

PAME WORK PLAN 2021-2023

MAY 2021



PAME
Protection of the Arctic Marine Environment

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PREFACE

PAME focuses on the marine agenda of the Arctic Council and provides a unique forum for collaboration on a wide range of activities directed towards the protection and sustainable use of the Arctic marine environment.

PAME's activities are based on its mandate: to address marine policy measures and other measures related to the conservation and sustainable use of the Arctic marine and coastal environment in response to environmental change from both land and sea-based activities, including non-emergency pollution prevention control measures such as coordinated strategic plans as well as developing programs, assessments and guidelines, all of which aim to complement or supplement efforts and existing arrangements for the protection and sustainable development of the Arctic marine environment.

PAME provides a unique forum for collaboration on a wide range of Arctic marine environment issues and consists of representatives from the Arctic states, who are responsible for its work in their respective countries, and representatives of Permanent Participant organizations on behalf of Arctic indigenous peoples. Additionally, the other Arctic subsidiary bodies, accredited observers and other Arctic stakeholders contribute to the ongoing work of PAME.

PAME generally meets twice a year to assess progress and advance its work. PAME is headed by a Chair and Vice-Chair, which rotate among the Arctic States and are supported by a Secretariat based in Iceland. PAME reports to the Senior Arctic Officials (SAOs), and through them, to the Ministers of the Arctic Council who meet every two years. PAME's work plan is approved by the SAOs and the Ministers.

INTRODUCTION

The PAME Work Plan 2021-2023 was developed according to:

- PAME's mandate;
- priorities identified and recommendations made within Arctic Council approved reports; direction provided from Ministerial Declarations;
- follow-ups on recommendations from Arctic Council projects and the AMSP (2015-2025), which outlines the overall direction of the Arctic Council for the protection of the Arctic marine environment; and
- policy follow-up on the scientific and other relevant assessments of the Arctic Council. Additional project proposals may be developed within the scope of this WP between 2021-2023, subject to PAME approval, confirmed lead/co-lead commitment and financing.

PROJECTS AND ACTIVITIES

Additional project proposals may be developed within the scope of this work plan between 2021-2023, subject to confirmed lead/co-lead commitment and financing.

AMSP Goal 1

Improve knowledge of the Arctic marine environment, and continue to monitor and assess the current and future impacts on Arctic marine

ARCTIC MARINE SHIPPING (12 activities)

Arctic Shipping Status Reports (ASSR)

Rationale and overall objective: To provide a snapshot of Arctic shipping activities by utilizing PAME's ASTD System to generate topical, fact-based, user-friendly reports.

Main activities: Develop user-friendly, illustrative information reports on Arctic shipping activities that describe notable trends, highlight important developments, and depict interesting and important information. The goal is to produce 3-4 reports each year and, once approved by PAME, disseminate them to the general public and other stakeholders.

Timeline: 2021-2023 (continued from previous WP)

Funding: \$85,000 USD (in-kind)

Co-leads: United States, PAME Secretariat

New Low Sulphur Fuels, Fate, and Behaviour in Cold Water Conditions (PAME-EPPR Joint Project)

[Annex 1](#)

Rationale and overall objective: To expand our knowledge of the toxicity, fate, and behavior of new low sulphur fuel oils in cold water conditions. The results will support integration into marine oil spill prevention, preparedness, and response activities.

Main activities:

1. Develop and distribute a questionnaire on fuel used by ships in the Arctic;
2. Convene an expert workshop with industry representatives to advance the project;
3. Collect samples of fuels;

4. Analyze the fate and behavior of the fuel samples; and
5. Analyze the toxicity of these fuels.

Timeline: 2021-2023 (continued from previous work plan)

Funding: \$450,000 USD (including in-kind)

Lead: Norway

Underwater Noise in the Arctic: Understanding Impacts and Defining Management Solutions - Phase II

[Annex 2](#)

Rationale and overall objective: Build on the research findings from both the 2019 *Underwater Noise in the Arctic: State of Knowledge Report* and 2021 *'Underwater Noise Pollution from Shipping in the Arctic Report* to further develop decision-support tools for minimizing impacts from vessel underwater noise in the Arctic.

Main activities: Three steps:

1. Improve understanding of underwater noise generated by shipping in the Arctic;
2. Develop operational and technological scenarios; and,
3. Share findings of this project to relevant Arctic Council and other multilateral fora.

Timeline: 2021-2023

Funding: tbc

Co-leads: Canada, United States, WWF

Collaboration with the Arctic Regional Hydrographic Commission (ARHC)

Rationale and overall objective: To foster greater communication between PAME and ARHC in line with the SAO approved (Nov 2019) non-binding MOU between these two bodies to support Arctic maritime safety and the protection of the Arctic marine environment.

Main activities: In collaboration with the ARHC:

- Consider the development and dissemination of reports and other information that support navigational safety and environmental protection in the Arctic along the lines of the *Arctic Navigation Risk* summary bulletin issued by the ARHC in 2017(available [here](#)) ;

- Review the potential interoperability of databases (including the ASTD System) that contain Arctic geospatial information to determine their potential utilization across platforms for improved analysis; and,
- Undertake work to issue a 2023 update of ARHC’s 2018 Arctic hydrography risk assessment (available [here](#)) by designating a PAME representative to communicate with the ARHC on the approach, structure, usability and other aspects of the update.

Timeline: 2021-2023

Funding: In-kind

Lead: United States

Systematically Strengthening Observer Engagement in PAME’s Shipping Work

Rationale and overall objective: This project will identify options for leveraging Observer interest, expertise and engagement in PAME’s shipping work.

Main activities: To continue work on the 2019-2021 WP project titled “A Framework for more Systematically Engaging with Observers on Shipping Related Matters.” It will be further developed and elaborate on opportunities for Observers to contribute to and/or support PAME’s shipping-related work. Planned deliverables include a prioritized list of recommendations that can be pursued by PAME to strengthen Observer engagement and an accessible primer/frequently asked questions (FAQs) manual with important basic information that every PAME Observer should know.

Timeline: 2021-2023 (continued from previous work plan)

Funding: In-kind

Co-leads: United States, Republic of Korea, Poland, Northern Forum

Arctic Ship Traffic Data (ASTD) System

Rationale and overall objective: Continue to strengthen the ASTD System by augmenting its functionality and facilitating access to eligible stakeholders.

Main activities:

1. Augment the ASTD System with new functionalities, adding new data layers and additional data, enhancing its analytical and report generating capabilities;
2. Facilitate access for eligible users, particularly Arctic States, PPs, Observers, and Arctic Council subsidiary bodies; and,
3. Refine the ASTD System application forms and instructions to clarify ambiguities and make easier to use.

Timeline: 2021-2023 (continued from previous work plan)

Funding: as per the *Cooperative Agreement among the Arctic States Regarding Arctic Ship Traffic Data Sharing* (2017) (7 Arctic States x \$4000/per year in addition to Level III access fees, in-kind contributions and data streams from the co-leads).

Co-leads: United States, Norway, PAME Secretariat

The Arctic Shipping Best Practice Information Forum

Rationale and overall objective: To support the effective implementation of IMO's Polar Code and, more broadly, sustainable Arctic shipping.

Main activities: The project will convene at least two annual Forum meetings (virtual or in-person as appropriate) of Participants and continue the development and expansion of the Forum's web portal (arcticshippingforum.is). The web portal includes hundreds of links to information related to the effective implementation of a compliance with IMO's Polar Code. It also serves as a resource hub of information, guidance, and guidelines that aid decision makers involved in Arctic marine navigation and those affected by maritime operations related to the Polar Code. The project will also explore the possibility of modest refinements to the Forum's 2017 Terms of Reference (ToR).

Timeline: A minimum of two annual meetings during the 2021-2023 period (continued from previous work plan).

Funding: In-kind contributions and voluntary Forum Participant donations.

Co-leads: Russian Federation, United States, Canada

Interpretation of the Polar Code

Lead: Norway

Rationale and overall objective: The adoption of the Polar Code was a first step towards ensuring safe and sustainable shipping in the Arctic. In order to ensure the success of the Polar Code there is a need to work towards facilitating, where applicable, consistent interpretation of the Code.

Main activities: Building off of the survey submitted during the 2019-2021 WP period, this project will convene a correspondence group of Arctic State Polar Code subject matter experts to analyze the survey results, and consider developing a paper containing Polar Code interpretations for possible submission to the IMO.

Timeline: 2021-2023 (continued from previous work plan)

Funding: In-kind

Lead: Norway

Wastewater Discharges from Vessels in the Arctic - A Survey of Current Practices

[Annex 3](#)

Rationale and overall objective: To better understand current practices of Arctic ship operators related to wastewater discharges in the Arctic, specifically grey water, sewage, and exhaust gas cleaning system (scrubber) effluent.

Main activities: The project will conduct a survey directed at shipping operators and industry trade associations. A third-party contractor will be hired to conduct the confidential survey. Non-attributed results will be summarized, and a report written and shared with PAME members for comment, review, and finalization. By collaborating with industry associations like the Arctic Expedition Cruise Operators (AECO), the consultant will conduct outreach and request interviews of current shipping operators, including cruise and tourism, pleasure craft, ferries, bulk carriers, fishing, research, tankers, and community and development project re-supply.

The survey findings may contribute to, and inform, future PAME work on Arctic Marine Tourism and the Arctic Shipping Best Practice Information Forum. Furthermore, it will inform potential future dialogue within the Arctic Council as well as ongoing discussions at the IMO.

Timeline: 2021-2023

Funding: \$37,000 CAD in addition to in-kind support

Co-leads: Iceland, WWF, CCU

Arctic Port Reception Facilities Inventory

Rationale and overall objective: Develop a current inventory of Arctic port reception facilities to assess where there may be infrastructure gaps in light of increasing Arctic shipping traffic.

Main activities: The project will update the 2012 paper titled "[Specially Designated Arctic Marine Areas and Port Reception Facilities](#)", which summarizes the capabilities and capacities of port reception facilities in the Arctic. The update includes a review of the existing waste infrastructure within each Arctic country and the development of a mapping data layer for incorporation into PAME's ASTD System. Explore collaboration with the Marine Litter expert group on information relevant for marine litter.

Timeline: 2021-2023

Funding: In-kind

Lead: United States

Arctic Arrangement for Regional Reception Facilities

Rationale and overall objective: Amend relevant MARPOL annexes to allow Arctic States to meet their MARPOL obligations of providing adequate port reception facilities for ship waste through a regional arrangement in the Arctic. Due to the Arctic's unique circumstances (remoteness, severe weather, limited infrastructure and resources) regional arrangements are a practical means of meeting the requirements.

Main activities: The project will develop language for the proposed draft MARPOL amendments that, consistent with the decision made by the 74th Session of the IMO's Marine Environmental Protection Committee (MEPC), would implement an Arctic Regional Arrangement for Port Reception Facilities. Such proposed draft language would be part of a joint submission by Arctic States to the 9th meeting of IMO's Sub-committee on Pollution, Prevention and Response (PPR) in 2022. This project also includes collaboration with the Marine Litter expert group (ML EG) on information relevant to marine litter.

Timeline: 2021-2023 (continuation from previous work plan)

Funding: In-kind

Co-leads: United States, Russian Federation

Raising awareness in the Arctic Council of the provisions of the 2012 Cape Town Agreement for the safety of fishing vessels and the experience gained in the implementation process by Arctic States and other nations, recognizing the importance of fishing vessel safety in the Arctic due to the increased traffic of fishing vessels in the region.

[Annex 4](#)

Rationale and overall objective: The project contributes to the PAME approved AMSA recommendations I(B): *IMO Measures for Arctic Shipping*, which is for the Arctic States to "...cooperatively support efforts at the IMO to strengthen, harmonize and regularly update international standards for vessels operating in the Arctic." Successive PAME Records of Decision have recognized IMO's current emphasis in raising awareness regarding the provisions of the Cape Town Agreement. The aim is to complement IMO's efforts and highlight the experience gained in the implementation process by Arctic States and other nations.

Main activities:

- Establish a Correspondence Group.
- Develop an Arctic Shipping Status Report (ASSR) on fishing vessel activities in the Arctic with its project co-leads.
- Develop a Summary Report that includes the findings from the ASSR Report, and highlights the provisions of the Cape Town Agreement for the Safety of Fishing Vessels, that includes:

- Information on challenges Arctic States or Observer States may have had in ratifying the Agreement;
 - Information on national legislation that may be considered to cover wholly or partially the Agreement; and
 - An overview of such challenges and national legislative information with suggestions for a way forward.
- The summary report will be presented to PAME for consideration.
 - Convene an online webinar for PAME Members and interested Arctic Council Working Groups where States share their experience, and challenges that may have been identified.

Timeline: 2021-2023

Funding: 80.000 USD (including in-kind)

Leads: Iceland, Spain, IMO.

INVASIVE SPECIES

Marine Invasive Alien Species in Arctic Waters (joint PAME-CAFF Project)

[Annex 5](#)

Rationale and overall objective: Contribute to the implementation of the *Arctic Invasive Alien Species Strategy and Action Plan* (ARIAS 2017) by improving the knowledge base for CAFF and PAME on specific actions in the ARIAS Strategy and Action Plan that focus on the risk of potential transfer of alien invasive species by ships via ballast water (BW) and biofouling (BF) into and within Arctic waters.

Main activities: The project will compile of a list of known nonindigenous species, including their current distributions, in Arctic waters. Presently, most Arctic States have data and knowledge that can be included directly in the project, which will also include a list of data sources. Furthermore, the project will review methods and tools used for risk assessment of invasive species, vectors and pathways, and identify those best suited for the project's risk assessments, as well as an assessment of the probability of nonindigenous species to be transferred by ships into Arctic waters, and between different ecoregions in the Arctic, presently and in the year 2100.

Timeline: 2021-2023

Funding: In-kind

Leads: Kingdom of Denmark, Canada, Norway. **Partner:** CAFF.

MARINE LITTER IN THE ARCTIC (4 activities)

Develop an Implementation Plan for the Regional Action Plan on Marine Litter in the Arctic (ML-RAP)

[Annex 6](#)

Rationale and overall objective: The overall objective is to develop an Implementation Plan for the *ML-RAP* in close coordination and cooperation with other Arctic Council WGs and with overall guidance from the SAOs and Ministers. The plan will support coordination, collaboration, and reporting on marine litter-related activities across the Arctic Council WGs and Arctic States, including the integration of marine litter activities in multiple WG work plans. Co-leads will also engage with Indigenous and local communities and relevant stakeholders.

Main activities:

1. Develop an Annotated Outline: Co-leads will prepare an annotated outline of the *ML-RAP* Implementation Plan and share with the other Arctic Council WGs to seek their input and feedback;
2. Develop a Roadmap for Implementation: Co-leads, in close collaboration with other Arctic Council WGs, will develop a Roadmap to guide implementation. The Roadmap may include an analysis of activities to date, the identification of gaps and needs, and criteria for an iterative priority-setting process, among other steps; and,
3. Establish an Implementation and Reporting Process: The PAME WG, in close collaboration with other Arctic Council WGs, will develop an implementation and reporting process, including a status report every two years for the SAOs and Ministers. Such reporting will be a cross-cutting WG effort with the aim to convey the status of ML-RAP Strategic Actions using a simple template such as that used by the AMSP or AMSA. This report will also inform biennial WG work plans and include domestic activities as well as Arctic Council projects.

Timeline: 2021-2023

Funding: \$155 000 (including in-kind)

Leads: Kingdom of Denmark, Finland, Norway, and United States

Arctic Coastal Cleanup

[Annex 7](#)

Rationale and overall objective: The project will contribute to enhancing efforts to remove litter from Arctic beaches and waterways. The project will establish partnerships with local organizations, community leaders and regional experts to increase the knowledge and awareness of the problem throughout the Arctic, contributing to reducing discharges of marine litter to the Arctic in the long term.

Main activities:

1. Start with a pilot project in 2021 to identify some areas with high levels of litter and establish methods and models for organization of clean-up actions, given the special Arctic conditions;
2. Based on the experiences from the pilot project, the project will be extended to enable partners in all Arctic regions to participate; and,
3. Highlight the impact of marine litter on the Arctic's unique environment, collect data on types and sources of the plastic litter found, and build awareness and partnerships which can have a positive effect both on clean-up and measures to reduce discharges of marine litter also in the long term.

Timeline: 2021-2023

Funding: \$220.000 USD (in addition to in-kind support)

Leads: Norway. Arctic States and PPs are welcome to co-lead.

Fishing Practice & Gear Inventory: Enhancing Understanding of Abandoned Lost or otherwise Discarded Fishing Gear (ALDFG)

[Annex 8](#)

Rationale and overall objective: This project would serve as an implementation activity under one of the strategic actions related to addressing ALDFG in the *ML-RAP* by offering a baseline understanding of existing fishing activity and gear use in a given area. The overall goal of the project is to increase understanding and develop reliable informational resources of fishing activity in the Arctic and near-Arctic, in order to inform gear identification as part of monitoring or removal. This additional knowledge could help inform ALDFG prevention and intervention efforts by understanding differences in gear composition over space, and eventually over time.

Main activities:

1. Collect information on current practices gathered from Arctic States and non-Arctic States fishing in the area, which may help identify which gear could contribute to marine litter in the Arctic;

2. Categorize and classify available records of ALDFG that has been recovered to understand potential sources, pathways, and fates of ALDFG and associated equipment, especially as fishing effort shifts farther north to follow biomass;
3. Design a visualization tool and structure to present data in a common format. A visualization structure would incorporate intuitive representation of fishing areas by country, target species, fishing gear by type, as well as any additional parameters identified. This could take the form of static maps or dynamic online tools, depending on assessed utility and resource availability; and,
4. Conduct outreach and communication on the data and lessons learned by providing information to partners on the availability and location(s) of data in order to inform and target ALDFG prevention and intervention efforts.

Timeline: 2021-2023

Funding: tbd

Leads: Norway, United States. Other partners are welcome to co-lead.

Marine Litter Communication and Outreach Activities

Rationale and overall objective: Development of outreach and communications material in support of the implementation of the *ML-RAP* including a Communication Plan

Main activities:

1. ML-RAP Communication Plan;
2. Plastic in a bottle;
3. Develop youth engagement toolkit in cooperation with CAFF International Arctic Youth Engagement Strategy;
4. Project video; and,
5. Marine Litter graphics site on the PAME website for outreach purposes.

Timeline: 2021-2023 (continued from previous WP)

Funding: in-kind

Lead: The PAME Secretariat

STRATEGIC DOCUMENTS

Targeted update of the Arctic Council Arctic Marine Strategic Plan (AMSP 2015)

[Annex 9](#)

Rational and overall objective:

1. Update strategic actions of the AMSP and integrate new ones, as relevant, to reflect the changes underway in the Arctic marine environment; and,
2. Enhance integration, coordination, and collaboration on marine-related activities among the AC WGs.

Main activities: An outreach and scoping phase will be developed to focus the update on priority topics as identified by Ministerial and SAO priorities and mandates. Representatives from the other Arctic Council WGs, PPs and other relevant stakeholders will be invited to contribute towards updating the AMSP. The project includes:

1. Identifying some potential new thematic areas of work and develop an annotated list of possible strategic actions; and,
2. Convening meetings with the Arctic Council WGs back-to-back with SAO meetings to seek additional inputs and feedback from the WGs. Further, PAME will seek direct input from the SAOs through their regular meetings and others as relevant.

Timeline: 2021-2023

Funding: \$175.000USD and In-kind

Leads: Norway, USA, Canada; Partners: all Arctic Council WGs

4th AMSP Implementation Status Report 2021-2023

Rational and overall objective: To track progress on implementation of the AMSP 40 Strategic Actions and report on its status.

Main activities: The project will develop the 4th "AMSP Implementation Status Report" in collaboration with other Arctic Council WGs for the period 2021-2023 for submission to the Arctic Council Ministerial meeting in 2023.

Timeline: 2021-2023

Funding: In-kind

Leads: PAME HoDs, PAME Secretariat, in collaboration with the other Arctic Council WGs

AMSP Goal 2

Conserve and protect ecosystem function and marine biodiversity to enhance resilience and the provision of ecosystem services.

MARINE PROTECTED AREAS (MPAs) (6 activities)

Continue the project on Modelling Arctic Oceanographic Connectivity, with the inclusion of the Central Arctic Ocean, to further develop PAME's Marine Protected Areas Toolbox

Rationale and overall objective: Ongoing climate change may facilitate increased access to the Arctic region, and potential new economic opportunities, but may also bring potential threats to the Arctic marine and coastal environments. These changes could benefit from more integrated approaches to Arctic marine management, including the consideration of MPA networks designed to aid in the conservation and sustainable use of the Arctic environment. Understanding seascape connectivity in the Arctic Ocean using oceanographic circulation models is one way to support MPA networks and sustainable use of the Arctic Ocean.

Main activities: Oceanographic connectivity modelling (details to be developed intersessionally).

Timeline: 2021-2023 (continuation from previous work plan)

Funding: (tbc)

Lead: Sweden

Different Ways of Knowing: Applying Indigenous and Local Knowledge and Scientific Information to Arctic Conservation Planning

[Annex 10](#)

Rationale and overall objective: To support respectful and effective partnerships to advance area-based management for conservation and sustainable use of the marine environment. The project will also seek to demonstrate how to connect locally-derived knowledge with sea- and ocean-scale scientific knowledge used in national and ocean scale systematic conservation planning and MPA network design.

Main activities: The project is Arctic-wide, and will build on previous work by PAME on Indigenous engagement in MPA planning by developing tools and best practices for engaging with Indigenous communities. It will:

- Develop and expand on case studies of how Indigenous peoples and local communities are already addressing area-based management for conservation or monitoring programs to ensure healthy ecosystems; and,
- Develop guidance and tools to consider different forms of knowledge derived at specific spatial scales (e.g., locally, regionally, ocean-scale) for comprehensive MPA network planning, design and implementation and begin to develop a community of practice among Arctic Indigenous communities to build capacity and share knowledge on area-based conservation planning and management, including through mentoring and opportunities for Indigenous youth and young professionals.

Timeline: 2021-2023

Funding: (tbc)

Leads: Canada, United States, AIA, ICC, Saami Council, WWF

Develop additional Information Briefs on the Arctic marine environment under change

Rationale and overall objective: Continue to develop Information Briefs (IBs) on the Arctic marine environment under change with the aim to leverage and synthesize information from the Arctic Council's work on this topic, communicate to decision makers and the public, and contribute to cross-cutting WG cooperation on common topics.

Main activities: Establish a joint PAME/CAFF scoping team to begin scoping possible content and areas of focus for an IB on a topic or topics related to joint PAME/CAFF activities under the broad theme of biodiversity, including consideration of what would be feasible and most valuable to present during this biennium. This may require a virtual workshop. Once the scope is clear, project co-leads will work with a drafting team inclusive of interested Arctic States, PPs, and relevant Observers to develop drafts of the IB for regular review by PAME and CAFF. Co-leads will aim for a completed product in time for submission to the SAOs for consideration for the 2023 Ministerial.

