including socio-economic impacts, should continue and be strengthened. 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).

***Notes:***

***Should there be a prioritization of the research needs actions?***

***Would subheaders be valuable to sort the research actions based on the type(s) of knowledge gaps they address. This could be based on the knowledge gaps identified in the Desktop Study:***

***General (e.g. monitoring frameworkframeworkand standard sampling and analysis method)***

***Drivers (e.g. socioeconomic assessment)***

***Sources (e.g. by sector)***

***Pathways (e.g. riverine input, winds, final fate)***

***Distribution (e.g. geographic, water column)***

***Impacts (e.g. on biota,methodology for risk assessment)***

***Should a general action be to support the monitoring plan developed by AMAP?***

#### General

##### RESEARCH ACTION 1

Produce and compile regional monitoring data (protocol?) while considering harmonization at broader scales, and can scaled down to ensure community based monitoring can be widely implemented..

##### RESEARCH ACTION 2

Research the concentration of contaminants transferred from plastics/debris to species of cultural importance (e.g. seals, polar bears, fish), including the bio magnification and bioaccumulation of contaminants associated with plastic debris.

##### RESEARCH ACTION 3

Assess the current state of knowledge on and, if needed, carry out research on the importance of sewage-related waste in the upstream waste flows (i.e., sewage treatments applied, efficiency of the treatments, existence of untreated sewage, storm water influence, psychology behind people’s behavior related to flushing the toilet, identification of missing elements).

##### RESEARCH ACTION 4

Conduct risk analysis of procedures on board vessels and in aquaculture farms to identify potential marine litter sources.

##### RESEARCH ACTION 6

Identify accumulation areas of marine litter and develop sub-regional or regional maps of hotspots of ﬂoating and stranded marine litter, based on mapping of circulation of ﬂoating masses of marine litter, and identiﬁcation of hotspots of accumulation on coastal areas and the role of prevailing currents and winds using Indigenous Knowledge and modelling approaches.

##### RESEARCH ACTION 7

Conduct analysis of overlap of high-density Marine Litter areas with areas of high sensitivity (endangered species, key habitats, etc.) in order to prioritise clean-up and mitigation efforts using both IK and western science.

##### RESEARCH ACTION 8

Assess and analyze removal data to support and target outreach efforts, potential policy options, and other means of preventing litter

##### RESEARCH ACTION 9

Work with the science and local communities to identify environmentally sound methods to remove micro-, nano-, and mesoplastics and fibres, implement removal protocols, and identify priority areas for removal.

***Note: Would this be better suited under the a section on international cooperation should one be created? Also pending outcome of inclusion of nano and fibres.***

##### RESEARCH ACTION 10

Building on the desktop study, investigate and compile information on the prevalence and sources of plastics and other top waste items in the Arctic environment and evaluate the potential harm/impact caused to the marine environment by them using both IK and western science.

##### RESEARCH ACTION 11

Continue and strengthen efforts to understand the environmental and socio-economic impacts of marine litter on the environment and biota, particularly effects at population levels and human health, furthered by a clearer understanding of the degradation of various plastics once in the marine environment..

***Note: divide this action into two separate actions?***

##### RESEARCH ACTION 11

Assess the importance of the different sources of primary and secondary microplastics. Evaluate products and processes that include both primary and secondary microplastics, such as fibres from clothing.

***Note: Pending outcome of inclusion of nano and fibres.***

##### RESEARCH ACTION 12

Promote research into methods to reduce the release of microplastics into the environment during the intended use of products, such as from synthetic fabrics and tires, including through product design and improvement of sewage and wastewater treatment.

##### RESEARCH ACTION 13

Assess microplastic contributions identified in the FAO report titled *Microplastics in fisheries and aquaculture*[[12]](#footnote-13) with relevance to the Arctic and consider development of options to reduce such inputs.

##### RESEARCH ACTION 14

Support international and regional efforts to analyse waste disposal offences at sea, including from offshore and seafloor activities, to further understand sources, pathways and drivers for such offenses in the Arctic.

***Note: Would this be better suited under the a section on international cooperation should one be created?***

RESEARCH ACTION 15

Promote research to prevent litter, including microlitter, from entering the marine environment through sewage, stormwater and wastewater outlets.

### 5. Education, Outreach and Communication

***Notes: General text on outreach and education to be included.***

***It may be beneficial to organize the actions in such a way that those focused on dissemination of the action plan (and related products) are separate from actions that are focused on engaging with targeted external audiences to prevent debris impacts in the Arctic.***

***Organizing in a way that links to related actions also helps avoid redundancy. Have flagged some instances that would benefit from the reorg below.***

##### ACTION 1

Develop marine litter assessment information sheets to assist Arctic Council member states to develop material for educational programs, including for universities (through UArctic and other partner universities from 8 states or observers) and professional seafarers such as fishermen, highlighting the marine litter problem and including codes of practice in cooperation with relevant organisations including IMO.

##### ACTION 2

Develop a communication strategy for this Regional Action Plan linked in a coherent way with national initiatives/actions. This will include linking the PAME website to relevant projects and initiatives based on the input from the stakeholder groups on marine litter management activities.

##### ACTION 3

Host regular symposium or scientific conference on marine litter in the Arctic in conjuction with other AC WGs with a focus on litter and microplastics, focusing on the latest scientific knowledge and the best practices to deal with this challenge. Regular symposium may be supplemented by a new conference/webinar series/add to UNEP´s Massive Open Online Courses (MOOC) for educators on marine debris.

##### ACTION 4

Establish a database on good practice examples of marine litter measures and initiatives (at community and national levels) and share this database with other Regional Seas Conventions in order to make actions more visible to the public.

***Note: Would this be better suited under the a section on international cooperation should one be created?***

##### ACTION 5

Where appropriate, develop and support shoreline cleanup programs. Consider actions to:

* Develop best practices guidelines for clean-ups
* Develop cleanup protocols for wilderness and remote beaches
* Train and support volunteers to survey and collect marine debris on local beaches, and report large and/or hazardous waste to appropriate authorities
* Establish pilot projects for marine debris collection sites at public beaches (e.g. wooden box with bags inside, information about marine debris inside, provide collection and drop off location)
* Explore means to reduce contributions of cleanup debris to landfills
* Engage with waste management associations for industry input.

##### ACTION 6

Establish an exchange platform to share information on location of hotspots, including from fishers, SCUBA diver surveys and sea-bed imaging, and to share experiences in marine litter removal on beaches, riverbanks, seafloor, the water column and sea surface areas, as well as ports and inland waterways.

***Note: Is this repetitive of previous actions (Strategic Action 40, Action 4)?***

##### ACTION 7

Strengthen anti-littering campaigns and associated penalties, particularly in ecologically sensitive and culturally important areas.

##### ACTION 8

Promote and undertake education activities on marine litter in synergy with existing initiatives in the field of sustainable development and in partnership with civil society (including activities related to prevention and promotion of sustainable consumption and production).

* Use websites, social media, blogs, and e-newsletters to educate various audience groups on marine debris science, issues, and actions that can be taken to prevent marine litter debris.
* Develop and implement community based public education campaigns for marine litter prevention, including specialized marine litter prevention programmes for key user-groups and stakeholders .
* Incorporate cultural concepts and practices including, where appropriate, use of Indigenous knowledge, popular culture icons in outreach programming to promote behavioural change at the community and national level.
* Conduct outreach and education around prevention of marine debris through public presentations, traveling exhibits, volunteer outreach, citizen science trainings, University courses, waste prevention and recycling initiatives, and hands-on beach cleanups.
* Conduct outreach and communication with the aquaculture sector on the types of gear escaping from farms into marine systems and are found in beach cleanup data

ACTION 9

Identify and promote curricula for marine-related education, including both professional seafarers and the recreational sector (e.g. diving and sailing schools), which develop awareness, understanding, and respect for the marine environment and secure commitment to responsible behavior at personal, local, national and global level.