Timeline: 2021-2023 (continuation from previous work plan)

Funding: (tbc)

Co-leads: Finland and the United States. **Partner:** CAFF

Revisiting the Framework for a Pan-Arctic Network of MPAs (2015) for potential updates

Rationale and overall objective: Assess the need to update the Framework for a Pan-Arctic Network of MPAs based on international developments, including international best practices and previous Arctic Council initiatives, within the broader context of sustainable oceans management practices and climate change. The aim is to support the efforts of Arctic States to develop their MPA networks and chart a course for future collaborative planning, management, and actions for the conservation and protection of the Arctic marine environment.

Main activities: The PAME Marine Protected Areas (MPA) expert group will explore potential updates for consideration by the PAME working group to include:

1. Potential linkages to the UN Decade of Ocean Science for Sustainable Development;
2. Exploration of management tools; and,
3. Convene a meeting of MPA managers from the Arctic to share approaches, opportunities and challenges, as well as contribute to revisiting of MPA Framework Document.

Timeline: 2021-2023

Funding: In-kind

Lead: MPA Expert Group

Other Effective Area-based Conservation Measures (OECM) in the Arctic Marine Environment (joint PAME-CAFF Project)

[Annex 11](#)

Rationale and overall objective: This project will provide an overview of the current range and understanding of international and national criteria used for identification of “Other Effective Area-Based Conservation Measures” (OECM’s) in the Arctic, this would include potential case studies on the approach Arctic States have applied to identify OECM’s in their national waters, and how those are contributing to broader marine conservation objectives. In addition, it would facilitate an exchange of information among Arctic States on the range of information and application of OECMs, and potentially contribute to updates of the Framework for a Pan-Arctic Network of MPAs. Include updated references and information on OECMs, consistent with what will be developed as part of this project into the updated PAME/CAFF “Indicator Report” (to be re-named “Status and Trends for Arctic Conservation Measures”).

Main activities: The project will be implemented by CAFF/PAME through a joint steering committee to be established to guide the work.

1. Project co-leads will gather existing sources on OECM criteria and Arctic State’s approaches to identifying OECMs, and relevant case studies. Provide relevant

updated information on OECM's to the PAME/CAFF Indicator report revision (spring 2021);

2. A report will be developed, based on the results gathered, which would include an overview of OECM criteria and application in the Arctic context, and Arctic relevant case studies; and,
3. Convene a workshop or session at the 2022 IMPAC V Congress in Vancouver (potentially in partnership with the Convention on Biological Diversity (CBD) Secretariat/others) to bring together Arctic marine conservation practitioners and managers to share information on the application of OECMs in the Arctic.

Timeline: 2021-2023

Funding: In-kind

Co-leads: Kingdom of Denmark, Canada, USA.

Expansion and refinement of the MPA-Network Toolbox

Rationale and overall objective: Continue enhancing PAME's work on a Pan-Arctic Network of Marine Protected Areas, taking into account any potential updates to the *Framework for a Pan-Arctic Network of MPAs* (2015) and the AMSP strategic action 7.2.10.

Main activities: This work will take into account outcomes from previous MPA workshops (4 workshops), the *Modelling Arctic Oceanographic Connectivity* study, updating exercise of the *Framework for a Pan-Arctic Network of MPAs* (2015) (MPA project #4 above), and work on other relevant projects from the 2021-2023 biennium.

Timeline: Ongoing/continuation from previous work plan.

Funding: In-kind

Lead: MPA Expert Group. Partners: CAFF, WWF, Circumpolar Conservation Union (CCU)

ECOSYSTEM APPROACH TO MANAGEMENT (EA) (7 activities)

7th EA Workshop on values and valuation of the cultural, social and economic goods and services produced by the ecosystems

Rationale and overall objective: To identify, understand and find ways to benefit from the diverse systems of values and valuation of nature in the shared ecosystems of an increasingly connected Arctic.

- Identify and understand diverse values held for nature;
- Explore the relationships between values and valuation; and,
- Explore ways to incorporate diverse systems of values and valuation into the Ecosystem Approach to management.

Main activities: Convene the 7th EA workshop in 2022 with focus on element No. 5 of the EA framework: Value the cultural, social, and economic goods and services produced by the ecosystem.

Timeline: 2022 (continuation from previous WP)

Funding: In-kind

Leads: Norway and the United States in close collaboration with the EA expert group

Third International Science and Policy Conference on Implementation of the Ecosystem Approach to Management in the Arctic

Rationale and overall objective: Topics that include common understandings on implementation; cooperation and joint work; challenges and solutions; and other aspects as developed by a conference planning group.

Main activities: A planning group will be established in 2021 with representatives of co-conveners and others. During 2022 this group will develop the program, identify and invite speakers, arrange for editing and publication of the proceedings, solicit sponsors, and provide for other operational details of the conference. Presentations, panels, and discussion groups at the conference (tentative 2023 or 2024) will review information, experiences, and examples of EA implementation in Arctic waters, as well as other aspects as developed by a conference planning group. A Conference Report will also be prepared during 2023-2024.

Timeline: 2021-2023 (continuation from previous work plan)

Funding: In-kind

Leads: Norway and the United States in close collaboration with the EA expert group

Integrated Ecosystem Assessment (IEA) of the Central Arctic Ocean (WGICA)

Rationale and overall objective: Continue the development of Integrated Ecosystem Assessment (IEA). Continue to report on developments within ICES/PICES/PAME WG on Integrated Ecosystem Assessment (WGICA) as well as other ICES activities on IEA.

Main activities:

1. WGICA to draft Report on human activities (Part 1) and climate and vulnerability assessment (Part 2) of the Central Arctic Ocean (CAO); and,
2. Coordinate and collaborate with the Shipping Expert Group and other AC WGs, as relevant.

Timeline: 2021-2023 (ongoing cross-cutting initiative by ICES/PICES and PAME)

Funding: In-kind

Leads: Norway, United States; **Partners:** ICES, PICES

Revise the Ecosystem Approach Framework (EA) and develop a tool for following EA implementation in the Arctic LMEs

[Annex 12](#)

Rationale and overall objective: Elaborate from the six-point EBM framework described in the 2019 Guidelines for Implementing an Ecosystems Approach, and assess relevant EA information within the Arctic Council with the aim to strengthen the integration of an ecosystem approach into assessments and management recommendations.

Main activities:

1. Reviewing and synthesize existing EA literature from reports of the EA EG and relevant EA literature globally (literature review);
2. Describing new element of the EA framework (“Monitoring” and “Advisory products”);
3. Producing a new EA circular figure with a in depth explanation;
4. Map and summarize information from Arctic Council WGs of relevance to EA;
5. Produce a communications strategy (e.g., conferences, workshops, Toolbox to guide future EA implementation); and,
6. Develop a tool for ongoing reporting mechanism on EA implementation in the Arctic Large Marine Ecosystems (LMEs).

Timeline: 2021-2023

Funding: In-kind

Leads: Norway and the United States in close collaboration with the EA expert group

Report on development in defining or setting Ecological objectives

Rationale and overall objective: The objective is to continue to integrate the ecosystem approach into assessments and management recommendations through follow-up to the 2013 EBM marine-related recommendations, taking into account previous work on Large Marine Ecosystems (LMEs), and new and ongoing EA activities of cross-cutting nature.

Main activities: This project will report on developments in defining or setting ecological quality objectives in the context of EA implementation in national and international processes.

Timeline: 2021-2023 (continuation from previous work plan)

Funding: In-kind

Leads: Norway and the United States in close collaboration with the EA expert group

Synthesis Report on Ecosystem Status, Human Impact and Management Measures in the Central Arctic Ocean (CAO)

[Annex 13](#)

Rationale and overall objective: The aim of this project is to synthesize relevant information on the status, trends and projected changes in the CAO Large Marine Ecosystem (LME), human activities and pressures in the area, and the current management measures in place in order to inform future policy and decision making.

Main activities: A synthesis report will be prepared drawing on published information and reports by the PAME/ICES/PICES Working Group on the Central Arctic Ocean (WGICA), other Arctic Council working groups and other information sources, such as the Central Arctic Ocean (CAO) Fisheries Agreement Provisional Scientific Coordinating Group. This project will also specifically contribute to the WGICA report *Human Activities, Pressures, and the Impact on the Ecosystems of the Central Arctic Ocean – Measures and Knowledge Gaps* to be completed within the same timeline.

Timeline: 2021-2023

Funding: In-kind

Co-leads: Canada, Finland, Sweden, United States, WWF

Concept paper on further cooperation under the Arctic Council on Ecosystem-Based Management (EBM/EA) of Arctic marine ecosystems

[Annex 14](#)

Rationale and overall objective: The need for ecosystem-based management (EBM/EA) to ensure sustainable use and protection of the marine environment is widely recognized by the international community, the Arctic Council, and the Arctic States and Permanent Participants of the Council. EBM, therefore, is a suitable framework for efforts to enhance cooperation on Arctic marine stewardship under the Arctic Council. This concept paper explores the case for enhanced transboundary cooperation and coordination of Ecosystem Based Management of the Arctic marine environment. A set of actions will be proposed to develop such cooperation further in the coming four years.

Main activities: Review the concept paper and provide input and further guidance to SAOs, including expert advice and recommendations to be discussed at the earliest possible SAO meeting of the incoming Russian Chairmanship.

Timeline: 2021-2023

Funding: In-kind

Leads: Norway in close collaboration with the EA expert group

AMSP Goal 3

Promote safe and sustainable use of the marine environment, taking into account cumulative environmental impacts.

RESOURCE EXPLORATION AND DEVELOPMENT (4 activities)

Meaningful Engagement of Indigenous Peoples and Local Communities in Marine Activities (MEMA): Outreach and Next Steps

[Annex 15](#)

Rationale and overall objective: This project will prepare the findings of the MEMA II Report, MEMA Reference Guide and the MEMA Database available to Indigenous peoples, local communities, and proponents of actions. The outreach effort will focus on Indigenous peoples and local communities in a culturally appropriate way, and in ways that enable proponents of actions to use the findings.

Main activities: To develop outreach material and explore next steps to encourage the use of the *MEMA Reference Guide* as a resource for all Arctic Council projects and other Arctic activities. The widely distributed outreach material will include a brochure on the findings the *MEMA II Report*. The PAME Secretariat will aim to produce MEMA outreach videos or other multi-media products, in collaboration with Indigenous peoples

Timeline: 2021-2023

Funding: In-kind (tbc for multi-media products)

Leads: United States, Canada, AIA, ICC, Saami Council and Northern Forum.

Management of Arctic Marine Oil and Gas Associated Noise

[Annex 16](#)

Rationale and overall objective: To take stock of the existing management practices for avoiding or mitigating effects of noise from Arctic oil and gas operations; and, to consider if specific technical guidance related to noise from Arctic oil and gas operations is needed.

Main activities:

1. Take stock of the practices for noise reduction or elimination related to all offshore or nearshore oil and gas operations in the Arctic;

2. Hold a one or two-day workshop on the management practices for mitigating noise from Arctic offshore oil and gas operations and prepare a workshop report; and,
3. Consider these activities to determine if specific technical guidance would be useful (for a future work plan).

Timeline: 2021-2023

Funding: In-kind in addition to \$10 000 USD for workshop and \$25 000 USD for consultant to facilitate workshop and prepare report.

Leads: United States, UK, WWF

Update the Arctic Offshore Oil and Gas Regulatory Resource (AOGRR)

[Annex 17](#)

Rationale and overall objective: The AOGRR provides easily and updatable web-based information and data (for e.g., documents, websites, relevant fora, networks, etc.). The AOGRR facilitates the sharing of current information on best practices from different Arctic countries and allows better communication in the management, regulation and enforcement of Arctic offshore oil and gas operations, while allowing all stakeholders easy access to this information. PAME will do a comprehensive update of the web resources of the regulatory agencies and ministries responsible for offshore oil and gas activities.

Main activities:

1. Check the current AOGRR for broken or out-of-date links.
2. Add any new web sites or links.
3. Seek clarifications from Arctic States on any website questions

Timeline: 2021-2023

Funding: In-kind

Lead: United States in close collaboration with PAME Secretariat

Existing Waste Management Practices and Pollution Control for Marine and Coastal Mining

[Annex 18](#)

Rationale and overall objective: The first objective is to take stock of the current and planned Arctic coastal and near shore mining operations and hold a workshop to elaborate on best practices for marine disposal of waste rock, tailings, sediments and water. The second objective is to identify best practices for offshore discharge of mining residuals and prepare a report.

Main activities: This project will inventory Arctic marine and coastal mining operations and planned operations, and identify practices for offshore discharge of mining residuals including waste rock, tailings, sediments and water.

Timeline: 2021-2023

Funding: In-kind in addition to \$10K USD for workshop and \$25K USD for consultant to facilitate workshop and prepare report.

Leads: Canada, Kingdom of Denmark.

AMSP GOAL 4

Enhance the economic, social and cultural well-being of Arctic inhabitants, including Arctic Indigenous Peoples and strengthen their capacity to adapt to changes in the Arctic marine environment.

CAPACITY BUILDING, INFORMATION OUTREACH, COOPERATION

1. Strengthen information outreach and cooperation and collaboration with international and regional organizations and to build the capacity and engagement of indigenous communities and other Arctic inhabitants.
2. Liaise and exchange information with relevant organizations and programs (e.g. UNEP Regional Seas Programme), and other regional programs.
3. Encourage activities and proposals from Permanent Participants.
4. Strive for the development of outreach and communication efforts and plans for PAME's activities (e.g. through updates on the PAME homepage, brochures, roll-up stands, other communication material).

Leads: PAME Chair - PAME Secretariat

ANNEX 1: New Low Sulphur Fuels, Fate, and Behaviour in Cold Water Conditions (PAME-EPPR Joint Project)

Background

A series of initiatives and regulatory developments over the past several years have given rise to the importance of studying low sulfur fuel oil in cold sea temperatures (Arctic conditions) which led to a project proposal that was formally approved by EPPR and PAME in 2020. The project is titled New low sulfur fuels, fate and behaviour in cold water conditions and will be a led jointly by representatives from EPPR and PAME promoting collaboration on a subject that intersects the mandates of these two working groups.

Basis for the proposal to EPPR and PAME was a project funded by the Norwegian Coastal Administration (NCA, 2016-2017) that included a characterization study of three hybrid/Low Sulphur Fuel Oils (LSFO) and five different marine diesel oils (DMA) showed:

- The three hybrid oils had a wide span in properties, and two of them had highly solidifying properties in cold water (high pour point values) that reduced the effectiveness of dispersants. With regard to one of the oils reduced oil skimmer performance was observed due to solidification.
- A wide span in toxicity / chemical composition were also revealed. The main findings from this NCA project were presented at the AMOP technical seminar on environmental contamination and response in 2017 and at the Interspill Conference in London 2018.

The project reports can be downloaded here:

<http://www.kystverket.no/Beredskap/forskning-og-utvikling/diesel--og-hybridoljer/forskningsresultater/>

This project was followed up by a new study “Characterization of Low Sulfur Fuel Oils (LSFO) – A new generation of marine fuel oils» on another two LSFO. The project has been funded by Canada, Norway and ITOPI. The project included laboratory studies on new low sulphur marine fuel oils with focus on fate and behaviour, potential toxicity, and with relevance to the effectiveness of different oil spill response options (use of dispersants and in-situ burning). Test methodologies was also subjected to an interlaboratory study and experiments were performed both in Norway (SINTEF) and in Canada (SL Ross) on one of the tested oils. The report documents that the new generation marine fuel poses new challenges for mechanic oil uptake methodologies and strategies, in addition use of dispersants may be challenging. It is however of great importance to provide better documentation of the variability of the weathering properties and behaviour of new low sulfur marine fuel oils when spilled at sea, and to determine mitigation effectiveness of different oil spill response options both on a cold and warmer sea surfaces. This project will contribute to fill the knowledge gap in relation to cold sea surface spills with the new LSFO-fuels.

The project reports can be downloaded here:

https://www.kystverket.no/contentassets/6a43755849464d1b9b6fe3136f551dbf/final-report-lsfo_multipartner.pdf

These projects led to a concern by the Norwegian Authorities and by other international Oil Spill Agencies and organizations concerning response to future spills of marine fuels oil (particularly in cold and Arctic areas). There is a need for further characterization of the properties on the increasing numbers of new marine fuels coming on the market, and that need to be taken into account when evaluating oil spill contingency strategies for spills related to shipping activities. A good overview of the physicochemical / weathering properties, fate and behavior when spilled at sea, potential toxicity and feasibility of the different response techniques like mechanical recovery, dispersants and in-situ burning (ISB) for these oils will be of high importance for the coming years.

One result of the Norwegian project was an application to EU to conduct a project where several of the issues described above should be considered. The application was approved and in January 2020 the IMAROS-project was launched (IMAROS: Improving response capacities and understanding the environmental impacts of new generation low sulphur **MARine fuel Oil Spills**).

The project was intended to be finalized December 31, 2021, but due to COVID 19 the project is delayed.

The overall aim of the IMAROS project is to:

- develop recommendations for oil spill response involving the new generation of fuel oils.
 - Capacities and methods for response at sea as well as on shorelines.
 - Gain knowledge about the best possible methods within oil spill response to this new generation of fuel oil.
- Increase knowledge to understand potential environmental impacts from an accidental spill.

The following states are partners in the IMAROS project: Norway (project lead), Sweden, Denmark, Belgium, France and Malta.

Since the project covers several of the same issues as the EPPR-PAME project, it is anticipated that we can benefit of the work and experiences gained in the IMAROS project.

The IMAROS project and the two other projects above largely focuses on relatively warm sea surface conditions. The Norwegian Coastal Administration recognized that there is a need for a project that covers cold sea temperatures (Arctic conditions). This led to the project proposal for this project.

Project Overview - scoping of work

The intent of the joint EPPR-PAME New low sulfur fuels, fate and behavior in cold water conditions project is to bridge a gap that exists and has been recognized by the Norwegian Coastal Administration. This project aims to further our knowledge of the toxicity and fate and behavior of new fuel oils in cold water conditions. Results will be described factually in order to support the integration of the project's results into marine oil spill prevention, preparedness and response activities.

The scope

The project will focus on Ultra-Low and Low Sulphur hybrid- and intermediate fuel oils however, with the introduction of low sulfur heavy fuels in the market in January 2020, the project scope will include comparisons and fact descriptions related to these fuels as well.

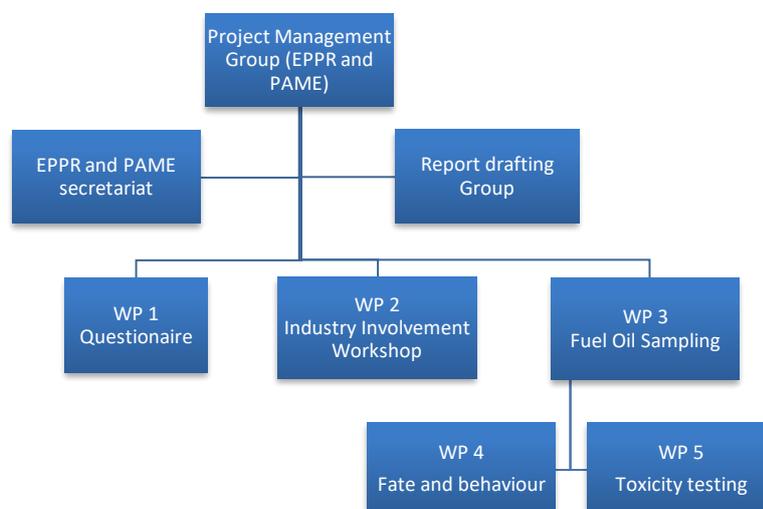
It should be noted that initially, the scope of the project was split between two Arctic Council Working Groups. Fate and behaviours was organized under EPPR while toxicity was organized under PAME. These sub tasks are closely related: a spill involving a highly toxic and persistent fuel, which can be difficult to disperse or recover mechanically, may lead to severe and long-lasting effects in the Arctic environment.

As the project matured, further consideration to the interconnectedness of these two sub tasks was recognized and the Norwegian Coastal Administration proposed the organization be managed jointly between the two working groups.

Therefore, a joint management group with equal representation from EPPR and PAME has been adapted (see the organization chart in Figure 1) and, one joint report with recommendations will be written as the main deliverable of the project.

Work packages and content of the work packages

The project is divided into the following work packages and organization:



Project Management Group (PMG)

It is proposed that the Project Management Group will be represented with one representative from EPPR and PAME plus one representative from each participating Arctic member state. The Project manager from the Norwegian Coastal Administration is permanent member of the Project Management Group.

The project management group is responsible for:

- Budget decisions and follow up
- Project progress and follow up
- Plan and conduct the Industry Involvement workshop
- Based on the best practice guideline approve possible tender documents for contracting a consultant for WP4 and WP5. Alternatively, for WP3 if it is found to be necessary
- Review and take decision on matters in relation to in kind contributions
- In corporation with W4 and WP5 conduct tenders among selected companies and/or consider in kind contributions
- Give feedback to and approve the reports from the Report drafting group
- Inform the working groups (EPPR and PAME) on progress, findings and conclusions
- Any other decisions important for the progress and the project execution

Report-drafting group

The report drafting group is represented by one representative from each participating member state plus the Project manager.

The main task of the Report-drafting group is to edit the text delivered from the different work packages into one report. The approved report is the main delivery from the project. The report-drafting group will be responsible for that the different work packages deliver the required text input. The report-drafting group will deliver a report outline to the Project Management group before each of its meetings and will report on progress.

WP 1 Questionnaire

WP 1 has members from each participating member state plus the Project manager. This group will develop a detailed plan for the tasks described below.

The IMO regulation for a 0.50% global sulphur cap for marine fuels entered into force first of January 2020. The new Sulphur cap has completely changed the fuel market for ships. As a result, the fuel mixture on all ships sailing in the Arctic is largely a knowledge gap. The main objective of WP 1 is to fill this knowledge gap. The following tasks are planned:

- Prepare a detailed project plan for WP 1 and deliver it to PMG
- Suggest a methodology for a survey/questionnaire that targets the ships accurately and deliver it for approval in the PMG
- Establish an approach for categorizing and organizing the incoming survey data
- Securing a representative selection of ships for the survey/questionnaire by using ASTD data
- Prepare a survey on which fuel ships use and the volume onboard
 - (Regional surveys with regional results or present result for the Polar Code area as a whole – or both?)

- Write a chapter on fuel use and deliver it to the Report drafting group

WP 2 Industry involvement workshop

The workshop is suggested to be headed by the Project manager in cooperation with PMG.

Industry involvement is a prerequisite for answering *how* and *why* fuel oil that fill the same gap in the fuel market (substitutes) have different level of toxicity and behavior.

Measures that easily can be taken to improve the properties is important and meaningful to discuss with industry. What industry we mean Shipping companies, refineries, fuel blenders, classification societies and agents.

- Plan and execute industry involvement workshop
- Write a chapter on the findings and discussions and deliver it to the Report drafting group
- Conduct a follow-up WEB seminar when the results from WP 4 and WP 5 are complete. The aim is to discuss the results and what measures can be suggested/taken based on the findings/results.