##### ACTION 10

Raise public awareness, including through schools and consumer campaigns, on the occurrence and practices for prevention of marine litter, including micro particles and alternatives, taking into account existing materials (e.g., UNEP MOOC on Marine litter, the EU’s Marlisco Project, NOAA’s Marine Debris Program, Ocean Wise’s Ocean Plastic Education) and accompanied by image campaigns addressing threats/impact to marine life from various harmful litter items.

***Note: Would this be better suited under the a section on international cooperation should one be created?***

### 6. Strengthening international and cross-institutional cooperation

***Note: should this be a separate section or under main Strategic Actions? If so, other actions from previous sections that fit here could also be considered.***

##### ACTION 1

Support ongoing work by the IMO to better understand sea-based sources of marine litter, including all shipping and offshore activities, including container loss and ballast water, and assist in assessing the volume and types of marine litter collected during fishing operations to better understand the management and disposal of such wastes in the Arctic.

##### ACTION 2

Enhance cooperation and coordination with global marine initiatives such as UNEP’s Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPAMarine); Regional Seas Action Plans; The Global Partnership on Waste Management (GPWM); Global Ghost Gear Initiative (GGGI)

# Monitoring

***To be added based on the AMAPs work***

# Reporting and review

***Note: Suggestion to delete this section as the “reporting and review” is better suited as a part of an implementation plan (see*** [***https://www.pame.is/index.php/document-library/amsp-documents/176-amsp-2015-2025-implementation-plan/file***](https://www.pame.is/index.php/document-library/amsp-documents/176-amsp-2015-2025-implementation-plan/file)***)***

#### 8.1 Measure degree of implementation and effectiveness of the RAP

Describe mechanism through which the states report on progress and effectiveness of the actions set out in the RAP.

#### 8.2 Review cycles

Describe mechanism/process for review

# Implementation

***Suggested rewrite based on the AMSP***

The Regional Action Plan on Marine Litter in the Arctic addresses both short-term and long-term challenges and opportunities to reduce and eliminate marine litter, including microplastics, from both sea-based and land-based sources in the Arctic region. The Arctic Council working groups will coordinate and cooperate closely. In addition, the Arctic Council will need to look to Arctic State governments and agencies for support and participation. Working regionally offers an economy of scale, particularly for such joint efforts as research, monitoring, and technical cooperation. It can also improve policy and program coordination, which in turn also help implementation. The implementation of this Regional Action Plan may also foster Arctic State cooperation to promote the goals in relevant international and regional fora.

The Arctic Council provides strong institutional support for the stewardship of the Arctic marine environment. The implementation of this Regional Action Plan relies on the existing structures and mechanisms of the Council, i.e., Arctic Council biannual meetings, Senior Arctic Officials (SAOs) meetings and the activities of the Arctic Council Working Groups. Each Working Group, under the overall direction of the SAOs, will implement, subject to available resources, those actions that relate to their mandates and incorporate them into their work plans by consensus. As a portion of the marine litter found in the Arctic comes from outside of the region, cooperation and collaboration between Arctic Council member states and Observer States, as well as other countries will be beneficial.

Reports on progress of the implementation of the Regional Action Plan on Marine Litter in the Arctic will be submitted regularly to the Senior Arctic Officials. Subject to direction from SAOs and Arctic Council Ministers, PAME, in collaboration with all Arctic Council subsidiary bodies, will also lead a review of the Regional Action Plan.

Under the direction of SAOs, PAME will, in consultation with other Arctic Council Working Groups and Permanent Participants, develop a communication plan to support implementation of the Regional Action Plan.