WP 3 Sampling

WP 3 has members from each participating member state plus the Project manager. This group will develop a detailed plan for the tasks described below.

The main task of WP3 will be to:

- Prepare a detailed project plan for WP 3 and deliver it to PMG
- Analyze the results from the questionnaire
- Based on the results from the questionnaire and the industry involvement workshop decide on a representative selection of fuel oils to obtain for testing (list of oils with back up if the first choice is impossible to obtain)
- Based on best practice decide on the approach for fuel oil collection including volume and procedures
- Based on best practice decide the requirements for laboratory testing. A document that concludes on best practice and agrees on test procedures shall be delivered to PMG for approval. Separate experts with representation from several participating states may be required for this task. A competent consultant that leads the work may also be required.
- Clarify in kind contribution/ consultant for WP4 and WP5. Also, alternatively for WP3, if it is found to be necessary. PMG approve and distributes the documents. If use of consultant, a tendering process might be necessary
- Follow up progress in WP4 and WP5

WP 4 Fate and behavior (when spilled at a cold sea surface)

The main objective of WP4 is to describe how and why fuel oil from the same viscosity and ISO class behave differently when spilt on a cold sea surface. In studies performed by the Norwegian Coastal Administration it is documented that the fate of such oils can be quite different, even though their starting point in relation to viscosity and the segment the fuel fills in the fuel market is very similar.

The second question under Sub-task one will be to answer what *measures* can be taken to optimize intermediate and hybrid fuel oil for cold water and ice (composition and chemistry of fuel oil).

Today some hybrid oils become very stiff and greasy, and they may be difficult to remove mechanically with skimmers or other oil uptake methodologies. Other hybrid oils on the other hand, will be in a liquid form even at a cold sea surface and hence much easier to remove. Oils with acceptable oil uptake properties will also normally naturally disperse faster and thereby be less persistent in the environment.

The analyses in WP 4 is performed by consultants or by in kind contributions. The responsibility for the follow up of this activity is WP 3.

WP 5 Environmental toxicity of low Sulphur fuel oils

The main objective of WP5 is to answer the following two questions:

- What are the toxicities of the newer fuels being used in the Arctic?
- Why do we find high toxicity levels in certain fuel oil samples within the same classification(e.g. ISO classes), while fuel samples from other batches with the same product, or the equivalent product from other similar producers, may have considerably lower toxicity levels?
Is it the crude oil used in the refinery as an input that is decisive for the toxicity level?
Or the refinery technology or processes? Or are the toxic substances added for other reasons by the refinery, or by the oil blenders?
A toxic oil can have severe and harmful effects on the fragile Arctic environment.
- What measures can be taken to avoid high toxicity levels in fuel oils in Arctic waters and in other sea areas? Industry involvement will be required for this task.

The analyses in WP 5 is performed by consultants or by in kind contributions. The responsibility for the follow up of this activity is WP 3.

Fate and Behavior (WP 4) and toxicity (WP 5) are closely related. A spill involving a highly toxic and persistent fuel, which can be difficult to disperse or recover mechanically, may lead to severe and long-lasting effects in the Arctic environment.

Timeline

The COVID-19 epidemical might lead to delay in the project.

Leader	Status	Start Date	End Date
EPPR-PAME	The project idea presented to EPPR II-2018 and PAME II 2018	2018	2018
EPPR	The project approved by EPPR and PAME including invitation of project partners	2019	01/2020
Norway	Preparation of draft project plan	03/2020	04/2020
Norway	Project plan sent out for comments	04/2020	05/2020
Norway	Final project plan distributed	05/2020	06/2020
All project partners	Application for funding and possible in kind contribution	04/2020	07/2020
	Project start – Skype meeting for Project Management Group	09/2020	
	WP 1 – Questionnaire	09/2020	01/2021
	WP 2 – Industry involvement workshop? Ref. IMAROS	11/2020	12/2020
	WP 3 – Sampling	2021/02	2021/06
	WP 4 – Fate and behavior	2021/08	2022/04
	WP 5 – Toxicity	2021/08	2022/04
	Final report	2022/04	2022/06

Project partners, funding and in-kind contribution

Project partners

Norway, USA, Kingdom of Denmark, Iceland, Canada, South-Korea, China

Budget

A detailed budget will be prepared based on final knowledge about funding available and knowledge about in kind contribution.

The budget will be an important issue in the project start up meeting.

Activity	Budget (NOK)	Delivery	Comment
WP 1 Questionnaire	100.000	Finalized questionnaire	Norway have secured funding for establishing a platform for data collection and processing, but in kind contributions will be necessary.
WP 2 Industry involvement workshop	100.000	Workshop report	In kind contribution (hours and travel and accommodation). Expenses for the industry experts is covered by the project.
WP 3 Sampling	150.000	Summary Report	In kind contribution.
WP 4 and 5 WP Analyzes Behavior and Toxicity (Chemical characterization)	1.500.000	Summary Report	
Develop Final report	0	Final report	In kind contribution
Dissemination – presentation of results	100.000	- Workshop with report - Presentation at EPPR and PAME meetings	

Comments to budget:

- WP 2 Industry involvement workshop:
 - Meeting room
 - Lunch
 - Travel and accommodation experts
- WP 3 Sampling includes
 - Purchase of samples
 - Packaging
 - Freight of samples to laboratory
 - Other costs?
- WP 4 and 5 Chemical characterization of
 - Physio-chemical characterization
 - Oil weathering
 - Eco toxicity
 - Identification /forensics
 - Modelling weathering of Low Sulphur Fuel Oil

ANNEX 2: Underwater Noise in the Arctic: Understanding Impacts and Defining Management Solutions - Phase II

Rationale and Overall Objective

The number of ships operating in Arctic waters as defined by the Polar Code grew by 25 per cent between 2013 and 2019 and the distance sailed increased by 75 per cent.¹ Shipping is one of multiple underwater noise-producing activities in the Arctic, and along with mineral extraction and exploration (through seismic survey), as well as port construction, introduces noise into the water, changes the underwater soundscape, and has the potential to negatively affect marine ecosystems and Indigenous and local ways of life.

Underwater noise can have a range of negative impacts on marine species. Particularly affected are those marine mammals that use sound for navigating, communicating, and foraging. Negative effects on marine species can include temporary disturbance and disruption of behavior, masking (interference with communication), permanent displacement from areas, and even hearing loss. Marine mammals are relied on by many coastal Indigenous Peoples in the Arctic for their culture, food security, and livelihoods, so negative impacts of underwater noise on marine mammals may in turn affect Arctic communities. With shipping and other commercial activity predicted to increase in the region, there is a need to understand, monitor and manage underwater noise.

During the 2019-2021 biennium, PAME advanced a Phase I of this project which, *inter alia*:

- Quantified (via modelling) the spatial distribution of underwater noise from shipping across the Arctic;
- Identified trends in levels of underwater noise from shipping from 2013-2019 in seven locations across the Arctic Ocean that largely represent the regional seas;
- Provided some insight into locations in the Arctic that are unaffected by shipping noise;
- Provided some insight into parts of the Arctic where underwater noise propagates long distances versus short distances; and
- Zoomed in on three regions with high concentrations of shipping and Arctic marine mammals (Barents Sea, Bering Sea/Strait, Baffin Bay/Davis Strait) and estimated excess noise.

To this end, Phase II of this project broadly aims to further develop decision-support tools for minimizing negative impacts from vessel underwater noise in the Arctic. The proposed Phase II project will include several new activities, based on the recent findings from Phase I. Phase II will also make use of information contained in PAME's Arctic Marine Shipping Assessment (AMSA) Report (2009), AMAP/CAFF/SDWG's report to identify Arctic marine areas of heightened ecological and cultural significance (2013), PAME's State of Knowledge Report on Underwater Noise in the Arctic (2019), the Arctic Shipping Status

¹ PAME – Arctic Shipping Status Report #1.

Report #1, and the Vessel Traffic Trends in the Arctic and Overlap with Important Marine Mammal Areas report (2020).

An additional aim of Phase II of this project is for PAME to share its work with other key regional and international organizations that have competence to address underwater noise generated by shipping in the Arctic.

Main activities:

For Phase II, with the geographic scope informed by results from the PAME *underwater noise pollution from shipping in the Arctic* report, the co-leads propose that the following activities be conducted, subject to resource availability, further prioritization, and an awareness of the need to establish more precise parameters:

1. Improve understanding of underwater noise incidentally generated by shipping in the Arctic

- Noise propagation models from Phase I will be validated and calibrated using existing measurements from multiple locations in the Arctic Ocean.
- The excess noise contribution of shipping to the ambient underwater soundscape will be estimated.
 - This will be done through modelling/measuring the ambient soundscape (excluding anthropogenic noise) and using noise propagation models from Phase I to derive the additional contribution by ship noise.
 - Models from Phase I will be further explored in order to extract information on regional soundscapes and dominant noise sources (i.e., vessel characteristics) in these areas.

2. Develop operational and technological scenarios

- Scenarios consisting of operational and technological strategies to reduce and/or mitigate the contribution of underwater noise generated by shipping will be explored in key Arctic areas
 - Scenarios may include marine areas of important Indigenous use and marine areas that enjoy some form of governmental protection;
 - Scenarios may take into consideration growth scenarios for shipping in the Arctic.
- The effectiveness of these strategies will be evaluated using combined ship source and noise propagation modelling and developing/expanding visualization of mitigation scenarios.

3. Share findings of this project to relevant Arctic Council and other multilateral fora

- PAME has a valuable role to play in providing insight and information on the protection and sustainable use of the Arctic marine environment to international bodies. Major findings and conclusions from Phases I and II of this project will be made available to key international and regional organizations and initiatives for comparison and cross-learning. This could include model-based evaluation and

technical guidance to reduce the risk of shipping noise for Arctic species of concern, as well as recommendations for where to focus future work. Of immediate relevance will be to bring an Arctic State perspective to the proposed new output at the IMO looking into updating the current voluntary *Guidelines for the reduction of underwater noise from commercial shipping to address adverse impacts on marine life* (MEPC.1/Circ.833);

- A white paper discussing the implications of underwater noise (spatially, seasonally and related to excess noise contribution at certain frequencies) for populations of noise-sensitive species, with input from CAFF's CBMP marine mammal expert network;
- A white paper discussing lessons learned in applying existing passive acoustic monitoring data within noise models, relating assets applied to those identified in the [CAFF CBMP circumpolar metadata database and map of PAME instruments deployed throughout the Arctic](#), and recommending next steps for developing regional sound monitoring capacity that can track high priority parameters through time; and
- Partner with other PAME Expert Groups such as the REDEG to explore additional anthropogenic noise source contributions to Arctic Ocean Soundscape.

Timeline:

2021-2023

Estimated budget:

The estimated budget is entirely subject to the range and level of detail assigned to the agreed upon work activities and the associated scope of accompanying requests for proposals (RFPs).

At minimum, it is anticipated that approximately 100,000 CAD for expert analysis by bio-acousticians to improve understanding of underwater noise from shipping and to support the development of operational and technological scenarios will be required.

Consistent with the overall Arctic Council approach, this project will be funded through voluntary contributions and in-kind support from member governments. The project will leverage wherever possible information from existing Arctic Council reports, PAME Secretariat expertise related to the ASTD System, and data from the ASTD System itself.

Leads

Canada, USA, WWF

ANNEX 3: Wastewater Discharges from Vessels in the Arctic - A Survey of Current Practices

Context

The impacts from shipping can be severe and the risks real to both marine habitat and Indigenous and community food security in the Arctic. Risks are equally high if essential goods and development do not reach people in the Arctic. The challenge for policy makers is to get the rules right to decrease the impacts and provide opportunity for people in the Arctic. Part of contributing to effective management and regulation of shipping is being on top of emerging social and environmental issues early, to give operators plenty of lead time for adaptive management, which will reduce impacts as soon and as effectively as possible. Wastewater discharge from ships, including grey water, sewage, and exhaust gas cleaning system (scrubber) effluent, is one such issue.

Goal of the Project

Through a survey directed at shipping operators and associations, develop a better understanding of vessel practices related to wastewater discharges in the Arctic. The findings will inform potential future dialogue within the Arctic Council as well as ongoing discussions at the IMO.

Based on survey results, a second phase of the project will be contemplated which could include policy recommendations and best practices and possible further research.

Definitions and Potential Impacts

Grey water - considered drainage from accommodation (e.g. shower, bath), laundry and dishwater and is distinct from drainage from toilets, urinals, hospitals, and cargo spaces.² Grey water can contain a variety of environmentally harmful pollutants and contaminants, including microplastics, nutrients, oil and grease, detergent and soap residue, harmful cleaning products, pharmaceutical and personal care products, heavy metals (e.g., copper, lead, mercury), coliform bacteria and pathogens.³

Sewage - also known as blackwater, is the general term for drainage and other wastes from toilets and urinals, medical premises, and spaces containing living animals.^{4 5} Sewage discharge can contain pharmaceutical and personal care products, as well as introduce invasive species and produce fecal-contaminated waters, which pose health risks to people who eat fish and other seafood from these areas.^{6 7} The environmental

2 E.g., 2017 Guidelines for implementation of MARPOL Annex V (resolution MEPC.295(71)).

3 Nowlan, L. and Kwan, I. 2015. Cruise Control - Regulating Cruise Ship Pollution on the Pacific Coast of Canada. West Coast Environmental Law. Retrieved from: https://georgiastrait.org/wp-content/uploads/2015/02/CruiseControl_WCEL.pdf

4 MARPOL Annex IV, see resolution MEPC.115(51).

5 Government of Canada. 2012. Vessel Pollution and Dangerous Chemicals Regulations (SOR/2012-69). Retrieved from <https://laws-lois.justice.gc.ca/eng/regulations/sor-2012-69/page-1.html>

6 Transport Canada. n.d. Complying with Sewage Discharge Regulations. Retrieved from http://www.bccdc.ca/resource-gallery/Documents/Educational%20Materials/EH/FPS/Fish/SEWAGEDISCHARGE_ENG.pdf

7 Smith, J.J. and Riddle, M. 2009. Sewage disposal and wildlife health on Antarctica. In: Health of Antarctic Wildlife: A Challenge for Science and Policy, pp 271-315. Springer, Berlin Heidelberg, Germany.

impacts of sewage discharge can be amplified in areas with low temperature and light conditions. For example, sewage discharge in the Arctic has a slow decomposition rate.⁸

Exhaust Gas Cleaning Systems - also known as scrubbers, are designed to remove sulfur oxides from exhaust gases from fuel burned in marine engines.⁹ The process generates scrubber liquid effluent that has low pH and contains heavy metals and polycyclic aromatic hydrocarbons (PAHs) that pose a risk to the marine environment. Coastal communities that rely on healthy marine species for food and livelihood may also be impacted.¹⁰

Indigenous and Local Community Engagement

Local communities and Indigenous residents in the Arctic have the most to gain by well managed and sustainable shipping practices. They are also the most impacted by pollution and ecosystem decline. Meaningful engagement of Indigenous and local communities during the project is essential, and IK (Indigenous Knowledge) and community perspectives will be included in developing the project scope, survey questions, and finalizing the report.

Survey of Current Practices

To understand current practices of Arctic shipping operators in dealing with discharges of grey water, sewage and scrubber effluent, a survey approach is proposed.

A third-party contractor will be hired to conduct the confidential survey. Non-attributed results will be summarized, and a report written and shared with PAME members for comment, review and finalization.

By collaborating with industry associations like AECO (Arctic Expedition Cruise Operators), the consultant will conduct outreach and request interviews of current shipping operators, including cruise and tourism, pleasure craft, ferries, bulk carriers, fishing, research, tankers, and community and development project re-supply.

Examples of possible survey questions:

1. What is your policy on wastewater (greywater, sewage, and scrubber effluent) discharges? (Where, how and when is it discharged, any special considerations for the Arctic or special areas?)
2. Do you have monitoring and recordkeeping in place for wastewater (greywater, sewage, and scrubber effluent) discharges? If so, what are they? Do you have a sampling program and are logbooks kept and updated?
3. Holding – do you have dedicated holding tanks for wastewater (greywater, sewage, and scrubber effluent)? What is the capacity for each?
4. Do you have a practice of shoreside discharges for wastewater (greywater, sewage, and scrubber effluent)? If so, what is the procedure?

8 International Maritime Organization (IMO). 2010. Additional MARPOL provisions for the Polar Code. Retrieved from https://1bps6437gg8c169i0y1drtgz-wpengine.netdna-ssl.com/wp-content/uploads/2017/webiva_fs_2/DE_54-13-8_-_Additional_MARPOL_provisions_for_the_Polar_Code_FOEI_IFAW_WWF_Pacific...1.pdf

9 Lange, I. B., Markus, T. and Helfst, L. P. 2015. Impacts of scrubbers on the environmental situation in ports and coastal waters. Umweltbundesamt. Retrieved from <http://www.umweltbundesamt.de/publikationen/impacts-of-scrubbers-on-the-environmental-situation>

10 Winnes, H. et al. 2018. Scrubbers: Closing the loop – Activity 3: Summary environmental analysis of marine exhaust gas scrubbers on two Stena Line ships. IVL Swedish Environmental Research Institute. Retrieved from <https://www.ivl.se/download/18.20b707b7169f355daa775fc/1561358335876/B2317.pdf>

5. Do you have treatment equipment for wastewater (greywater, sewage, and scrubber effluent)? Any pre-screening of solids? And, do you separate out the various wastewater streams? Is there any shared equipment or tanks with ballast water systems, or can wastewater be used as ballast?
6. What are the volumes, estimated or measured, for wastewater (greywater, sewage, and scrubber effluent) discharge? if so, how is this done or how is it estimated? What is the daily amount of water used onboard?
7. Food wastes - how is it handled? Are there any discharges of water from food?
8. What is the chemical use onboard and how does that use relate to wastewater discharges? Is it handled separately?
9. Are there cleaning or personal hygiene products (e.g., ecofriendly shampoo) that are recommended for crew and passengers? Is there an education program for crew and passengers on wastewater?
10. Is any treated wastewater recycled for use such as cleaning or other uses such as toilet flushing?

Synergies within PAME

The survey findings may contribute to, and inform on, any further work on Arctic Marine Tourism, including the ongoing [tourism project at PAME](#) . Also, the survey data will be a valuable addition to the [Arctic Shipping Best Practices Information Forum under Polar Code Part IIA, Chapter 4](#).

Workplan and Timeline

Workplan and timelines to be determined by project team and co-sponsors after approval at PAME II – 2020. Hiring a research/polling company and developing the survey will likely be the first step if the project is approved. It is anticipated that by PAME II 2021 a final report will be submitted to PAME.

Budget

A contract with a research/polling firm will be most of the project budget. \$37,000 CAD has been secured to date which is anticipated to cover the contract along with other project costs.

Co-sponsors

Iceland, CCU and WWF. There is an open invitation from the current co-sponsors for PAME member states, Permanent Participants, and observers to join the project as official co-sponsors or to collaborate on the project.

Contacts

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ANNEX 4: Raising awareness in the Arctic Council of the provisions of the 2012 Cape Town Agreement

for the safety of fishing vessels and the experience gained in the implementation process by Arctic States and other nations, recognizing the importance of fishing vessel safety in the Arctic due to the increased traffic of fishing vessels in the region.

Background

The total number of fishing vessels in the world is estimated at around 4.6 million. Most of these are small vessels. Some 64,000 fishing vessels of 24 metres in length and over operate in marine waters.

Approximately two million people work in the global shipping sector, an industry that is highly regulated by instruments such as the International Convention for the Safety of Life at Sea (SOLAS), a multilateral treaty aimed at ensuring that signatory flag States comply with safety standards.

By comparison, around 38 million people are estimated to be engaged in capture fisheries. Provisions in treaties such as SOLAS generally do not apply to fishers or fishing vessels. SOLAS includes a number of regulations which are applicable to all ships, such as SOLAS Chapter V on safety of navigation. However, many other SOLAS regulations provide an exemption for fishing vessels.

Fishing is one of the most dangerous professions in the world. It is estimated that approximately 80 lives are lost per 100,000 fishers on average.

Data from PAME has recently highlighted the increased number of fishing vessels in the Arctic ([link](#)). The safety of fishing vessels and their crew is of utmost importance, especially in the unique environmental and hazardous navigational conditions of the Arctic.

IMO attempts to address Fishing Vessel Safety

IMO has been working for many years, alongside other stakeholders, to enhance fishing vessel safety. IMO adopted the Torremolinos International Convention for the Safety of Fishing Vessels in 1977, which was later modified by the 1993 Torremolinos Protocol. As both of these treaties had failed to come into force, IMO later adopted the 2012 Cape Town Agreement.

The 2012 Cape Town Agreement is therefore the key IMO treaty to address fishing vessel safety. The Agreement includes mandatory international requirements for stability and associated seaworthiness, machinery and electrical installations, life-saving appliances, communications equipment and fire protection, as well as fishing vessel construction. The 2012 Cape Town Agreement will improve the safety of life at sea for hundreds of thousands of fishers worldwide, including in Polar waters, as well as having other benefits.

Summary of Benefits of Cape Town Agreement for Arctic States

It is considered in summary that the benefits of implementing the Cape Town Agreement are as follows:

- protect Arctic State rescue services from being called out unnecessarily to substandard fishing vessels;
- save lives in the fishing industry and improve working conditions;
- help create internationally-binding safety standards applicable to foreign registered fishing vessels, giving 'Port State Control' ability to binding States to check fishing vessels for safety measures to prevent incidents in Arctic waters. The Agreement has a "no more favorable treatment" clause which means that all vessels entering a port of a State that is a party to the Agreement would be subject to the same inspection standards - even if their flag State has not ratified or acceded to it. This allows States to control all vessels entering their ports, raising global safety standards; and
- help reduce plastic waste from fishing vessels ending up in Arctic waters, through implementation of the safety measures. In particular, abandoned, lost or otherwise discarded fishing gear accounts for up to 13-15% of total plastics in our ocean and due to world ocean currents much waste has accumulated in the Arctic. From the limited analysis thus far of macro-litter washed ashore on Arctic beaches or accumulating on the seafloor, most (50-100%) can be attributed to fishing activity, such as nets, floats and other debris.¹¹

While it is acknowledged and understandable that some States may face hurdles in the legislative process limiting their ability to ratify the Agreement, the knowledge already acquired by States who have ratified the Agreement, or who are in the ratification process would be extremely valuable for those States, as well as being of great assistance for all States in terms of lessons learned. This project would aim to highlight that experience, as well as the guidelines currently being developed.

Entry into Force Criteria for the Cape Town Agreement

The treaty will enter into force 12 months after at least 22 States, with an aggregate 3,600 fishing vessels of 24 m in length and over operating on the high seas have expressed their consent to be bound by it. To date, 15 countries have ratified the 2012 Cape Town Agreement, including the Arctic States of Denmark, Iceland, Finland and Norway; the Arctic Council Observer States of France, Germany, Netherlands and Spain, in addition to Belgium, Cook Islands, Congo, Saint Kitts and Nevis, Sao Tome and Principe, South Africa, and most recently Croatia.¹² The aggregate number of fishing vessels in these States that are covered under the requirement for the entry-into-force is 1433.

Additionally, 51 States have signed the Torremolinos Declaration of October 2019, publicly indicating their determination to take action to bring the Agreement into force by the target date of 11 October 2022 (tenth anniversary of the adoption of the Agreement), or where they have already ratified indicating their desire that the

¹¹ PAME's Desktop Study on Marine Litter

¹² <https://www.imo.org/en/MediaCentre/Pages/WhatsNew-1584.aspx>

Agreement comes into force, including the Arctic Council States of Denmark, Iceland, Finland, and Norway, as well as the Arctic Council Observer States of China, France, Germany, Netherlands, Poland, Republic of Korea, Spain and the United Kingdom.

In addition to the above, the following other States have also signed the Declaration:

Argentina, Bangladesh, Belgium, Belize, Bulgaria, Central African Republic, Chile, Congo (Republic of), Cook Islands, Costa Rica, Croatia, Democratic Republic of the Congo, Ecuador, Fiji, Gabon, Ghana, Guinea (Republic of), Guinea-Bissau, Indonesia, Ireland, Kiribati, Liberia, Lebanon, Marshall Islands, Mozambique, Namibia, New Zealand, Nicaragua, Nigeria, Panama, Papua New Guinea, Peru, Portugal, Sao Tome & Principe, Sierra Leone, South Africa, Togo, Uganda, and Vanuatu.

Working Group to develop Implementation Guidance

To further assist States in the process of implementation, a group of interested parties was established under the coordination of Spain to develop draft guidance to assist competent authorities in the implementation of the 2012 Cape Town Agreement. MSC 102 in November 2020 was informed of such group and invited interested parties to join the group. There is currently no purpose-made guidance available for States that are considering implementing the Agreement. The guidance is intended to cover those aspects of the implementation of the Agreement that should be taken into account by interested Member States when dealing with the ratification process. To this end, the draft guidance includes a description of general aspects, the legal status of the Agreement and a list of sections and technical annexes that allow for a better understanding of the Agreement.

The Agreement offers a wide range of flexibility in terms of implementation and application. Therefore, the guidance focuses on providing information on available flexibility options, in particular on those that are related to progressive implementation, exemptions, surveys and certification.

The work of the Group has mainly focused on further developing those aspects of the Agreement applicable to existing fishing vessels since this segment of the fishing fleet would require the broadest consideration prior to ratification by interested Member States. Such clarity provides Administrations with comfort in respect of what can be wrongly perceived as a more daunting task than it actually is in reality when implementing the Agreement.

Being mindful of the difficulties that many states face when considering ratification of the Agreement and taking into account the timeline for the entry into force of international safety provisions for fishing vessels, the co-sponsors of the draft guidance believe that an early implementation of those technical aspects of the guidance relating to existing fishing vessels could be beneficial at this stage.

The Working Group has made considerable progress and an early draft of these guidelines has been submitted to MSC 103 for consideration (MSC 103/20/2).

IMO's continued work on Safety of non- SOLAS vessels operating in or near Polar Regions

IMO's Maritime Safety Committee has considered how the safety measures of the Polar Code might be applied in the future to non-SOLAS vessels operating in Polar waters. It is a possibility that the 2012 Cape Town Agreement may become the basis for a Polar regulatory framework on maritime safety and environmental protection applicable for fishing vessels, as there is currently no base legal framework on which to build additional safety requirements for their operation in the Polar Regions.

As a first step, IMO's Maritime Safety Committee has instructed the Sub-Committee on Ship Design and Construction (SDC 6) to develop recommendatory safety measures for certain types of vessels when operating in Polar Waters, including fishing vessels of 24 m in length and over, with a view to alignment with the 2012 Cape Town Agreement.

Key Objective

To compliment IMO's efforts by raising awareness of the provisions of the *2012 Cape Town Agreement* and the experienced gained in the implementation process by Arctic States and other nations, recognizing the importance of fishing vessel safety in the Arctic due to the increased traffic of fishing vessels in the region.

Scope and relevance to PAME's work

PAME recently approved updates to the 2009 AMSA Recommendations (PAME I-2021). There, the AMSA I(B) recommendations, IMO measures for Arctic shipping, now reads:

That the Arctic states, in recognition of the unique environmental and navigational conditions in the Arctic, decide to continue to cooperatively support efforts at the IMO to strengthen, harmonize and regularly update international standards for vessels operating in the Arctic. These efforts include: Support the updating and augmenting of global IMO ship safety and pollution prevention instruments with specific mandatory requirements or other provisions for ship construction, design, equipment, communications, crewing, training and operations, aimed at safety and environmental protection; develop consensus recommendations at the regional level to support global measures adopted by IMO; and report periodically regarding such efforts.¹³

This project has direct linkages to this recommendation, in addition to:

- AMSA recommendation I(A) Linking with International Organizations, as the safety of navigation is an area of common interest to all Arctic Council members
- AMSA recommendation I (C) Uniformity of Arctic Shipping Governance, where the Arctic states "should encourage broad subscription to IMO instruments and their uniform implementation in particular as they relate to safe, secure and environmentally sound and sustainable Arctic shipping."
- AMSP Strategic Action 7.3.5: Develop recommendations for consideration by Arctic states to promote maritime safety and environmental protection with the objective of reducing risks related to international shipping activities in Arctic waters.¹⁴

¹³ PAME II-2020 approved draft updates of the 2009 AMSA Recommendations: https://pame.is/images/05_Protectec_Area/2021/PAME_I/SEG/SEG_pre-meeting_agenda_3cii-approved_final_draft_AMSA_Recommendations_Matrix.pdf

¹⁴ Arctic Marine Strategic Plan: https://pame.is/images/03_Projects/AMSP/AMSP_2015-2025.pdf

- Supporting successive PAME Records of Decisions that have recognized IMO's current emphasis in raising awareness regarding the provisions of the Cape Town Agreement.^{15 16 17}

The project will furthermore:

- Utilize data from PAME's Arctic Ship Traffic Data project on fishing vessels in the Arctic;
- Seek to develop a report with the co-leads of the Arctic Shipping Status Report project;
- Have linkages to the work of the approved PAME project on the Implementation of the Polar Code;
- Have linkages to PAME's work on the Arctic Shipping Best Practice Information Forum;
- Have linkages to PAME's work on marine litter in the Arctic; and
- Have linkages to the proposed PAME project; Fishing Practice & Gear Inventory: Enhancing Understanding of Abandoned Lost or otherwise Discarded Fishing Gear (ALDFG)
- Have linkages to EPPR's work on search and rescue.

Main Components and Implementation

List of Tasks/Activities:

- To establish a Correspondence Group;
- Develop an Arctic Shipping Status Report (ASSR) on fishing vessel activities in the Arctic with its project co-leads;
- Develop a Summary Report that includes the findings from the ASSR Report, and highlights the provisions of the Cape Town Agreement for the Safety of Fishing Vessels, that includes:
 - Information on challenges Arctic States or Observer States may have had in ratifying the Agreement;
 - Information on national legislation that may be considered to cover wholly or partially the Agreement; and
 - An overview of such challenges and national legislative information with suggestions for a way forward.
- The summary report will be presented to PAME for consideration.

¹⁵ [Record of Decision from PAME I-2019](#): "PAME encourages Arctic States and Observer States that have not done so to ratify the Cape Town Agreement related to the safety of fishing vessels as soon as possible and contribute to its timely entry into force, and notes the convening of the IMO's "International Conference on the Safety of Fishing Vessels and IUU Fishing" to be held at Torremolinos, Spain, 21-23 October 2019."

¹⁶ [Record of Decision from PAME I-2020](#): "PAME notes its important contribution to the 21-23 October 2019 "Ministerial Conference on Fishing Vessel Safety and IUU Fishing", notes Poland's decision to ratify the 2012 Cape Town Agreement for the safety of fishing vessels, and encourages Arctic States and Observer States that have not yet done so to consider ratification."

¹⁷ [Record of Decisions from PAME II-2020](#): PAME notes the decisions of Poland, Bulgaria, and Portugal to sign the Torremolinos Declaration indicating their intention by October 2022 to ratify the 2012 Cape Town Agreement for the safety of fishing vessels, and invites Arctic States and Observer States that have not yet done so to consider signing the Declaration which remains open for signature at IMO until 20 October 2020.

- Convene an online webinar for PAME Members and interested Arctic Council Working Groups where States share their experience, and challenges that may have been identified.

Operation of Correspondence Group

- Participation in the correspondence group is open to all PAME Members, and interested Arctic Council Working Groups;
- The group is to meet on a regular basis via teleconference;
- The Group will coordinate with the Arctic Shipping Status Report's project, to develop a report on fishing vessel activities in the Arctic;
- The Group will cooperate closely with the PAME Secretariat and the IMO Secretariat;
- The Group will convene an online webinar for PAME Members and interested Arctic Council Working Groups where States share their experience, and challenges that may have been identified;
- The Group will update PAME and the IMO of the proceedings;
- The Group will collect all relevant material for the project on the PAME website; and
- The Group will prepare a summary report for welcome by SAO's.

Timeline and Major Milestones:

- Approval of the project – co-leads identified (intersessional, May 2021)
- Correspondence Group formed (May-June 2021)
 - First meeting of Correspondence Group (June 2021)
- Arctic Shipping Status Report on fishing vessel activities in the Arctic (2021)
- Webinar (2021/2022)
- Update at PAME meetings + IMO meetings + SAO (throughout)
- Final report to PAME and SAOs for welcome (May 2023)

Overall estimated budget:

Consistent with the overall Arctic Council approach, the development of this project will be financed through voluntary contributions and in-kind support from the project co-leads as well as from PAME members and others as relevant in accordance with the Arctic Council Observer Manual for Subsidiary Bodies¹⁸.

Item	Budget (USD/in-kind)
Project management and coordination	50.000
Webinar	10.000
Production of ASSR Report (including analysis of data)	10.000
Final report (including final layout and communication)	10.000
Estimated total	80.000

Main outcomes

- A webinar
- An ASSR report/other report on fishing vessels in the Arctic
- A summary report

Project Team Structure/Lead Countries

The project is led by Iceland, Spain, IMO

- Sverrir Konráðsson, Maritime Specialist; sverrirk@samgongustofa.is
- Victor Jiménez Fernández, Alternative Permanent Representative of Spain to IMO; vjfernandez@mitma.es
- Andrés Ramírez Galván, Maritime Affairs Attaché, Embassy of Spain in London; agalvan@mitma.es
- Michael Kingston, IMO Consultant; michaelkingston@michaelkingston.org
- Cagri Kucukyildiz, Technical Officer, Subdivision for Marine, Technologies and Cargoes, IMO Maritime Safety Division; CKUCUKYI@imo.org

All PAME Members and interested Arctic Council Working Groups are invited to co-sponsor the project.

¹⁸ https://oarchive.arctic-council.org/bitstream/handle/11374/939/EDOCS-3020-v1B-Observer-manual-with-addendum-finalized_Oct2016.pdf?sequence=13&isAllowed=y

ANNEX 5: Marine Invasive Alien Species in Arctic Waters (joint PAME-CAFF Project)

Rationale:

- Because of changing climate and increased sea ice melt, shipping has increased in recent years in the arctic regions. This trend is expected to continue in the future (CAFF 2010). In relation to Arctic marine species, ships are the most prevalent vector in marine systems through organism entrainment in ballast water and biofouling (Molnar, Gamboa, Revenga, & Spalding, 2008; Williams et al., 2013). Studies of polar shipping operations have demonstrated that the external hull and ballast tanks of vessels operating in ice-covered waters can support a wide variety of non-native marine organisms (Ware et al. 2014 and 2016, Chan et al. 2015).
- The project will follow up directly on activities in the Arctic Invasive Alien Species Strategy and Action Plan (CAFF and PAME 2017) in line with relevant marine actions under goal no. 2: Improve the capacity of the Arctic Council and its partners to make well-informed decisions on the needs, priorities, and options for preventing, eradicating, and controlling invasive alien species in the Arctic by improving the knowledge base.
- Further, the outcome of this particular project will also help inform next steps related to aspects of goal no. 3: Undertake prevention and early detection/rapid response initiatives

Objectives:

- The primary objective of this project is to improve the knowledge base for work in CAFF and PAME on specific actions in the Arctic Invasive Alien Species Strategy and Action plan (ARIAS) that focus on the unwanted potential transfer of marine invasive alien species by ships via ballast water (BW) and biofouling (BF) into and within Arctic waters. The project will build upon data from existing databases and published information.
- The suggested project includes:
 - Compile (/update) a list of known nonindigenous species, including their current distributions, in Arctic waters. Presently, most Arctic States have data and knowledge that can be included directly in the project and the project will include a list of data sources
 - Review of methods and tools used for risk assessment of invasive species, vectors and pathways, and identify those best suited for the project's risk assessments
 - An assessment of the probability of nonindigenous species to be transferred by ships into Arctic waters, and between different ecoregions in the Arctic, presently and in the year 2100
 - A risk assessment of the probability of nonindigenous species to become established and invasive alien species in the Arctic ecoregions as of now and in climate scenarios for the year 2100

- Reporting

The project is suggested to form the basis for an extension of this project (Phase 2) where the results from the project go into preparing programs for monitoring, detection and recording of nonindigenous species and invasive alien species in Arctic waters. Including the possibilities to use The Circumpolar Biodiversity Monitoring Program (CBMP) in CAFF and submit information to databases which include occurrence and distribution of species in marine geographical areas e.g. Global Biodiversity Information Facility and ICES databases.

Study Area: Marine areas of the Circumpolar Arctic using the borders of CAFF and PAME.

Project Design:

Scope

Increased shipping

Because of changing climate and increased sea ice melt, some types of shipping have increased in recent years in the Arctic regions. This trend is expected to continue in the future (CAFF 2010). Several extractive industries (such as oil, gas, and mineral industries) are well-established and show a growing interest in the region as melting ice makes access to natural resources more feasible for extraction (CAFF 2010). While there are currently few known invasive non-native species in the Arctic, more are expected with climate change and increased human activity (CAFF 2013; Ware et al. 2014 and 2016; Bellard et al. 2016, Nordic Council of Ministers 2014).

In recent years, the risk of marine invasive alien species has been assessed for various Arctic marine areas. Potential invasive species have recently been listed for the Barents Sea, Bering Sea, Canadian Arctic Seas, Iceland Shelf, West Greenland Shelf and East Greenland Shelf (Norwegian Biodiversity Information Center 2018; Reimer et al 2017; Goldsmit et al 2019, Goldsmit et al 2020, Thorarinsdottir et al 2014; Gustavson et al 2020). In line with climate change, environmental conditions in the Arctic marine areas will change. Climate models predict that water temperature will rise, the distribution and thickness of sea ice will be reduced, and freshwater runoff from land will be increased, among other changes (AMAP 2017). In some Arctic marine areas, climate change has already had a major impact on habitat suitability for different organisms (CAFF 2017, CAFF 2019). In light of modelled predicted climate changes, scientists have already begun predicting the potential for new invasive species in certain Arctic areas such as the Bering Sea (Reimer et al 2017) and Greenland waters (Gustavson et al 2020).

In relation to the potential for introduction of marine nonindigenous species in the Arctic, ships are the most prevalent vector in marine systems through organism entrainment in ballast water and biofouling (Molnar, Gamboa, Revenga, & Spalding, 2008; Williams et al., 2013). Studies of polar shipping operations have demonstrated that the external hull and ballast tanks of vessels operating in ice-covered waters can support a wide variety of non-native marine organisms (Ware et al. 2014 and 2016).

Ballast water

Ballast water is pumped into, between, and out of ship ballast tanks to maintain safe draught, trim and stability during voyages and cargo operations. Thus, while ballast water is essential for safe and efficient modern shipping operations, it may pose serious ecological, economic and health problems to recipient regions. Ballast water may contain marine organisms and life cycle stages that can pass through the ships ballast water intake and piping systems (i.e., viruses to vertebrates). Globally hundreds of invasions have already taken place, likely via ballast water, sometimes with devastating consequences for the local ecosystem, economy, and infrastructure.

In order to contain and minimize the risk of introducing invasive species by ballast water, the IMO adopted the International Ballast Water Management Convention (IMO BWC), which entered into force in September 2017. The IMO BWC requires ships to manage their ballast water for minimizing the risk of introducing of invasive alien species into coastal areas, including exchanging their ballast water or treating it using an approved ballast water management system. Initially, there are two different standards, corresponding to these two options (D-1 and D-2 standards). The D-1 standard requires ships to exchange their ballast water in open seas, away from coastal waters, at least 50 nautical miles from land and in waters of at least 200 meters depth if 200 nautical miles and 200 meters depth are not practicable.

The D-2 standard is a performance standard that specifies the maximum concentration of viable organisms allowed to be discharged in the ballast water. New ships must meet the D-2 standard upon entering into service, while existing ships must meet the D-1 standard until a compliance date, after which they are subject to the D-2 standard or can use other methods, such as discharging to treatment facilities. All ships must meet the D-2 standard or other accepted methods (rather than exchange) after September 2024. Currently, for most ships, this involves installing special equipment for treatment of the ballast water. To date, 86 States have ratified the IMO BWC, corresponding to 47% of the IMO member States and 91.2% of world's tonnage.

According to the Regulation D-1 Ballast Water Exchange Standard, ships performing ballast water exchange shall do so with an efficiency of 95 per cent volumetric exchange of ballast water. Limits on viable organisms in discharged ballast water are set according to the Regulation D-2 Ballast Water Performance Standard. More than 60 systems are presently approved under the IMO BWC by flag States for treatment of ballast water.

Under the IMO BWC ships are required to be surveyed and certified by flag States and inspected by port State control officers. Inspection of valid certificates, Ballast Water Record Book and/or samples of the ballast water may be conducted. In case of concerns, a detailed inspection may be carried out, and further corrective actions can be requested, and stronger enforcement actions can follow.

Biofouling

Biofouling is also considered as one of the main and significant vectors for marine bio-invasions and is defined as the undesirable accumulation of marine organisms on submerged structures (including ships' hulls and external structures, sea chests and internal seawater piping). Non-binding IMO Biofouling Guidelines were developed to encourage the control and management of ships' biofouling to minimize the transfer of invasive aquatic species.

The Guidelines were further supplemented by the Guidance for minimizing the transfer of invasive aquatic species as biofouling (hull fouling) for recreational craft. This Guidance is for use by all owners and operators of recreational craft less than 24 metres in length, which may constitute an important vector for the transfer of invasive marine species due to their large numbers and their operating profile that may make them particularly susceptible to biofouling.

The potential for invasive aquatic species transferred through biofouling to cause harm has been recognized by the IMO, the Convention on Biological Diversity (CBD), several UNEP Regional Seas Conventions (e.g., Barcelona Convention for the Protection of the Mediterranean Sea Against Pollution), the Asia Pacific Economic Cooperation forum (APEC) and the Secretariat of the Pacific Region Environment Programme (SPREP). Studies show that the biofouling process begins within the first few hours of a ship's immersion in water.

The biofouling that may be found on a ship is influenced by a range of factors, such as: design and construction, specific operating profiles (including operating speeds, ratio of time underway and moored or at anchor, places visited, trading routes, and maintenance history) and the type, age, and condition of any anti-fouling coating. Several studies have shown that biofouling can be a significant vector for the transfer of invasive aquatic species including different species of crab, tunicates, mussels, starfish, barnacle, seaweed, and others.

Biofouling of ships and boats is of concern for both primary and secondary invasions (Briski et al., 2012; Davidson, Scianni, Minton, & Ruiz, 2018; Ulman et al., 2019; Iacarella et al 2020). Some nations impose biosecurity measures such as biofouling compliance regulations for incoming vessels (Davidson et al., 2018; Ministry for Primary Industries, 2018). Implementing practices to control and manage biofouling can greatly assist in reducing the risk of the transfer of invasive aquatic species.

Methods and activities

This project will focus on an exchange of knowledge and data among the Arctic States on nonindigenous and potential invasive species in the different Arctic waters/ecoregions. The project will form the bases for an extension. This first phase will focus on risk assessments as described below. Phase 1 of the project will be running in 2021 - 2023, and will:

- Identify ship routes and ship types that pose the greatest risk of transferring species into and between different ecoregions, using the PAME's Arctic Ship Traffic Database (ASTD) and other resources available. The ASTD will be the primary source of shipping activity for the analysis, but data from other shipping databases, e.g., Global AIS, will

be included where further or more detailed information is needed and available, e.g., outside the Arctic or in a specific Arctic region. As the project proceeds, regions of particular importance as locations of introductions of invasive species to the Arctic may be identified. Criteria for evaluation of the risk of introduction to, and transfer within, the Arctic will be developed in the project

- Use niche models (e.g. the AquaMap, Kaschner et al 2010) to display suitable environmental conditions that fall within a species' natural distributional range and the possible range of natural distribution of a species by the year 2100 with respect to global climate change conditions described under IPCC SRES A2 scenario (AquaMaps2100)
- Make a Literature review including an evaluation of existing and potential methods and tools that could be used for risk assessment in Arctic waters
- Submit as possible, information to databases which include occurrence and distribution of species in marine geographical areas e.g. Global Biodiversity Information Facility and ICES databases new species (ABDS, GBIF, ICES)
- As relevant, and further discussed by the CAFF Board and PAME Head of Delegation's, determine how Arctic States and Arctic Council accredited Observer States that are contracting parties to the IMO's Ballast Water Management Convention (BWC) could identify uncertainties and difficulties in implementing the IMO BWC in Arctic waters
- As relevant and further discussed by the CAFF Board and PAME HoD's, consider how Arctic States can identify uncertainties and difficulties in implementing the non-binding IMO Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species, Resolution MEPC.207(62) (2011) for control of biofouling

Relevance to Indigenous Peoples:

Invasive Alien species have a potential to impact both Arctic Ecosystems and regional economics, and therefore may also affect food security and indigenous lifestyles as regards to hunting, fishing, harvesting and trade. Permanent Participants are encouraged to join and participate in the project.

This proposal is a desktop study, which will focus on collecting and synthesizing published information and will, where possible and relevant, incorporate Indigenous Knowledge (IK) and Local Knowledge (LK) and perspectives.

It is the hope to include IK in the project, and the project leads will arrange a meeting with the PP's to elaborate on potential ways to meaningfully engage PP's in the project (refer to Activity 1).

Traditional Knowledge and Local Knowledge (TKLK):

Will the use of TKLK lead to better project outcomes (yes or no)? Yes

The inclusion of Indigenous Knowledge and Local knowledge would contribute to a more holistic understanding of the impacts of invasive species. As this project will provide an overview of the potential for increased introductions and spread of nonindigenous species, the inclusion of Indigenous Knowledge and Local Knowledge, would strengthen

the possibility to include Indigenous Knowledge holders and Local Knowledge holders in future tracking of the spread and impacts of invasive species. This would help inform decision making and management plans, including strengthening of early warning systems.