# Annex : Selected Research Needs based on 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, seaice transportation and accumulation |
| 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, cultural and other impacts of marine litter |
|  | Attached heavy metals and pops on the microplastic and accumulation impact |
|  |  |  |

# References

***Note: to be populated***

Footnotes / references to the documents we refer to like Marpol annex V –

… MARPOL Annex V, known as a living document, the latest of which is [resolution MEPC.295(71)](http://www.imo.org/en/OurWork/Environment/PollutionPrevention/Garbage/Documents/MEPC.295(71).pdf)

… See 2012 Cape Town Agreement Consolidated text [2012 Cape Town Agreement](http://www.imo.org/en/About/Conventions/ListOfConventions/Documents/Consolidated%20text%20of%20the%20Agreement.pdf) (kept this here in case we keep the language about the IMO Identification Scheme Number, see page 13 of RAP)

<http://www.imo.org/en/Publications/Documents/Newsletters%20and%20Mailers/Mailers/IA793E.pdf> (additional reference to Cape Town Agreement)

IMO MEPC 74/14/2 Proposal for a new output to amend MARPOL to allow the establishment of regional arrangements in the Arctic (see page 14 of RAP)

See Polar Code [IMO Polar Code](http://www.imo.org/en/MediaCentre/HotTopics/polar/Documents/POLAR%20CODE%20TEXT%20AS%20ADOPTED.pdf) (need to add reference see page 14 of RAP)

The ISO standard (ISO 201070:2013) (see page 13 of RAP)

# Acronyms

***Note: to be populated***

GGGI - Global Ghost Gear Initiative

ALDFG - abandoned, lost or otherwise discarded fishing gear

MARPOL - International Convention for the Prevention of Pollution from Ships/ Maritime Pollution

IMO – International Maritime Organization

FAO – Food and Agriculture Organization

EU – European Union

GISIS – Global Integrated Shipping Information System (I wrote this out with the abbreviation on page 12 of the RAP)

ISO – International Organization for Standardization

LCA – life cycle assessments

KIMO - Kommunenes Internasjonale Miljøorganisasjon

NABU - Nature and Biodiversity Conservation Union

MOOC – Massive Open Online Courses – (I wrote this out with the abbreviation on page 28 of the RAP)

1. Arctic Council (2017). “Fairbanks Declaration.” Arctic Council Secretariat (Fairbanks, USA. Accessed at: <https://oaarchive.arctic-council.org/handle/11374/1910>. [↑](#footnote-ref-2)
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>. [↑](#footnote-ref-3)
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>. [↑](#footnote-ref-4)
4. Ibid. [↑](#footnote-ref-5)
5. 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>. [↑](#footnote-ref-6)
6. **Note from Grid-Arendal:** This requires discussion within PAME as it is not clear if all countries support the inclusion on nanoplastics. If nanoplastics are not to be included, some words of explanation should be added as to why they have been excluded. Also, for some of the actions could be quite difficult to address microplastics but exclude microfibers as microfibers are mostly a type of microplastics (except for the natural fibers such as cotton , wool, etc.). This may require consultation with AMAP to determine how microplastics will be treated in their monitoring program [↑](#footnote-ref-7)
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> [↑](#footnote-ref-8)
8. 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>. [↑](#footnote-ref-9)
9. 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> [↑](#footnote-ref-10)
10. See for example: Port Reception Facilities: How to Do It (IMO, 2016); Consolidated Guidance for Port Reception Facility Providers and Users (Mepc.1/Circ.834/Rev.1); Guidelines for ensuring the adequacy of port waste reception facilities (MEPC.83(44)); 2016 Revised Specific Guidelines for the Assessment of Vessels (LC 38/16, Annex 7) [↑](#footnote-ref-11)
11. <http://www.fao.org/3/ca3546t/ca3546t.pdf> [↑](#footnote-ref-12)
12. <http://www.fao.org/3/a-i7677e.pdf> [↑](#footnote-ref-13)