Schedule:

The project is considered to be a two phase project. Implementation and timeline for Phase 1:

- Activity 1: Project leads will arrange a meeting with the PP´s to further elaborate on the meaningful engagement of PP´s in the project
- Activity 2: Establishment of project group (summer 2021).
- Activity 3: Project group will meet regularly (online) to discuss more detailed aspects of the project and share experiences and develop an extended outline for the report that will be sent for information and comments to the CAFF Board and PAME HoD´s. Distribution of work tasks will be made, depending on resources and funding. (end 2021)
- Activity 4: Compilation of a list of known nonindigenous species, including their distributions in Arctic waters & review of methods and tools used for risk assessment of invasive species in Arctic waters (Spring 2022)
- Activity 5: An assessment of the probability of nonindigenous species to be transferred to, and within the Arctic, by ships; and a risk assessment of non-indigenous species to establish in current Arctic ecoregions and in climate scenarios for the year 2100. (end 2022)
- Activity 6: Reporting based on outline presented to the CAFF Board and PAME HoD´s in 2021, and dissemination to CAFF and PAME (early winter 2023)

Phase 2 is planned to build upon results of Phase 1 and continue the work on preparing programs for monitoring, detection, registration of nonindigenous species and invasive alien species in Arctic waters.

Anticipated Outputs:

Expected results and/or products of the project Phase 1:

- Establishment of project group focusing on Arctic marine non-indigenous species
- List of nonindigenous species and their current distributions in Arctic waters
- A review report on methods and tools used for risk assessment of invasive species in Arctic waters
- Assessment of the probability of the listed nonindigenous species to be transferred by ships
- A risk assessment of non-indigenous species to be invasive alien species in the arctic now and in near future (climate scenarios year 2100)
- Reporting and dissemination of the results of the project to CAFF and PAME

Application of Results:

The primary objective of this project is to improve the knowledge base for work in CAFF and PAME on specific actions in ARIAS that focus on the potential for transfer of unwanted marine alien species into and within Arctic waters by ships via ballast water (BW) and biofouling (BF).

Estimated Budget:

To be provided

Project Team Structure/Lead Countries:

The lead countries (KoD, Canada, Norway) will help facilitate the progress of the project. Further, the project will need an active project group consisting of experts from other Arctic States and Permanent Participants. The project group will help give input and written contributions to the work within the project. Further the project will work close together with the CAFF and PAME secretariats on data and reporting. Finally, the project will need input from the CAFF Board and the PAME Head of Delegation 's on questions related to project refinement, including report outline etc.

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ANNEX 6: Develop an Implementation Plan for the Regional Action Plan on Marine Litter in the Arctic (ML-RAP)

Background

PAME has a long history of addressing pollution in the Arctic marine environment. With the adoption of the *Regional Programme of Action on Protection of the Arctic Marine Environment from Land-based Activities* in 1998, and its updates in 2004 and 2009, PAME outlined a step-wise approach for tackling land-based sources of marine pollution, which included litter, though there was no specific focus on regional understanding or actions to address marine litter until more recently.

In 2021, PAME completed the *Regional Action Plan on Marine Litter in the Arctic* (ML-RAP) in collaboration with the Arctic Council Working Groups (WGs), Permanent Participants (PPs), Observers and nominated marine litter experts.

The ML-RAP addresses short-term and long-term challenges and opportunities to reduce marine litter from both land-based and sea-based sources in the Arctic region. The Arctic Council WGs will coordinate and cooperate closely to facilitate and support implementation of the Strategic Actions listed in the ML-RAP at multiple levels. For the purposes of this Implementation Plan, we will focus on coordination and cooperation within and between WGs, but will also take note of work done by individual States to support the ML-RAP Strategic Actions.

The Arctic Council provides strong institutional support for the stewardship of the Arctic marine environment. Implementation of the ML-RAP will rely on existing structures and mechanisms of the Arctic Council, i.e., Arctic Council biennial Ministerial meetings, Senior Arctic Official (SAO) meetings, and the meetings and activities of the Arctic Council WGs. Each WG, under the overall direction of the SAOs, implements, subject to available resources, those actions that relate to its mandate and incorporates them into its work plans by consensus. Cooperation with a full range of stakeholders will also facilitate the execution of this work.

Key Objectives

- ✓ Develop an Implementation Plan for the ML-RAP in close coordination and cooperation with other Arctic Council WGs, and relevant stakeholders as appropriate, with overall guidance from the SAOs and Ministers.
- ✓ Coordinate, collaborate and report on marine litter-related activities across the Arctic Council WGs and Arctic States, including the integration of marine litter activities in WG work plans.
- ✓ Engage with Indigenous and local communities and relevant stakeholders.

Scope and Approach

The ML-RAP Implementation Plan will set forth the approach, process, and methodology to implement the ML-RAP. A transparent process inclusive of the Arctic Council WGs, and relevant stakeholders, will guide its development. The ML-RAP Implementation Plan will be a living document.

Main activities during the 2021-2023 period

The following activities are based on PAME's previous work developing the AMSP Implementation Plan¹⁹ and implementing the Arctic Marine Shipping Assessment. Activities may be modified as work proceeds. Joint conference calls and face-to-face meetings will provide opportunities for input from Arctic Council WGs, and relevant stakeholders, throughout the process. Ideally, meetings will be held back-to-back with other planned meetings to maintain the overall workload at a manageable level.

i. Develop an Annotated Outline

The PAME WG project co-leads will prepare an annotated outline of the ML-RAP Implementation Plan and share with the other Arctic Council WGs to seek their input and feedback.

ii. Develop a Roadmap for Implementation

The PAME WG, in close collaboration with other Arctic Council WGs, will develop a Roadmap to guide implementation. The Roadmap may include an analysis of activities to date, the identification of gaps and needs, and criteria for an iterative priority-setting process, among other steps.

iii. Establish an Implementation and Reporting Process

The Arctic Council will contribute to the Implementation Plan by incorporating activities into WG work plans, as relevant, as well as through individual domestic actions. Guidance from the SAOs and Ministers will help inform what types of activities should take priority.

The PAME WG, in close collaboration with other Arctic Council WGs, will develop a status report every two years for the SAOs and Ministers. This report will also inform biennial WG work plans. Such reporting will be a cross-WG effort with the aim to convey the status of ML-RAP Strategic Actions using a simple template such as that used by the AMSP or AMSA. The ongoing stocktaking will inform adaptation of ML-RAP implementation.

Using the Roadmap as a guide, general steps in an implementation and reporting process may include:

1. Identifying any priority strategic actions based on decisions from Arctic Council Ministerial meetings, SAOs and working groups.
2. Developing specific projects and activities based on the ML-RAP Strategic Actions.
3. Integrating projects and activities into WG work plans.
4. Developing status reports on the implementation of the ML-RAP at the end of each Arctic Council Chairmanship.
5. Reporting to Arctic Council SAOs and Ministers on progress.

¹⁹ <https://www.pame.is/document-library/amsp-documents/176-amsp-2015-2025-implementation-plan/file>

Note: The development of this Implementation Plan does not preclude the advancement of the ML-RAP Strategic Actions during the 2021-2023 WP period.

Timeline of Major Milestones

The following timeline is preliminary and may be modified as work proceeds.

May 2021	Arctic Council Ministerial – approval of the ML-RAP and PAME Work Plan
Jun/Aug 2021	Co-leads to develop an annotated outline of the ML-RAP Implementation Plan and send to other Arctic Council WGs to seek their input and feedback.
Sep 2021	Presentation by project co-leads and discussions/inputs at PAME II-2021
Oct/Nov 2021	Update and present at the SAO meeting and guidance sought, as appropriate
Nov/Jan 2022	Co-leads to develop 1st draft ML-RAP Implementation Plan and send to other Arctic Council WGs for review and comments.
February 2022	Presentation by project co-leads and discussions/inputs at PAME I-2022
March 2022	Presentation at the SAO meeting and guidance sought, as appropriate
April/August 2022	Co-leads to develop 2 nd draft ML-RAP Implementation Plan based on comments received and send to other Arctic Council WGs for review and comments.
September 2022	Presentation by project co-leads and discussions/inputs at PAME II-2022
October 2022	Presentation at the SAO meeting and guidance sought, as appropriate
Oct/Jan 2023	Co-leads to develop final draft ML-RAP Implementation Plan based on comments received and send to other Arctic Council WGs for review and comments.
February 2023	Presentation by project co-leads and discussions/inputs at PAME I-2023
March 2023	Submission of a final draft ML-RAP Implementation Plan to SAOs for approval
Mars/Apr 2023	Final layout and preparation for Ministerial
May 2023	Arctic Council Ministerial

Overall estimated budget:

Consistent with the overall Arctic Council approach, the development of this project will be financed through voluntary contributions and in-kind support from PAME members and others as relevant in accordance with the Arctic Council Observer Manual for Subsidiary Bodies²⁰. This budget will be developed in further detail.

Activity	Budget (USD/in-kind)²¹
Project management, coordination, consultation and outreach	\$80.000
Scoping workshop/meetings	\$40.000
Communication and outreach	\$20.000
Editing, final layout and online posting	\$15.000
Total	155.000

Project team Structure/Lead Countries

- Leads: Kingdom of Denmark, Finland, Norway, and United States
- Partners: AC WGs, including their PP reps
- The PAME Secretariat will provide administrative and project assistance.

²⁰https://oaarchive.arctic-council.org/bitstream/handle/11374/939/EDOCS-3020-v1B-Observer-manual-with-addendum-finalized_Oct2016.pdf?sequence=13&isAllowed=y

²¹ The budget is based on in-kind contributions.

ANNEX 7: Arctic Coastal Cleanup

Goal/Key Objectives

The project will contribute to enhancing efforts to remove litter from Arctic beaches and waterways. The project will establish partnerships with local organizations, community leaders and regional experts to increase the knowledge and awareness of the problem throughout the Arctic, contributing to reducing discharges of marine litter to the Arctic in the long term.

Scope

This project would serve as an implementation activity of strategic actions related to Cleaning Arctic coasts in the *Regional Action Plan for Marine Litter in the Arctic*.

Background

Plastic pollution is a threat to our oceans, even in the remote Arctic. Marine litter, mostly plastic, is scattered along even remote beaches and the sea bottom in the Arctic and found on remote frozen ice floes just 1,000 miles from the North Pole. Scientists have found microplastics throughout the water column and in global-scale high levels frozen in Arctic sea ice. One important source for the microplastic is degradation of plastic litter. Given the threat to the Arctic environment, plastic pollution in the Arctic marine environment has been identified as a priority for the Arctic Council.

Main Components and Implementation

List of Tasks/Activities:

- The Arctic Coastal Clean-Up will start with projects in Alaska, Iceland and Norway (Finnmark) to identify some areas with high levels of litter and establish methods and models for organization of clean-up actions, given the special Arctic conditions.
- Based on the experiences from the pilot project, the project will be extended to enable partners in all arctic Regions to participate.
- The project will highlight the impact of marine litter on the Arctic's unique environment, collect data on types and sources of the plastic litter found, and build awareness and partnerships which can have a positive effect both on clean-up and measures to reduce discharges of marine litter also in the long term.

Timeline and Major Milestones:

Timeline: 2021-2023, to be developed further

Budget:

Estimated Budget:

- Keep Norway Beautiful contribute with 80 000 USD through funds from Norrøna Sportswear. Ocean Conservancy will contribute with significant own resources.

- Additional funding needed at least: 40 000 USD in 2021, 50 000 USD per year 2022-2023. Total budget estimated: 220 000 USD 2021-2023, but dependent of experiences with pilot project in 2021.

Main outcomes

- Established partnerships on beach cleaning between local organizations and community leaders in the Arctic
- Shared experience and development of sound methods and models for organization of the clean-up actions
- Increased information about types and sources of litter found on Arctic beaches
- Increased awareness among stakeholders of the impact of marine litter on the Arctic's unique environment
- Cleaner Arctic coasts

Project Team Structure/Lead Countries

Lead: Norway. Arctic States and PPs are welcome to co-lead.

Project implementation: Keep Norway Beautiful, Ocean Conservancy.

ANNEX 8: Fishing Practice & Gear Inventory: Enhancing Understanding of Abandoned Lost or otherwise Discarded Fishing Gear (ALDFG)

Summary

Through this project, multiple Arctic States would work to catalogue the current fishing practices, activities, and gear types employed in Arctic and near-Arctic waters. This would help to identify which types of gear may be most likely to contribute to marine litter, and to determine commonalities and differences between specific threats or concerns within Arctic sub-regions. The results would also be helpful in categorizing and classifying available records of ALDFG that has been recovered and in understanding potential sources, pathways, and fate of ALDFG and associated equipment, especially as fishing effort shifts farther north to follow commercially and culturally significant species.

Goal/Key Objectives

The overall goal of the project is to increase understanding and develop reliable informational resources of fishing activity in the Arctic and near-Arctic, in order to inform gear identification as part of monitoring or removal. This additional knowledge could help inform ALDFG prevention and intervention efforts by understanding differences in gear composition over space, and eventually over time.

Scope

This project would serve as an implementation activity under one of the strategic actions related to addressing ALDFG in the *Regional Action Plan for Marine Litter in the Arctic* by offering a baseline understanding of existing fishing activity and gear use in a given area.

Background

ALDFG is a common topic of focus and key source of marine litter in the Arctic, as identified in the PAME *Desktop Study on Marine Litter including Microplastics in the Arctic*. However, while there is specific or localized knowledge on gear types or practices in use by the practitioners of the fisheries, there is not a broad scale understanding of commonalities or differences across countries or fisheries. This project would fill that gap by creating a simple map of active fishing areas, the gear that is used there, and the species targeted. Later iterations could include more information such as level of effort or productivity/catch.

Main Components and Implementation

List of Tasks/Activities:

- Identify parameters/metrics.
 - Work with partners to identify core information that should be gathered and presented. Specific fields or information will vary but may include target species, geographic fishing area, and primary fishing gear types employed.
- Complete an initial survey or compilation of applicable data on fishing areas, practices, and gear types, as well as data gaps.

- The data would ideally be available through fishing permit providers/issuers at national or regional governments, though this may vary by region, permit structure, or fishery framework.

(For example, within the United States this would begin with the National Oceanic and Atmospheric Administration National Marine Fisheries Service, as well as state, local and tribal governments depending on the specific geographic location of fishing activities and relevant jurisdictions. This same framework could be applied in other nations, as appropriate; beginning with the federal or national government entity and working to the more specific to complete, expand, or verify specific data.)

- Alternatively, data could also be gathered through liaising with the fishing industry to acquire generalized (non-proprietary) data.

(For example, within the United States, this would begin with the larger fishing industry firms to establish dialogue and acquire initial input, with expansion to more localized fishing firms or practitioners at sub-regional levels, as needed to complete the data collection.)

- Acquire fishing activity/practice information to fill data gaps.
 - Work with additional national, regional, or local permit providers or industry to acquire data that is missing from readily available sources.
- Design a visualization tool and structure to present data in a common format.
 - A visualization structure would incorporate intuitive representation of fishing areas by country, target species, fishing gear by type, as well as any additional parameters identified. This could take the form of static maps or dynamic online tools, depending on assessed utility and resource availability.
- Conduct outreach and communication on the data and lessons learned.
 - Provide information to partners on the availability and location(s) of data in order to inform and target ALDFG prevention and intervention efforts.

Timeline and Major Milestones:

- PAME II-2021: Present a draft of the parameters/metrics that will be included in this study, as well as a preliminary survey on the existing, publicly accessible data.
- December 2021: Request Arctic States to provide points of contact (government and industry experts) to facilitate collection of data.
- PAME II-2022: Complete data collection and analysis.
- PAME I-2023: Present data and final report to PAME for approval.

Budget:

Budget is TBD.

Main outcomes

The final product will be a collection of datasets and a final report on fishing practices, activities, and gear types employed in Arctic and near-Arctic waters.

Project Team Structure/Lead Countries

Leads: Norway, United States. Other partners are welcome to co-lead.

Note: Parts of the project can potentially be contracted out to an organization familiar with the Arctic Council and its work (e.g., GRID-Arendal).

ANNEX 9: Targeted update of the Arctic Council Arctic Marine Strategic Plan (AMSP 2015)

Background

The Arctic Marine Strategic Plan (AMSP) was first adopted by the Arctic Council (AC) in 2004 and updated during the period 2013-2015 followed by approval with reference to the 2015 Iqaluit Declaration:

Approve the Arctic Marine Strategic Plan for the period 2015-2025 as a framework to protect Arctic marine and coastal ecosystems and to promote sustainable development in the region

The AMSP provides a framework to guide its actions to protect Arctic marine and coastal ecosystems and to promote sustainable development. It addresses stressors on the Arctic marine environment regardless of whether or not they originate from within or outside the region, recognizing that Arctic marine areas are connected to the rest of the world through chemical, physical, biological and human interactions.

The AMSP covers all Arctic marine areas and relates to all key activities affecting Arctic marine ecosystems; including coastal zones, river basins and other areas that are connected to the marine environment. It addresses both short-term and long-term challenges and opportunities, through forty Strategic Actions comprised under four Strategic Goals:

Goal 1: Improve knowledge of the Arctic marine environment, and continue to monitor and assess current and future impacts on Arctic marine ecosystems.

Goal 2: Conserve and protect ecosystem function and marine biodiversity to enhance resilience and the provision of ecosystem services.

Goal 3: Promote safe and sustainable use of the marine environment, taking into account cumulative environmental impacts.

Goal 4: Enhance the economic, social and cultural well-being of Arctic inhabitants, including Arctic indigenous peoples and strengthen their capacity to adapt to changes in the Arctic marine environment.

The Arctic Council Working Groups (AC WGs) have coordinated and cooperated closely in its implementation since its Ministerial approval in 2015. The Implementation section states that:

Reports on progress of the implementation of the AMSP 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 Arctic Marine Strategic Plan.

Rationale

The SAO based Marine Mechanism (SMM) was established at the 2019 Ministerial Meeting to coordinate marine issues in the Arctic Council. The first SMM was held in the form of a webinar series from 29 September until 29 October 2020 with four thematic sessions, including the Arctic Marine Strategic Plan, Sustainable Arctic Shipping, Regional

Coordination of Marine Issues and Global Commitments, and Ecosystem Based Management.

Based on the SMM theme on AMSP, the general view was that AMSP provides a good building block and basis for continued Arctic marine cooperation within the Arctic Council. There was wide agreement to revise the AMSP with new actions that would reflect the changes underway in the Arctic marine environment. Potential areas meriting consideration include ocean acidification, marine litter, invasive species, biodiversity, and marine protected areas. Furthermore, discussions emphasized the need/opportunity for increased PP engagement in marine strategic planning work and implementation, as well as the cross-WG relevance of the AMSP implementation.

Therefore, it is timely for the PAME Working Group, in close collaboration with other AC WGs, and with engagement from its Permanent Participants (PPs) and input from other stakeholders to update relevant strategic actions of the AMSP and integrate new ones, as relevant, to reflect the changes underway in the Arctic marine environment.

Updating the AMSP will demonstrate Arctic States' stewardship of the Arctic marine environment by providing the building blocks towards more coordinated and integrated approaches and supporting policy decisions at the local, national, regional and at the international levels. It also responds to calls by the global community to enhance sustainable development and protection of marine biodiversity and the marine environment, including through the application of the ecosystem approach and integrated coastal and ocean management.

Key Objectives

- ✓ Update strategic actions of the AMSP and integrate new ones, as relevant, to reflect the changes underway in the Arctic marine environment.
- ✓ Enhance integration, coordination, and collaboration on marine-related activities among the AC WGs.

Main Components and Implementation

Prior to the main implementation phase of this project, there will be an outreach and scoping phase to focus the update on priority topics as identified by Ministerial and SAO priorities and mandates. Representatives from the other AC WGs, including their PPs, and other relevant stakeholders will be invited to contribute towards updating the AMSP.

The co-leads will prepare for the 1st scoping workshop in close collaboration with the other AC WGs, including their PPs, with the aim to assist in identifying some new thematic areas of work and develop an annotated list of possible strategic actions. The co-leads will also aim to use the venues of the AC WGs back-to-back with SAO meetings to seek additional inputs and feedback from the WGs. Further, PAME will seek direct input from the SAO's through their regular meetings and other opportunities such as future SMM meetings.

To ensure the best coordination and collaboration possible, it is important that national AC WGs representatives communicate at a national level.

Timeline:

Following timeline is preliminary and may be modified as the work proceeds.

- May/June 2021: Reach out to other AC WGs, including PPs, and relevant stakeholders in planning of the 1st scoping workshop
- September 2021: 1st scoping workshop back-to-back with PAME II-2021
- October/December 2021:
 - Summary report from the scoping workshop capturing the key points raised
 - Coordination session with the other AC WGs back-to-back with SAO meeting
 - Presentation at the SAO meeting and guidance sought, as appropriate
 - Consultations and preparation of the 1st draft annotation of new strategic actions
- January/February 2022: Presentation by co-leads and discussions/inputs at PAME I-2022
- March/April 2022:
 - Coordination session with the other AC WGs back-to-back with SAO meeting
 - Presentation at the SAO meeting and guidance sought, as appropriate
- Spring/summer 2022: consider convening a 2nd workshop
- September 2022: Presentation by co-leads and discussions/inputs at PAME II-2022
- October/November 2022:
 - Presentation at the SAO meeting and guidance sought, as appropriate
 - Coordination session with the other AC WGs back-to-back with SAO meeting
- November/December 2022: Revisions and consultations as appropriate and prepare a final draft of the revised AMSP in advance of the PAME I-2023 meeting
- February/March 2023: Approval of the final draft update of the AMSP to be forwarded to the 2023 Ministerial meeting
- May 2023: Final revised AMSP submitted to the Ministerial meeting for approval

Overall estimated budget

Consistent with the overall Arctic Council approach, the development of this project will be financed through voluntary contributions and in-kind support from PAME members and others as relevant in accordance with the Arctic Council Observer Manual for Subsidiary Bodies²².

²² https://oarchive.arctic-council.org/bitstream/handle/11374/939/EDOCS-3020-v1B-Observer-manual-with-addendum-finalized_Oct2016.pdf?sequence=13&isAllowed=y

Activity	Budget (USD/in-kind)
Project management and coordination	\$80.000
External expert(s)	\$20.000
Scoping workshop/meetings	\$40.000
Communication and outreach	\$20.000
Editing, final layout and online posting	\$15.000
Total	175.000

Project team Structure/Lead Countries

- Leads: Norway, USA, Canada.
- Partners: AC WGs, PPs.
- The PAME Secretariat will provide administrative and project assistance.

ANNEX 10: Different Ways of Knowing: Applying Indigenous and Local Knowledge and Scientific Information to Arctic Conservation Planning

Project Summary

Indigenous communities rely on marine resources for food security and cultural resilience and well-being and hold extensive knowledge of the natural world that is valuable to, but underutilized in, informing management decisions in the context of a changing Arctic. Considering different ways of knowing, including Indigenous and local knowledge and scientific information, in the design and planning of networks of marine protected areas (MPAs) and other area-based conservation measures supports more effective and equitable marine conservation and management. This practice is also a cornerstone of the PAME-authored Arctic Council Framework for Pan-Arctic Network of Marine Protected Areas (2015). However, meaningful participation of Indigenous and local communities in Arctic conservation planning has been limited by the lack of documented Indigenous and local knowledge; ability to engage with knowledge holders in culturally appropriate and meaningful ways; analysis and documentation of case studies; and best practices and relevant tools. Supporting participation in these ways makes important contributions to improving effectiveness and inclusiveness of Arctic marine resource management and conservation of marine life.

PAME supports implementation of the Framework through its living MPA-network Toolbox,²³ which provides targeted knowledge and information about management approaches through case studies, scientific synopsis and promotion of specific tools targeted to decision-makers, practitioners, Indigenous Peoples, and stakeholders in support of national efforts to develop MPA networks. Indigenous representatives have noted the importance of utilizing flexible and dynamic approaches to ocean management, particularly given the importance of marine life for food security and culture, and growing human pressures and impacts on Arctic biodiversity, including from rapid climate change. This project will add important content to the MPA-network Toolbox to recognize the importance of including Indigenous and local knowledge and scientific information in marine planning and management, acknowledging the differences, associated unique contributions, and potential synergy of these knowledge systems.

Key Objectives

The key objectives are to add to the PAME MPA-network Toolbox through the following themes:

- Recognize important preconditions and characteristics for area-based conservation planning that starts from the perspective of Indigenous and local communities as expert knowledge holders and resource users.

²³ PAME MPA-network toolbox (2015-2017), found at <<https://www.pame.is/projects/marine-protected-areas/pame-mpa-network-toolbox-area-based-conservation-measures-and-ecological-connectivity>>.

- Summarize best practices for individuals or organizations working with Indigenous communities on co-designing area-based measures for ocean conservation, including the application of Indigenous knowledge.
- Develop and expand on case studies of how Indigenous Peoples and local communities are already addressing area-based management for conservation (e.g., multiple Canadian examples; Pribilof Islands, Alaska) or monitoring programs to ensure healthy ecosystems.
- Identify Indigenous and local knowledge, as well as scientific information, that represents community priorities and needs and explore how different ways of knowing may be used and combined to improve the comprehensiveness, connectedness, and effectiveness of MPA networks.
- Explore concepts and tools and provide practical guidance for Arctic Indigenous Peoples and local communities, marine managers, stakeholders and scientists to jointly consider (e.g., layer, visualize, evaluate, interpret, integrate, use, manage, share) Indigenous Knowledge, local knowledge, and scientific information in parallel to inform area-based marine conservation planning and management.
- Develop guidance and tools to consider different forms of knowledge derived at specific spatial scales (e.g. locally, regionally, ocean-scale) for comprehensive MPA network planning, design and implementation.
- Begin to develop a community of practice among Arctic Indigenous communities to build capacity and share knowledge on area-based conservation planning and management, including through mentoring and opportunities for Indigenous youth and young professionals.

Approach

The project will address the need for integrating Indigenous perspectives on conservation and use, informed by the experiences of Indigenous communities and tied to the full integration of conservation with Indigenous livelihoods and food security. The project team will work via virtual meetings, and, when conditions permit, in-person meetings or conferences (e.g. PAME, other Arctic Council or Arctic-focused meetings). The team will develop a project outline and review past work done by the Arctic Council, including the MPA toolbox workshop #4 Report (March 2019) on *Indigenous leadership in marine planning* and the *Meaningful Engagement with Indigenous Peoples and local communities in Marine Activities Part II* report, to synthesize relevant information and contacts. The team will work with national points of contact to develop appropriate mechanisms for reaching out to Indigenous communities at national and regional scales. Team members will then follow up with Indigenous Peoples and other Arctic partners to develop case studies, best practices and tools.

Scope

The project is Arctic-wide, and will build on previous work by PAME on Indigenous engagement in MPA planning by developing tools and best practices for engaging with Indigenous communities. It aims to support respectful and effective partnerships to advance area-based management for conservation and sustainable use of the marine

environment. The project will also seek to demonstrate ways to connect place-based Indigenous and local knowledge with sea- and ocean-scale scientific knowledge used in national and ocean-scale systematic conservation planning and MPA network design.

Main Components and Implementation:

List of Tasks/Activities:

A draft of MPA-network Toolbox materials will be available for PAME review by PAME-II 2022, and will be revised for final PAME review and approval by PAME-I 2023.

Timeline and Major Milestones:

The project will coordinate with, build on and advance dialogue on Indigenous and local engagement in area-based conservation planning and design through the following approach:

- Identify circumpolar case studies of application of Indigenous knowledge to marine area-based conservation activities (2021).
- Identify and engage Indigenous young professionals in the development of case studies (2021).
- Identify champions to communicate case studies at knowledge exchange workshops and International Marine Protected Areas Conference (IMPAC5) (2022).
- U.S./Canada Indigenous Knowledge Exchange organized by AIA and partners will focus on sharing knowledge among Indigenous participants to identify/develop marine conservation goals for local communities and familiarize Indigenous leaders and environmental managers with tools to support these efforts. Organizers will hold the meeting virtually (Spring 2021).
- IMPAC5, June 2022, will showcase First Nations and Arctic conservation efforts. The project will deliver a report and session on Arctic Indigenous engagement. Canada hopes to have a major deliverable to showcase a milestone/agreement for Pikiyasorsuaq, or the North Water Polynya, and a panel discussion.
- United States and Chile Workshop on Indigenous Peoples and MPAs (immediately before IMPAC5, June 2022). Indigenous-led event to share experiences among Arctic and non-Arctic countries.
- Package and analyse information from case studies, knowledge exchange workshops and IMPAC5, according to the project objectives and for the purpose of amending the PAME MPA-network Toolbox to include these tools, including in formats that allow sharing information back with Indigenous communities and organizations.

Overall estimated budget:

Consistent with the overall Arctic Council approach, the development of this project will be financed through voluntary contributions and in-kind support from PAME members. The proposed stepwise approach, with PAME approval required for each phase, will facilitate financial planning and budgets. Financial contributions will be sought from other

sources as well, such as the Nordic Council of Ministers and the Arctic Council Project Support Instrument (PSI).

Item	Budget (USD/in-kind)
Project management, coordination, outreach	\$100,000
Engagement and consultations with stakeholders	\$150,000
Stipends for Indigenous youth involvement in case study development	\$90,000
Workshop(s)/meetings	\$80,000
Best practices, guidance and tools package	\$20,000
Editing, layout and printing of report; web-design of online product	\$10,000
Estimated Total	\$450,000

- AIA can contribute funds for the Indigenous Knowledge Exchange, staff time, and the development of guidance and tools.
- WWF can contribute funds for the engagement of champions, the consultation of knowledge holders and in-kind capacity for the development of best practices, guidance and tools.
- Other partners will contribute in-kind through staff and partner meeting organization.

Main outcomes

The final product will be an amended MPA-network Toolbox, with best practices, case studies, guidance, and tools developed during this project to facilitate Indigenous and local engagement in area-based conservation for more effective and equitably managed MPA networks. Another important outcome will be the capacity built and knowledge shared with Indigenous youth and young professionals for engagement in area-based conservation planning, design and management.

Project Team Structure/Lead Countries

Project co-leads:

- Lauren Divine, Aleut International Association (lmdivine@aleut.com)
- Stephanie Meakin, Inuit Circumpolar Council, To Be Confirmed (meakin.steph@gmail.com)
- Bethany Schroeder, Department of Fisheries and Oceans, Canada (Bethany.Schroeder@dfo-mpo.gc.ca)
- Lauren Wenzel, NOAA, USA (lauren.wenzel@noaa.gov)

Other Project team members include the following. The team welcomes additional participation:

- Gunn-Britt Retter, Saami Council, To Be Confirmed (gbr@saamicouncil.net)
- Martin Sommerkorn, WWF (msommerkorn@wwf.no)

ANNEX 11: Other Effective Area-based Conservation Measures (OECM) in the Arctic (joint PAME-CAFF Project)

Project Summary

The project will provide an overview of the current range and understanding of international and national criteria used for identification of "Other Effective Area-Based Conservation Measures" (OECMs) in the Arctic. The project will also facilitate an exchange of information among the Arctic Council members on the range of information and application of OECMs. Related to the discussion on OECMs, Indigenous peoples also have an important role in advancing biodiversity conservation, sustainable marine management and the protection of cultural heritage. These outcomes may be achieved in a variety of ways, by using locally implemented sustainable management practices or approaches which result in the safeguarding of the environment and resources, or through more formal tools, such as the Indigenous Protected and Conserved Areas (IPCA) concept. The role of Indigenous sustainable management practices, including IPCAs, and other Indigenous stewardship measures, and their contribution to effective marine stewardship will be explored in the Arctic context through this project, and could be expanded upon in future work by the Arctic Council.

Overview

At the Convention on Biological Diversity (CBD) COP 14 (2018) the definition for "other effective area-based conservation measures" (OECMs) was adopted²⁴. It is the intention that sites that are recognized as OECMs will contribute to the new proposed CBD post-2020 Global Biodiversity Framework's global target 2: "By 2030, protect and conserve through well connected and effective system of protected areas and other effective area-based conservation measures at least 30% of the planet with the focus on areas particularly important for biodiversity."

The Conservation of Arctic Flora and Fauna (CAFF) and Protection of the Arctic Marine Environment (PAME) Working Groups have addressed the topic of protected areas through a range of activities over the years: the 2015 PAME *Framework for a Pan-Arctic Network of Marine Protected Areas* (MPAs) sets out a common vision for international cooperation in MPA network development and management in the Arctic; the 2017 PAME MPA-network Toolbox for Area Based Measures and Ecological Connectivity further developed guidance to assist Arctic states in advancing their MPA networks by providing theory and tools that can be used to assess and protect biodiversity; and the 2017 CAFF/PAME Arctic Protected Areas - Indicator report, which is in the process of being updated, also provided an overview of the status and trends of protected areas in the Arctic.

While the concept of OECMs has been referenced in some places in previous PAME/CAFF documents, the international discourse and advancement of OECMs as a tool for

²⁴ An "other effective area-based conservation measure" (OECM) is defined by the CBD in Decision 14/8 as: "A geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values (CBD 2018).

conservation of global biodiversity has evolved significantly in recent years, and the Arctic Council has not yet considered OECMs as a standalone concept. There are currently opportunities for the Arctic Council to consider how OECMs, as well as other applicable sustainable management practices identified by Indigenous peoples throughout the circumpolar Arctic, may contribute to functional and effective MPA networks in the Arctic and post-2020 CBD biodiversity targets. This project seeks to share information on how Arctic states are interpreting and applying the OECM definitions and criteria within their national jurisdictions and explore additional Indigenous sustainable management practices that contribute to marine stewardship.

Some concepts that may be explored in regard to OECMs for this project could include:

- How OECMs achieve long-term and effective contribution to in situ conservation of marine biodiversity.
- How OECMs achieve positive and sustained long-term outcomes for biodiversity associated with ecosystem functions and services, and uphold, where applicable, cultural, spiritual, socio-economic (e.g., sustainable use), and other locally relevant values.
- Potential for OECMs to contribute to conservation efforts in the Arctic.
- OECMs in the context of climate change and its impacts on the marine environment, and OECMs potential utility in conserving areas important for biodiversity (e.g., bottlenecks for migration), and enhance the representativeness and connectivity of fully protected areas.

Parallel to the discussion on OECMs, there is growing international interest in the concept of Indigenous sustainable management practices as well as IPCAs and the potential role they can play in biodiversity conservation and the protection of cultural heritage. With new ambitious global biodiversity targets on the horizon, opportunities are emerging for Indigenous-led marine conservation and stewardship to play a role in meeting those targets. There are also opportunities to build collaborative relationships among Indigenous and non-Indigenous partners to work together toward protection of global biodiversity. Indigenous sustainable management practices and IPCAs have yet to be considered in a coordinated way in the Arctic context although some Arctic States have begun to consider how these approaches may be applied within domestic contexts such as with the Canadian 2017 Indigenous Circle of Experts (ICE) process. The fourth PAME MPA Workshop -- *Exploring ways to support Indigenous/Local involvement in, and Indigenous/Local led, marine protection in the circumpolar Arctic Ocean*²⁵-- also included some cases studies of Indigenous-led conservation efforts in the Arctic context, which could be profiled in this project.

This project will help promote a common understanding and terminology around OECMs and other non-MPA approaches to marine management. It will also aim to inform other Arctic Council products and considerations, such as the Circumpolar Biodiversity Monitoring Program (CBMP) initiative. It will work with and support other Arctic Council projects, including the update to the *PAME/CAFF Status and Trends in Arctic Conservation*

²⁵ We recognize and respect that Indigenous Knowledge and Local Knowledge are distinct from each other

Measures, and two PAME projects -*Review of Ecosystem Status, Human Impacts and Management Measures in the Central Arctic Ocean*, and *Different Ways of Knowing: Applying Indigenous, Local and Scientific Knowledge to Arctic Conservation Planning*-both to be completed during the 2021-23 work plan

The outcomes of this project can provide a basis from which to advance additional contributions to the MPA toolbox on concepts related to marine management for conservation not limited to marine protected areas.

Key Objectives

- Provide a general description of how OECMs have been or are being applied in the Arctic, and an overview of the criteria used internationally to define OECMs.
- Provide an overview of Indigenous peoples sustainable management practices and related material through review of literature that has been developed by Indigenous organizations and Peoples.
- Ensure consistent and updated references on OECMs within the updated PAME/CAFF *Status and Trends in Arctic Conservation Measures* report.
- Facilitate a dialogue about how Arctic Council members are interpreting and applying the CBD's OECM definition in the Arctic, as applicable.
- Explore opportunities for OECMs to contribute to effective conservation of biodiversity and associated values in Arctic-specific contexts, including as part of a pan-Arctic network of marine protected areas.
- Contribute a reference report on OECMs to the PAME MPA networks Toolbox.

Implementation

A steering group supported by the CAFF and PAME Secretariats will be established comprising representatives from both the working groups to implement the project.

Activities to be undertaken

- Gather existing sources on OECM criteria and Arctic Council member approaches to identifying OECMs;
- Develop relevant case studies;
- Provide relevant updated international information and references to OECMs to the PAME/CAFF *Status and Trends in Arctic Conservation Measures* report;
- Invite PAME/CAFF members, with a focus on the PPs, to provide information on current sources of information, status and application of Indigenous sustainable management practices and/or IPCAs, including Arctic examples of IPCAs, and their current and future recognition within Arctic States;
- Convene a webinar or in person meeting(if possible), of PP representatives, Indigenous management practitioners and knowledge holders to explore and discuss potential case studies and expanded understanding of Indigenous sustainable management practices and IPCAs in the Arctic context. The outcomes of that discussion could inform both the overview report and an IMPAC 5 workshop;

- Convene a workshop or session at the 5th International Marine Protected Area Congress (IMPAC5) in Vancouver in 2022, in partnership with the CBD Secretariat, to bring together Arctic marine conservation practitioners and managers to share information on OECMs and Indigenous sustainable management practices/IPCAs in the Arctic; and
- Develop a report, based on the information gathered, including an overview of OECM criteria, Indigenous sustainable management practices and/or IPCAs, their application in the Arctic context, and Arctic relevant case studies.

Timeline and Major Milestones

Timeline	Activity
Feb 2021	Approval of the project proposal in the CAFF and PAME 2021-23 Work Plans
Summer 2021	Work with the CAFF/PAME Secretariat to update references to OECMs in the <i>Status and Trends in Arctic Conservation Measures</i> report (Update to be approved at AC Ministerial May 2021)
May/June 2021	Steering Committee to be established by the co-leads, targeting first meeting to launch project in June 2021
Fall 2021	First draft report outline and project update presented to PAME II 2021 and CAFF board meeting
February 2022	First Draft OECM report for review by PAME/CAFF
March 2022 (TBD)	PP and Indigenous practitioner meeting and discussion (possibly aligned with SAO or SDWG meeting)
June 2022	Workshop or session at IMPAC5 in Vancouver
Fall 2022	Final Draft OECM Report at PAME II and CAFF meetings
February 2023	Approval of final Report PAME I and CAFF spring meetings in 2023

Budget

Estimated Budget: In-Kind.

Main Outcomes

- Inclusion of current terminology on and references to OECMs in the PAME/CAFF *Status and Trends in Arctic Conservation Measure*.
- Arctic OECM and related Indigenous management practices overview report.
- A session at IMPAC5 in Vancouver in 2022, in partnership with the CBD Secretariat, to bring together Arctic marine conservation practitioners and managers to share information on the application of OECMs in the Arctic.

- Synthesis of information, relevant examples and current understanding of Indigenous sustainable management practices and IPCAs potential contribution to conservation of biodiversity, and their application in the Arctic.
- Contribution to the PAME MPA Network Toolbox, which can be used to inform understanding of OECMs and other applicable Indigenous sustainable management practices, IPCAs and IPCAs in the Arctic region, which can inform international discussions on these topics at other fora.
- Increased awareness of the need to build an understanding of the sustainable management measures in use by Indigenous peoples and local communities to achieve marine stewardship and sustainable resource use in the circumpolar Arctic and recognition of these measures as contributing to marine conservation and management. Subsequent projects may arise to address this and contribute this knowledge to the MPA Networks Toolbox.

Project Team Structure/Lead Countries

Kingdom of Denmark, Canada, USA

Inclusion/involvement/contribution by Permanent Participants.

Have Permanent Participants been engaged in the development of the project proposal?

Yes, ICC provided comments on the project proposal and engaged in discussions with the project co-leads on the proposal. A component of the project will focus on the concept of the role of Indigenous sustainable management practices, as well as IPCA's, and other Indigenous stewardship measures, along with other OECMS.

Will the use of Traditional Knowledge and Local Knowledge lead to better project outcomes?

Unknown at this time.

ANNEX 12: Revise the Ecosystem Approach Framework (EA) and develop a tool for following EA implementation in the Arctic LMEs

Rationale and overall objective

The concept of the Ecosystem Approach to management (**EA**) has been around for decades and is known by a number of different names: ecosystem-based management (EBM), ecosystem approach to management (EAM), or simply the ecosystem approach, EA, which is the term used here (read more in Harwell et al 2020²⁶).

EA has been extensively discussed, elaborated and developed within national and international fora such as e.g. the Arctic Council Joint PAME-CAFF-SDWG-AMAP EA Expert Group, the International Council for the Exploration of the Sea (ICES), the Food and Agriculture Organization (FAO), the Convention on Biological Diversity (CBD).

The Arctic Council Ministers adopted in 2004 the EA as an overarching principle and approach of the Arctic Marine Strategic Plan (AMSP), and in the Kiruna Declaration (2013; <https://oaarchive.arctic-council.org/handle/11374/93>) the Arctic Council Ministers agreed to the following definition for EA:

A comprehensive, integrated management of human activities, based on best available scientific and traditional knowledge about the ecosystem and its dynamics, in order to identify and take action on influences that are critical to the health of ecosystems, thereby achieving sustainable use of ecosystem goods and services and maintenance of ecosystem integrity.

The United Nations [Ecosystem Approaches \(un.org\)](https://www.un.org/en/ecosystem-approach/) overview encourages States to be guided in the application of EA by a number of existing instruments, in particular the United Nations Convention on the Law of the Sea (UNCLOS), which sets out the legal framework for all activities in the oceans and seas, and its Implementing Agreements, as well as other commitments, such as those contained in the Convention on Biological Diversity and the World Summit on Sustainable Development call for the application of an Ecosystem Approach.

Today there is no universally agreed definition of an Ecosystem Approach, which is interpreted differently in different contexts (read more in Harwell et al 2020). The PAME working group in the Arctic Council has developed Guidelines for Implementing an Ecosystem Approach to Management of Arctic Marine Ecosystems, which includes a six-element EA framework (PAME 2019, <https://oaarchive.arctic-council.org/handle/11374/2390>).

This EA Revision project aims to revise the EA Guidelines and further develop the 2019 version of the EA framework into an iterative circular process that defines more elements than those existing. The project will also map the relevance/applicability of EA work done in the AC; communicate the EA work at conferences and workshops, and develop a tool

²⁶ Harwell, M.C., Mollada, J.L., Jackson, C.A. and Sharpe, L., 2020. Establishing a Common Framework for Strategic Communications in Ecosystem-Based Management and the Natural Sciences. In *Ecosystem-Based Management, Ecosystem Services and Aquatic Biodiversity* (pp. 165-188). Springer, Cham.

that can function as an ongoing voluntary reporting mechanism from where it is possible to evaluating national and international progress in implementing the EA.

Main Activities of the EA Revision project

1. Developing the EA guidelines by reviewing and synthesizing existing literature from reports of the Arctic Council and literature globally (literature review) to summarize existing knowledge that is relevant for national and international implementation of Ecosystem Approach to Management.
2. Describing any new elements of the EA guidelines that are not explicitly expressed in the six-element framework (such as “Monitoring” and “Advice”).
3. Developing a circular EA guidelines from the existing linear framework.
4. Identifying and mapping relevant information within Arctic Council Working Groups that can facilitate practical EA work such as Integrated Assessments, which need data on ecosystem fluctuations (e.g. CBMP) and human activities (e.g. AMAP), and align Arctic Council EA work with other relevant mechanisms such as ICES.
5. Enhancing EA communication (e.g., conferences, workshops, and easy access to developed guidelines) to promote the outcomes of this project and EA implementation in the Arctic.
6. Developing a tool that can function as a voluntary reporting mechanism to help evaluate national and international progress in implementing EA.

1. Developing the EA guidelines by reviewing and synthesizing existing literature

Updating and developing further the six elements of the EA Framework by reviewing and synthesizing existing literature from reports of the Arctic Council and literature globally (literature review) to summarize existing knowledge that is relevant for national and international implementation of Ecosystem Approach to Management.

Following are the six elements of the EA Framework:

1. Identify the geographic extent of the ecosystem
2. Describe the biological and physical components and processes of the ecosystem including humans
3. Set ecological objectives that define sustainability of the ecosystem
4. Assess the current state of the ecosystem (Integrated Ecosystem Assessment)
5. Value the cultural, social and economic goods produced by the ecosystem
6. Manage human activities to sustain the ecosystem

2. Describing any new elements of the EA guidelines that are not explicitly expressed in the six-element framework

Logerwell & Skjoldal (2019) point toward “Monitoring” as the source of updated information on the status of ecosystem components, human activities and the pressures from these activities, and needed as the basis for advice on management measures to

maintain or achieve the agreed ecological objective for the ecosystem. This part of the project will therefore describe and discuss additional elements such as “Monitoring (read more below)”, but may also develop elements such as e.g. “Advice” that via a “mechanism” (e.g. advisory drafting group) could e.g. support the development or implementation of policies and legislation to meet conservation, management, and sustainability goals and objectives. ICES has a well-established mechanism for producing reviewed science-based “advisory products”, which could help developing such an element within the EA framework (to read more on “advice” see e.g. www.ices.dk/about-ICES/how-we-work/Pages/Advisory_process.aspx).

3. Moving from a linear to a circular EA guideline framework.

While the existing six elements in the 2019 EA framework are numbered, the elements do not necessarily need to be sequential (Logerwell & Skjoldal 2019). Rather, the points are linked in an iterative and adaptive operational management cycle. This project will therefore further develop the present linear EBM framework of the EA guidelines to a figure that shows a circular approach reflecting the adaptive, dynamic, and developing approach it is meant to be. A key part of this will be to develop a figure illustrating the concept of a circular, iterative EA approach.

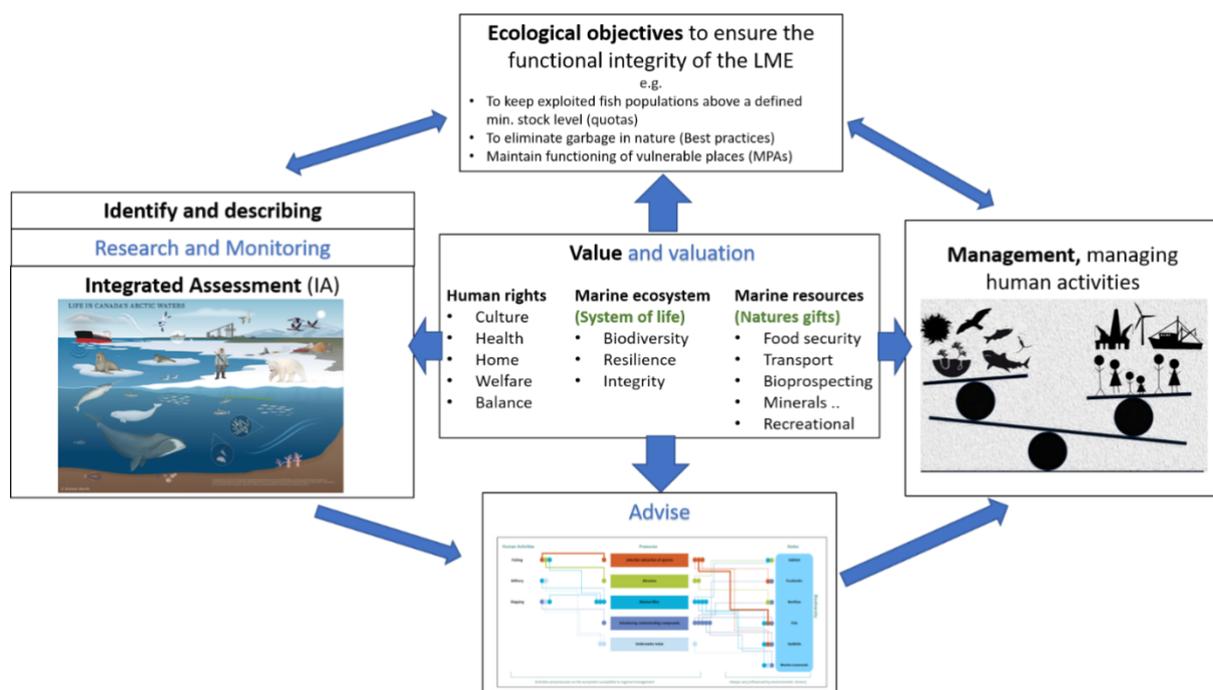


Figure 1. A draft example from PAME II 2020 of a possible circular approach to the linear EA framework including new elements such as “Research and Monitoring”, “Valuation” and “Advice”

4. Map where relevant information is to be found within Arctic Council Working Groups for doing practical EA work

This part of the project will map relevant key points of EA information within the AC working groups (CAFF, AMAP, SDWG), the ICES and other forums that can be used when

doing e.g. Integrated Assessments or other relevant and practical work within EA. This mapping should make it easier to assess information and infrastructure relevant and available to national as well as international EA work as well as to identify missing information to improve and support EA work. The goal of this part of the project is not to conduct Integrated Assessments and analyze data, but rather to identify processes and data existing in the Arctic Council to do such practical work. This could be done e.g. through explanatory and descriptive web interface/ portals that could have active links to assessments/ programs of relevance. Relevant work to identify and map may include, but are not limited to:

- Monitoring and data management (see e.g. CAFF)
- Identifying status and trends of the ecosystem (see e.g. CAFF and AMAP)
- Identifying human activities and its pressures (see e.g. AMAP and PAME)
- Integrated assessment and ecosystem overview (see e.g. ICES)
- Meaningful engagement of indigenous people (see e.g. SDWG)
- Best practices and guidelines for human activities and conservation (see e.g. PAME)

5. Enhancing EA communication

This part of the project will enhance the PAME and Arctic Council ACS homepages to make information on EA easy to find and understandable. This will facilitate the implementation of EA as an iterative, adaptive process. The revised internet pages will contain:

- Easily accessed EA guidelines.
- Continue the writing of reports: “7th Value and Valuation workshops” and “Ecological Objectives”.
- Preparing an international conference that will discuss national and international implementation and challenges (to be held in phase II, 2023-2025).

6. Developing a voluntary reporting tool that can provide a status of implementation of EA in Arctic LMEs.

While the revision of the EA framework may end up as a “tool-box” for *how* to implement EA in national and international waters, the *progress* of implementation of EA in the Arctic LMEs can be followed by a voluntary reporting tool that should be evaluated to identify the steps taken.

The implementation of EA in the 18 Arctic Large Marine Ecosystems (LMEs) are at different phases. While all LMEs are already identified and described (Large Marine Ecosystems [file \(pame.is\)](http://pame.is)), only some are monitored on a regular basis and Integrated Assessments of the Ecosystems are at an early stage of development. Few LMEs have clearly defined Ecological Objectives that provide a framework for research and monitoring plans and managing human activities.

A reporting tool to track progress on the EA implementation in the Arctic LMEs may be developed. An example of criteria's that such a reporting tool might track is the six EA

elements, as illustrated in figure 2. Reporting tool will assist in identifying challenges and difficulties, as well as opportunities and successes. Regular workshops, conferences and meetings can provide opportunities to share information and hold discussions and will be beneficial for practitioners in other LMEs in the implementation of the EA.

While this reporting tool may be developed during 2021-2023, the first round of voluntary input from States may be made during the period 2023-2025 and could potentially be repeated on a regular basis for update on progress.

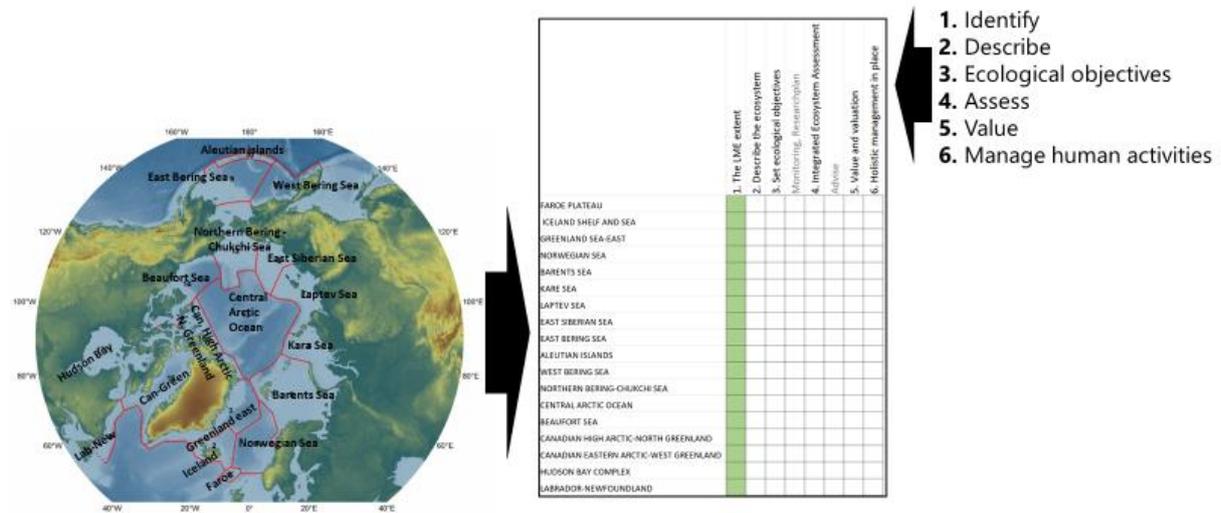


Figure 2. The 18 Large Marine Ecosystems (LMEs) location (left) and stacked vertical together with the six EA framework elements horizontally.

Timeline and major milestones

Chairmanship Arctic Council		Russia		Norway	
Chairmanship PAME		Sweden		Denmark	
Year	The product	2021	2022	2023	2024
1. Developing the EA guidelines by reviewing and synthesize existing literature	The EA revision Report	x	x		
2. Describing any new elements of the EA guidelines	The EA revision Report	x	x	Phase II	
3. Moving from a linear to a circular EA guideline framework	The EA revision Report	x	x	Phase II	Phase II
4. Mapping where relevant information are to be found within AC Working Groups that can help doing practical EA work	The EA revision Report		x	Phase II	Phase II
5. Enhancing EA communication	Conference, Workshops, On-line guidelines		x	Phase II	Phase II
6. Producing a reporting tool that can be used to track, can help synthesize progress in implementing the EA.	On-line reporting tool		x	Phase II	Phase II

Overall estimated budget (2021-2023):

2021-2023 - in-kind.

2023-2025 – For Conference and On-line products, a budget needs to be discussed.

Project team structure/lead Countries

Norway and the United States in close collaboration with the EA expert group.

ANNEX 13: Synthesis Report on Ecosystem Status, Human Impact and Management Measures in the Central Arctic Ocean (CAO)

The Arctic Ocean is a marine area in a phase of extraordinary transition, and parts of it are becoming increasingly accessible for human activities. The Central Arctic Ocean (CAO) includes an area of high seas which has historically been covered in multi-year ice year round; however, with the effects of climate change, the ice in this area is rapidly changing in seasonal coverage and disappearing, making the high seas portion of the CAO increasingly accessible for parts of the year. With the rapid change occurring, it is timely to gather the range of existing information on this area in order to inform effective future policy and decision making.

The aim of this project is to synthesize relevant information on the status, trends and projected changes in the CAO Large Marine Ecosystem (LME), human activities and pressures in the area, and the current management measures in place. This information will be summarized and communicated to Senior Arctic Officials.

Key Objectives

1. Understand and describe management measures for the CAO;
2. Assess current human activities, their drivers and pressures in the CAO;
3. Highlight the common understanding on state of biodiversity and ecosystems, trends and projected changes in the CAO;
4. Bring together and synthesize information to inform policy makers on future marine conservation needs in the CAO in order to enable cooperative adaptive ecosystem based management;
5. Communicate information on Indigenous knowledge and local knowledge, and Indigenous interests in the context of the high seas, in particular the CAO;
6. Initiate collaboration with the ICES/PICES/PAME WGICA, CBMP/CAFF, and the cross-working group Ecosystem Approach Expert Group to enhance the efforts to complete an Ecosystem Overview for the CAO, as a basis for any future ecosystem based management; and
7. Collaborate with the Provisional Scientific Coordinating Group (PSCG) created under the Agreement to Prevent Unregulated High Seas Fisheries in the CAO in their efforts to develop a Joint Program of Scientific Research and Monitoring.

Background

The CAO has historically been an area completely covered with multiyear sea ice and largely inaccessible. With climate change, the ice in this area is rapidly disappearing, with some recent studies indicating the area could be completely free of ice during the summer as early as 2030. There are now parts of the high seas in the CAO that are already seasonally ice free.

Two areas in the CAO meet the CBD EBSA criteria. The marginal ice zone, which results from seasonal ice-cover over the deep Arctic Ocean (deeper than 500 m), is a significant and unique feature in areas beyond national jurisdiction. Multi-year ice areas provide a range of globally and regionally important habitats. Projections of changing ice conditions due to climate change indicate that the Central Arctic Ocean beyond national jurisdiction and in adjacent Canadian waters is likely to retain ice longer than all other regions of the Arctic, thus providing refugia for globally unique ice-dependent species, including vulnerable species, as the ice loss continues.

The 2018 *Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean* (CAO Agreement) includes a requirement for the Parties to establish a Joint Program of Scientific Research and Monitoring (JPSRM). The Parties, through the JPSRM, will facilitate cooperation in scientific activities to better understand the living marine resources and ecosystem in the CAO, develop a data-sharing protocol, and take into account Indigenous knowledge and local knowledge to lay a foundation for establishing a formal relationship with Indigenous Peoples. Work required to establish the JPSRM is already underway while waiting for the CAO Agreement to enter into force, including initial recommendations regarding scientific coordination, research, monitoring, and data sharing in the CAO. The Inuit Circumpolar Council (ICC) is actively engaged under the CAO Agreement and in the PSCG to advocate for the interests of Indigenous Peoples and the role of Indigenous knowledge. This project will include a review of the role and interest of Indigenous Peoples and Indigenous knowledge for the CAO, based on the work already undertaken by ICC, and other relevant sources.

The PAME/ICES/PICES Working Group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean ([WGICA](#)) is currently undertaking work to identify relevant information and methods for assessments (IEAs), including ecosystem overviews. Much work has been completed through the WGICA to report on the status of the CAO Ecosystem, including the physical and biological components. In the coming work period, the WGICA will complete the Ecosystem Overview (EO), work on a report on the human activities, pressures, and the impact on the ecosystems of the CAO and develop a climate and vulnerability assessment of the CAO. This project will build on the work already completed by the WGICA in summarizing the status of the CAO ecosystems and will work in collaboration with the WGICA to contribute with relevant information for the CAO for the future work on Reports and the EO, as described in the current WGICA [Terms of Reference](#).

PAME's mandate is "To address marine policy measures and other measures related to the conservation and sustainable use of the Arctic marine and coastal environment in response to environmental change and from both land and sea-based activities, including non-emergency pollution prevention control measures such as coordinated strategic plans as well as developing programs, assessments and guidelines, all of which aim to complement or supplement efforts and existing arrangements for the protection and sustainable development of the Arctic marine environment."

The synthesis report proposed here would be consistent with the PAME mandate, in that it would serve as a resource for future decisions on marine policy measures in the context

of the CAO. It would also be complementary to other efforts towards protection and sustainable use of the Arctic marine environment.

PAME's *Framework for a Pan-Arctic Network of Marine Protected Areas* (MPAs) (the Framework) sets out the vision for an 'ecologically connected, representative and effectively-managed network of protected and specially managed areas'. Further technical work and coordination at the pan-Arctic level is needed to advance this vision. PAME recognizes that each Arctic State pursues MPA development in its own EEZ, based on its own authorities, priorities and timelines (the Framework 2015). Elements of the synthesis report, as described in further detail below, would contribute to the technical work and coordination needed to implement the Framework.

Given the regional and global interests at play with regards to the CAO, the need for a cross cutting and multi sectoral overview of the CAO is clear; however, this can only be completed in collaboration with other bodies working on the CAO, such as the WGICA, the PSCG, and eventually the permanent group established under the CAO Agreement to establish and implement the JPSRM. An additional benefit and outcome of this work would be to open the lines of communication both within the Arctic Council and outside the Arctic Council, by bringing together the different groups working on the CAO and informing future monitoring, scientific assessments and decision making in a variety of fora with regard to ecosystem based management and area-based conservation. It would provide an opportunity for the Arctic Council to be engaged in discussions regarding marine conservation and sustainable use in the Arctic Ocean.

The Arctic Council working groups have also completed a large body of work in support of sustainable development and environmental protection across the circumpolar Arctic, and there is much to draw from in order to better understand the CAO. The synthesis work proposed to be completed under this project would be based on reports already completed by the WGICA, other Arctic Council working groups and published information sources. The synthesis report will be carried out in close coordination with CAFF/CBMP and AMAP, both of which have recent highly relevant sources for this project.

Examples of existing resources and publications which could be drawn on include:

- Arctic Marine Shipping Assessment (AMSA) Specially Designated Marine Areas in the Arctic High Seas (DNV Report 2014)
- CAFF CBMP State of the Arctic Marine Biodiversity Report (SAMBR)
- AMSA Recommendation IIC - Areas of Heightened Ecological and Cultural Significance Report
- ICES/PICES/PAME Working Group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean (WGICA) Reports
- Arctic Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas (EBSAs)
- Natural Marine World Heritage in the Arctic Ocean: report of an expert workshop and review process (UNESCO)
- PAME Arctic Ship Traffic Database, including AIS based ship data in the CAO

- Reports from the Third, Fourth and Fifth Meetings of Scientific Experts on Fish Stocks in the CAO (predecessor group to the PSGC) and the Report of the First Meeting of the PSCG

Key Arctic Council recommendations and actions that directly support the potential outcomes of this project include but are not limited to:

CAFF Arctic Biodiversity Assessment Recommendations:

- 1. Advance and advocate ecosystem-based management efforts in the Arctic as a framework for cooperation, planning and development.
- 5. **Advance the protection of large areas of ecologically important marine, terrestrial and freshwater habitats, taking into account ecological resilience in a changing climate.**
 - a. Build upon existing and on-going domestic and international processes to complete the identification of ecologically and biologically important marine areas and implement appropriate measures for their conservation.
- 7. **Develop and implement mechanisms that best safeguard Arctic biodiversity** under changing environmental conditions, such as loss of sea ice, glaciers and permafrost.
 - a. **Safeguard areas in the northern parts of the Arctic where high Arctic species have a relatively greater chance to survive** for climatic or geographical reasons, such as certain islands and mountainous areas, which can act as a refuge for unique biodiversity.

Arctic Council: Arctic Marine Strategic Plan 2015-2025 Strategic Actions:

- 7.2.1 *Promote the **implementation of the ecosystem approach to management** in the Arctic through synthesis and application of the results of relevant work by the Arctic Council and associated efforts by relevant organizations.*
- 7.2.2 ***Identify and assess threats and impacts to areas of heightened ecological and cultural significance** and how such areas may be influenced in the future by climate change and other human induced changes and activities.*
- 7.2.4 *Encourage the Arctic states to implement appropriate measures, – or to **pursue such measures at relevant international organizations to protect Arctic marine Areas of Heightened Ecological and Cultural Significance. Focus should be on species and ecosystems particularly at risk from climate change and cumulative impacts, including areas of refuge for ice-associated species** that are, or are expected to become particularly important to Arctic marine biodiversity under future climate conditions.*
- 7.2.10 ***Develop a pan-Arctic network of marine protected areas**, based on the best available knowledge, to strengthen marine ecosystem resilience and contribute to human wellbeing, including traditional ways of life.*

The Arctic Council established the Task Force on Arctic Marine Cooperation (TFAMC, 2015-2019) with the general aim of enhancing Arctic marine cooperation. Throughout its first term, the TFAMC considered a broad range of issues on marine cooperation and governance, and ultimately made recommendations for complementary enhancements

to the Arctic Council. The work of the TFAMC could also be drawn on as a resource to inform the proposed synthesis report.

The first SAO Marine Mechanism (SMM) Webinar Series, held in the fall of 2020, considered Arctic Ocean governance throughout different themed sessions. Participants generally acknowledged that marine management in the Arctic should be approached in a holistic way, through a mosaic of national, regional, and international instruments. The SMM identified a need to better coordinate within the Arctic Council on issues arising in international fora. In the final summary from this webinar series, it was suggested that the Arctic Council could better support work on ecosystem based management in Arctic waters, including the CAO. This project could be a contribution to any future SMMs, informing the SAOs in their consideration of the CAO and ecosystem based management.

Project description

A synthesis report will be prepared, with the project objective of gathering available information in regard to the CAO.

The report will include the following elements/subsections:

- A. Information on management measures applicable to the CAO.
- B. Biological and physical overview of the CAO LME and key adjacent shelf areas (summary from WGICA reports, CAFF/CBMP, AMAP and other sources).
- C. Analysis of human activities and pressures in the CAO (using ASTD and other Arctic Council data sources).
- D. Indigenous interests and Indigenous knowledge and local knowledge case studies relevant to the CAO.
- E. Summary of the steps for Ecosystem Based Management Approach in the Arctic, focusing on possible relevance for the CAO.
- F. A discussion of MPAs and other effective area-based conservation measures relevant to the CAO.
- G. Key Findings and Next Steps to be communicated to the SAOs.

Timeline and major activities

Between May 2021- May 2023 (PAME Work Plan period)

Timeline	Activity
March -April 2021	Leads to be identified for each chapter, developing structure and content of project
	Presentation of the "Human Activities" part the project to the WGICA
June 2021	Presentation of the project to the Preparatory Conference of the CAO Agreement (TBC)
May 2021 -February 2022	-Data/Information gathering for each chapter, -Establish joint steering group with WGICA/PAME project leads to coordinate contributions to the WGICA Report 2- Human activities/stressors and regulatory measures, -First draft completed
October 2021	Complete contribution to WGICA Report 2 Participate in WGICA meeting
Fall 2021	Project update at PAME II 2021
February 2022	Workshop to present synthesis among experts, chapter leads, draft findings
February -September 2022	Bringing together different chapters/subsections, carrying out overall review and synthesis, in collaboration with other AC working groups, as relevant
September 2022	Draft report presented to PAME
November 31, 2022	Comments submitted by PAME reviewers
December 31, 2022	Final Draft Circulated to PAME
February 2023	Final draft completed/Approved

Overall estimated budget (2021-2023)

Consistent with the overall Arctic Council approach, the development of this project will be financed through voluntary contributions.

Project team structure/lead Countries

- Canada, Finland, Sweden, USA
- Observer partner: WWF
- PP co-lead/contributor (TBD)

References

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ANNEX 14: Draft Concept paper on further cooperation under the Arctic Council on EBM of Arctic marine ecosystems

The need for ecosystem-based management (EBM) to ensure sustainable use and protection of the marine environment is widely recognized by the international community, the Arctic Council, and the Arctic States and Permanent Participants of the Council. EBM, therefore, is a suitable framework for efforts to enhance cooperation on Arctic marine stewardship under the Arctic Council. This concept paper explores the case for enhanced transboundary cooperation and coordination of Ecosystem Based Management of the Arctic marine environment. A set of actions is proposed to develop such cooperation further in the coming four years.

The case for enhanced cooperation and coordination

The concept of Ecosystem Based Management (EBM), or the Ecosystem Approach to management (EA), has been around for more than 30 years, and was adopted as the core principle for the Arctic Council's Arctic Marine Strategic Plan already in 2004. Since then, EBM has been the overarching approach to cooperation related to management and conservation of the Arctic marine environment. In the 2013 Kiruna Declaration, Ministers agreed to the following definition of EA:

"Comprehensive, integrated management of human activities based on best available scientific and traditional knowledge about the ecosystem and its dynamics, in order to identify and take action on influences that are critical to the health of ecosystems, thereby achieving sustainable use of ecosystem goods and services and maintenance of ecosystem integrity".

According to this definition, EA has four main elements: 1) it is explicitly about management of human activities; 2) it is based on the best knowledge available about the ecosystem; 3) the purpose is to make appropriate and effective management decisions; and 4) the goal is to ensure sustainable use while maintaining ecosystem integrity.

The Arctic Council has also developed a framework for implementation of the Ecosystem Approach to management of human activities in Arctic marine and coastal environments, consisting of six related elements making up an iterative marine stewardship cycle:

1. Identify the geographic extent of the ecosystem;
2. Describe the biological and physical components and processes of the ecosystem including humans;
3. Set ecological objectives that define sustainability of the ecosystem;
4. Assess the current state of the ecosystem (Integrated Ecosystem Assessment);
5. Value the cultural, social and economic goods produced by the ecosystem; and
6. Manage human activities to sustain the ecosystem.

Cooperative work under the Arctic Council has so far been undertaken mainly on the first five of these elements. While tools for area-based marine management has been

developed by PAME, there has so far been few efforts to expand the cooperation to transboundary coordination of management and conservation measures.

EBM is a useful framework also for such coordination and cooperation. It includes a spectra of management and conservation approaches, such as MPAs and other area-based conservation measures, single-and multi-species conservation measures, regulation of individual activities, and the precautionary approach, as well as other measures carried out under existing national and international policy and legislative frameworks. This also includes the Indigenous Peoples' concepts of conservation and overall management.

Most of the work on implementing the ecosystem approach takes place at the national level, as this is where the legal, financial and administrative means implement EBM in practice exist. But ecosystems, habitats and ranges of species are defined and delineated by environmental factors, not by jurisdictions. Transboundary cooperation is therefore needed to ensure effective and coordinated management of shared ecosystems and populations.

The Arctic Marine Environment has a number of characteristics that calls for transboundary cooperation and coordinated management action:

- Arctic marine species are typically wide ranging, with populations extending across national jurisdictions and also into areas beyond national jurisdiction (ABNJ).
- Many Arctic marine species, habitats and ecosystems have a circumpolar distribution, such as the marginal ice-zone (MIZ), and species linked to sea-ice.
- Many Arctic marine species also migrate between different parts of the Arctic, as well as in and out of the Arctic, throughout the season.
- This means that species and populations will often depend on habitats within more than one national jurisdiction, as well as in ABNJ and outside of Arctic waters.
- Arctic Marine ecosystems and species are under rapidly increasing pressure from climate change and ocean acidification, leading to transboundary shifts in the geographical distribution of species and ecosystems. These changes are expected to continue and possibly accelerate for decades to come. Changes and reductions in the distribution of sea-ice habitats are of particular concern.
- Levels of activity in Arctic waters are increasing and expanding into new areas. Many of these activities, such as shipping, fisheries or oil and gas activities, are transboundary in nature, or may have transboundary impacts.

Together, these factors underscore the case for transboundary cooperation on EBM, including conservation measures. They also indicate that transboundary cooperation and coordination is needed in order to ensure effective adaptation of management and conservation measures to rapid climate change. Transboundary cooperation has the potential to make the sum of national efforts more effective, improving the odds for reaching management and conservation targets. While bilateral and regional arrangements already cover some of these needs, including for fisheries through the Regional Fisheries Management Organizations and the new *Agreement to Prevent Unregulated High Seas fisheries in the Central Arctic Ocean*, there is likely to be a case also

for more coordination and closer cooperation on EBM and marine conservation at the circumpolar level through the Arctic Council.

The Arctic Marine Strategic Plan 2015-2020 includes a number of Strategic Actions in relation to EBM which are pointing in the same direction:

- *Promote the implementation of the ecosystem approach to management in the Arctic through synthesis and application of the results of relevant work by the Arctic Council and associated efforts by relevant organizations.*
- *Identify and assess threats and impacts to areas of heightened ecological and cultural significance and how such areas may be influenced in the future by climate change and other human induced changes and activities.*
- *Encourage the Arctic states to implement appropriate measures, – or to pursue such measures at relevant international organizations to protect Arctic marine Areas of Heightened Ecological and Cultural Significance. Focus should be on species and ecosystems particularly at risk from climate change and cumulative impacts, including areas of refuge for ice-associated species that are, or are expected to become particularly important to Arctic marine biodiversity under future climate conditions.*
- *Develop a pan-Arctic network of marine protected areas, based on the best available knowledge, to strengthen marine ecosystem resilience and contribute to human wellbeing, including traditional ways of life.*

The recommendations from the 2013 *Arctic Biodiversity Assessment* also includes a number of important recommendations, not least with regard conservation measures for species and ecosystems particularly at risk from climate change. It is also worth noting that the *AC Task Force on Arctic Marine Cooperation*, in the second phase of their work (TFAMC II), identified two functional needs for enhanced cooperation that were not covered by present Arctic Council work or addressed through complementary enhancements suggested by the task force. Those were: (1) extending cooperation throughout the marine stewardship cycle and (2) integration across sectors and jurisdictional boundaries. TFAMC II concluded that further work is also required to fully address regional cooperation on area-based measures. The primary recommendation from the TFAMC II was the establishment of a SAO-based mechanism to guide the marine work of the Arctic Council and improve coordination on marine issues in the Arctic Council.

Below, potential actions to fill those needs through enhanced cooperation on EBM is discussed, and a set of actions to move this agenda further is proposed.

Towards a more coordinated implementation of EBM

Ongoing and planned activities on EBM and area-based management measures under the Arctic Council already contributes to some level of coordination across Arctic marine areas, which is effectively underpinned by common monitoring programmes and assessments conducted by AMAP and CAFF. Concrete transboundary coordination and cooperation on implementation of measures, is, however a more demanding task than elaborating common monitoring and knowledge, guidelines or management tools that

states can use on a voluntary basis. More concrete coordination of measures requires a higher level of **political commitment**, and **common ambitions** and **priorities**.

In order to enhance the role of the Arctic Council as a forum for coordination of **management measures** across national jurisdictions, there are several options that could be considered depending on the level of ambition and commitment. There is likely a considerable potential for further coordination simply by making more use of common, voluntary **guidelines, frameworks** and **management tools** developed under the Arctic Council in national marine management. Some activity to report and map progress in national EBM-efforts, and how these AC products are used by Arctic states in their national efforts on EBM and area-based management, could be useful in this regard. Such a mapping would also be useful as a basis for further discussions at the SAO-level on how to enhance the role of the Arctic Council in marine stewardship.

Other options that could be explored is to establish some kind of **Circumpolar Action Plan** or **cooperative mechanism** related to EBM and area-based marine management.

It could be broad in scope or limited to protection and sustainable use of particular Arctic marine species, habitats or ecosystems of common interest:

- An action plan for protection of vulnerable species linked to sea-ice and their key habitats in light of climate change could be worth exploring.
- A broader concept could be a plan to link area-based conservations measures across jurisdiction and develop pan-Arctic networks of MPAs and OECMs.
- An even broader approach could be an action plan for Ecosystem Based Management of the Arctic Marine Environment through a wide range of coordinated measures built on the experiences with similar broad action plans, for example under HELCOM.

Action plans are not new to the Arctic Council. In 1996, an Action plan for establishing a Circumpolar Protected Areas Network was released by CAFF. An Arctic regional action plan on marine litter in the Arctic is now near finalization. Another example is the framework titled *"Enhanced Black Carbon and Methane Emissions Reductions: An Arctic Council Framework for Action"*, adopted by the Arctic Council in 2015. The framework for Action is guided by a common, aspirational goal for BC emission reduction across the Arctic, and includes a system of national reporting. An Expert Group on Black Carbon and Methane was established to help implement key commitments in the Framework.

Any new such initiatives would have to be supported by scientifically founded activities such as circumpolar **gap analysis** of conservation efforts and assessment of the implications of climate change for management and conservation priorities. Due to the pace and scale of Arctic climate change, scenarios and models for assessing future changes and impacts on Arctic marine biodiversity and living resources, including on the geographical distribution of species and their habitats, could also be of great value for coordinated management and conservation planning. The need for biodiversity **scenarios** and **models** as decision support for adaptive management strategies; and choice of policy options has been underlined also by the IPBES. In light of the projected dramatic future changes in the Arctic marine environment described by IPCC in their *Special Report on the Ocean and the Cryosphere in a Changing Climate*, a project assessing the likely future changes to Arctic Marine ecosystems and biodiversity under different

emission scenarios in more detail would be of great value for future cooperation on EMB. Such a project could also improve the knowledge base for a targeted follow-up of key recommendations in the 2013 *Arctic Biodiversity Assessment* to adapt marine conservation measures to climate change. Ongoing and new projects to assess the impacts and risks from ongoing and new activities in the Arctic would also be useful to support action plans or similar initiatives.

Any new initiatives would also benefit from some preferably simple mechanisms to coordinate and oversee **implementation** and report on progress in measures taken nationally. This could be organized at the working group level and supervised by SAOs through the SMM. New efforts along these lines must take into consideration the non-legally binding nature of the Arctic Council. While this is a limitation, it also offers opportunities to choose approaches to enhanced cooperation on issues of common interest, as well as levels of commitments that all members of the Arctic Council would be comfortable with.

A set of actions to explore the options

A process to explore the options and develop a more concrete cooperation on implementation of EBM and area-based conservation and management could draw on an interplay between the AC working groups, and the SAO level through the SMM. On the working group level, the process could be anchored jointly in PAMEs Expert Group on Ecosystem Approach and the Expert Group on MPAs.

There is already a wide array of EBM-related activities at the WG level in the Arctic Council that could be built on and developed further to underpin more concrete coordination of implementation. Some highly relevant project activities are already included in the draft workplan of PAME and the EA expert group for 2021-23. This includes a project to revise the existing EBM Guidelines and its framework for EBM of the Arctic marine environment. The main aim for this revision is to incorporate monitoring and scientific advice more clearly as elements in the framework, and to clarify and explain EBM better as an iterative management cycle. This project also intends to compile EBM-relevant information produced under the Arctic Council and relevant scientific bodies such as ICES and PICES. The project will assess how this information could be used to strengthen EBM of Arctic marine ecosystem, and what kind of information is missing.

This assessment could at some point of its elaboration be presented for discussion by the SAOs in connection with a meeting under the SAO Marine Mechanism, as a basis for discussions on further cooperation on EBM and area-based measures. This could take place sometime during the Russian chairmanship, or alternatively at an early stage of Norway's chairmanship.

A framework for a pan-Arctic network of marine protected areas (MPAs) has been developed by PAME, aiming to inform the development of MPAs and networks of MPAs that are located within the national jurisdiction of Arctic States, and chart a course for future collaborative planning and actions for conservation and protection. It covers a wide variety of area based conservation measures, including measures usually categorized as Other Effective Conservation Measures (OECMs), and can support and enhance transboundary cooperation and coordination among Arctic States on area based conservation measures. Under the Arctic Council, tools for area-based marine

conservation are also being developed through PAME's "Toolbox" project. The framework will be revisited the next two years, and the toolbox will be developed further. A new project on Arctic OECMs is also on PAME's draft workplan for 2021-23.

Another important activity on the workplan for 2021-23 is an update of the Arctic Council's Arctic Marine Strategic Plan. In particular the revision of the plan's Strategic Actions could provide direction for further cooperation on implementation of EBM and area-based conservation measures, and for the scope of an eventual future Action Plan to this end.

The process could also benefit from involving a wider audience of interested parties, through thematic workshops at the working group level, the next Arctic Biodiversity Conference scheduled for 2022, and the planned third Arctic Marine EBM Conference in 2023. The planning of such a conference under Norway's AC chairmanship is already on the draft workplan of PAME for 2021-23. Transboundary cooperation on area-based measures and adaptive management in light of climate change could be among the thematic issues to be discussed at this conference. Such a conference could also be designed to take stock of national and regional EBM-efforts and provide targeted input to the need for and scope of an eventual Action Plan.

Hopefully, such a conference will provide additional input to the process of identifying ways forward for a closer cooperation on implementation of EBM and area-based management measures in the Arctic. We envisage that a proposal for follow-up activities and projects is developed through a targeted process after the conference, including a conference-report and another SMM-meeting, which could eventually result in an Action Plan or some other form of document reflecting an agreement on the elements of a more action-oriented cooperation on EBM to be adopted by ministers in 2025.

As soon as one or more thematic issue for enhanced cooperation are identified by the AC, this could be supported by more targeted scientific activities, such as pan-Arctic gap-analysis, identification of priority areas for management and conservation measures, and others. Hopefully, new, targeted project activities can be started up at the latest in 2023 to inform the overall process. The upcoming update of the Arctic Marine Strategic plan could contribute to the identification of such key activities.

Tentative timeline and major milestones

Chairmanship	Russia		Norway	
	2021	2022	2023	2024
Revision of existing EBM-framework. Compilation and assessment of relevant information (project)	X	X		
Revision of AMSP to provide direction on future cooperation on EBM and area-based management	X	X		
Planning of new projects to support enhanced cooperation, potentially also a project to establish an Action Plan	X	X		
3rd EA conference - planning and preparation	X	X		
Arctic cooperation on EBM and area based marine management measures special theme at 3. Arctic Biodiversity Congress		X		
SMM to discuss revisions to EBM-framework and way forward for cooperation on EBM		X	(or X)	
3rd EA conference in Norway			X	
Report from EA conference			X	
SMM to discuss elements of future coordination of implementation (potentially an Action Plan)			X	
New project activities to support enhanced cooperation (potentially development of Action Plan)			X	X
SMM to discuss draft document/Action Plan				X
Finalize document reflecting agreement on future cooperation on EBM (possibly in the format of an Action Plan)				X

ANNEX 15: Meaningful Engagement of Indigenous Peoples and Local Communities in Marine Activities (MEMA): Outreach and Next Steps

Project Summary

Engagement of Indigenous Peoples and local communities in marine activities is not only important to empower those potentially affected by an action of outside entities but can also inform and affect that action. The MEMA reports (MEMA I and II) and the MEMA Database contain a lot of information that needs to be more accessible. The MEMA Reference Guide was an attempt to summarize the findings of MEMA II Report. The MEMA II Report, MEMA Reference Guide, and MEMA Database should have an outreach process that will make these documents more available and useful to all concerned.

Engagement of Permanent Participants in the development of the project proposal

Permanent Participants from ICC, Saami Council, and AIA have been active in developing the MEMA Part II Report and the Reference Guidelines and are involved in developing the MEMA Outreach and Next Steps project. PPs will be critical to translation of the Reference Guide into local languages and for distribution of the Reference Guide to their communities.

Will the use of Traditional and Local Knowledge (TLK) lead to better project outcomes?
Yes

Indigenous Knowledge guided the inquiry of good practices. The use of Indigenous Knowledge and local knowledge was found to be one of the factors in successful meaningful engagement with indigenous Peoples in MEMA Part II Report.

Key Objectives

Make the findings of the MEMA II Report, MEMA Reference Guide and the MEMA Database available to Indigenous Peoples, local communities, and proponents of actions. The outreach effort will focus on Indigenous Peoples and local communities in a culturally appropriate way, and in ways that enable proponents of actions to use the findings.

Scope

- Translate the MEMA Reference Guide into other Arctic languages, for example, Russian, Saami, Inuktitut, etc.
- The PAME and Arctic Council Secretariats coordinate to provide the Reference Guide and other MEMA materials to all Arctic Council Working Groups.
- Arctic Member States disseminate MEMA materials to appropriate agencies/ministries within their governments.
- Arctic Council Permanent Participants to disseminate MEMA materials to communities, tribal entities, and other organizations within their networks.

- Arctic Council Observer States review MEMA materials and consider disseminating them to appropriate agencies/ministries to enhance meaningful engagement practices in their countries.
- Other Arctic Council Observers provide MEMA materials to business / industry, academic /research institutions, NGOs / IGOs, and other institutions as appropriate.

Main Components and Implementation

The widely distributed outreach material will include a brochure on the findings the MEMA II Report. PAME Secretariat may produce MEMA outreach videos or other multi-media, in collaboration with Indigenous Peoples.

Timeline and Major Milestones

Timeline: 2021-2023

Budget

In-kind + other funds for possible videos (TBC)

Main Outcomes

- MEMA Brochure
- Possible MEMA outreach videos or other multi-media

Project Team Structure/Lead Countries

MEMA Co-leads (Canada, United States, AIA, ICC, Saami Council, Northern Forum)

- Canada – Maureen Copley
- United States – Dennis Thurston
- AIA – Chantae Kochuten
- ICC – Nicole Kanayurak
- Saami Council - Gunn – Britt Retter
- Northern Forum – James Gamble

Engagement of Permanent Participants

Have Permanent Participants been engaged in the development of the project proposal?

Yes, Permanent Participants from ICC, Saami Council, and AIA have been active in developing the MEMA Part II Report and the Reference Guidelines and are involved in developing the MEMA Outreach and Next Steps project. PPs will be critical to translation of the Reference Guide into local languages and for distribution of the Reference Guide to their communities.

Will the use of TLK lead to better project outcomes?

Yes, Indigenous Knowledge guided the inquiry of good practices. The use of Indigenous Knowledge and local knowledge was found to be one of the factors in successful meaningful engagement with indigenous Peoples in MEMA Part II Report.

ANNEX 16: Management of Arctic Marine Oil and Gas Associated Noise

Project Summary

The continuation of Arctic marine oil and gas activities requires a better understanding of the sources of noise and the effects and potential effects of noise on marine mammals and fish. Of critical interest to Indigenous Peoples is how this noise affects or potentially affects their subsistence activities. Thus, determining how to avoid or mitigate these potential effects would be useful.

PAME has worked on noise in the Arctic Ocean from shipping and this can be utilized as a resource. However, there are other non-vessel sources of noise from offshore oil and gas operations that should be considered.

Arctic oil and gas activities contribute noise to the marine environment from the exploration through to decommissioning phases with such possible sources as: vessel traffic, seismic surveys, ice-breaker operations, trenching, drilling, production, and decommissioning operations.

There is significant scientific knowledge and Indigenous Knowledge on the effects of noise on Arctic marine biota. PAME will consider current practices to manage Arctic marine oil and gas associated noise, to reduce potential effects on marine biota and associated subsistence activities.

Key Objectives

The first objective is to take stock of the existing management practices for avoiding or mitigating effects of noise from Arctic oil and gas operations.

The second objective is to consider if specific guidance related to noise from Arctic oil and gas operations are needed.

Rationale

The rationale for this proposed project is provided in the following Arctic Council documents and recommendations related to oil and gas:

AMAP Assessment 2007 Oil and Gas Activities in the Arctic – Effects and Potential Effects (OGA) Recommendation #25 - The Arctic countries should facilitate and cooperate on research to improve technology in relation to oil and gas exploration and development. In particular, research into less impacting drilling and seismic technologies should be continued.

Arctic Offshore Oil and Gas Guidelines (AOOGG 2009)

3.5 Environmental Impact Assessment (EIA)

- an assessment of all associated sources of noise, including seismic or other testing equipment, vessels, aircraft, drill ships, drilling operations, and ice-breaking equipment and their potential effects on fish, marine mammals, and other wildlife including cumulative effects;

4.3 Standards and Practices for Environmental Monitoring

Monitoring standards and practices for environmental monitoring should be established for all phases of offshore petroleum activities, including offshore seismic operations and marine transportation.

Arctic Marine Strategic Plan 2015-2025 - Strategic Actions relevant to this proposal include:

7.1 Improve and Expand the Knowledge-base

7.1.1 Strengthen scientific cooperation and joint monitoring among the Arctic states, and with other states, organizations and stakeholders involved in Arctic research or traditional and local knowledge, with a focus on prioritizing research issues, filling knowledge gaps, and developing mechanisms to share and exchange observational data.

7.1.2 Improve, synthesize, and respond to emerging knowledge across all disciplines and sectors to include government, academic and industry information, and traditional and local knowledge.

7.1.3 Improve the understanding of cumulative impacts on marine ecosystems from multiple human activity-induced stressors such as climate change, ocean acidification, local and long range transported pollution (land and sea-based), marine litter, noise, eutrophication, biomass overharvesting, invasive alien species and other threats.

7.1.7 Continue the development and standardizing of data sharing and management at a circumpolar level.

7.2 Conserve and Protect Ecosystem Function and Biodiversity

7.2.1 Promote the implementation of the ecosystem approach to management in the Arctic through synthesis and application of the results of relevant work by the Arctic Council and associated efforts by relevant organizations.

7.2.2 Identify and assess threats and impacts to areas of heightened ecological and cultural significance and how such areas may be influenced in the future by climate change and other human induced changes and activities.

7.2.3 Identify and develop tools and methodologies for assessing cumulative impacts and risks for Arctic marine ecosystems and areas of heightened ecological and cultural significance with the aim of using them for integrated assessments.

7.3 Promote Safe and Sustainable Marine Resource Use

7.3.2 Improve the understanding of risks and risk reducing measures related to Arctic shipping and oil and gas exploration and development activities, including gap analysis and sharing of best practices related to oil spill prevention, preparedness and response to emergencies in the Arctic.

7.3.6 Advance continuous improvement of safety and environment protection performance and the use of best and most appropriate practices and technology for all marine activities.

7.3.12 Strengthen the dialogue with relevant business, industry and environmental stakeholders and Arctic inhabitants in order to foster conservation and sustainable use of the Arctic marine environment.

7.4 Strengthen Capacity to adapt to changes

7.4.1 Improve meaningful engagement of Arctic indigenous peoples and other Arctic inhabitants in relevant decisions, including through the consideration and use of traditional and local knowledge (TLK) in avoiding or mitigating negative environmental, subsistence, and cultural impacts, as well as in maintaining or increasing well-being and socioeconomic opportunities.

7.4.2 Facilitate coastal community exchanges between Arctic states to improve sharing of knowledge and experiences and to strengthen the dialog with relevant business and industry in the Arctic in order to foster the conservation and sustainable use of the Arctic marine environment.

7.4.4 In cooperation with the Permanent Participants, encourage engagement, as appropriate, with indigenous peoples organizations and bodies, that have specialized in traditional knowledge and that can inform the work of the Arctic Council in the protection of the marine environment and in enhancing the well-being and the capacity of Arctic inhabitants, including Arctic indigenous peoples to deal with a changing Arctic and increased activity.

Scope

The scope of this project includes:

1. Taking stock of the practices for noise reduction or elimination related to offshore or nearshore oil and gas operations in the Arctic. The activities of concern include: noise from vessels (survey, supply, crew, ice management), ice breakers, drilling, dredging, coring, seismic (high resolution and exploration), piledriving, and decommissioning activities (explosives, manual deconstruction).
2. Consider these activities to determine if specific technical guidance would be useful.
3. This proposed noise project could complement the work of the proposed shipping project on noise (2021-2023) by focusing on oil and gas activities.

Main Components and Implementation

List of Tasks/Activities

- Take stock of the practices for noise reduction or elimination related to all offshore or nearshore oil and gas operations in the Arctic.
- Hold a one or two-day workshop on the management practices for mitigating noise from Arctic offshore oil and gas operations and prepare a workshop report.
- Consider these activities to determine if specific technical guidance would be useful (for a future work plan).

Timeline and Major Milestones

PAME I 2021: Approval of the project plan

PAME II 2021: Take stock of the practices for noise reduction or elimination related to all offshore or nearshore oil and gas operations in the Arctic.

PAME I 2022: Workshop on management practices for mitigating noise from Arctic offshore oil and gas operations (to coincide with PAME meeting). Prepare a workshop report.

PAME II 2022: Report to PAME related to current management practices for mitigating noise. If determined that specific technical guidance would be useful, this will be recommended for a future work plan.

Budget

In-kind in addition to \$10 000 USD for workshop and \$25 000 USD for consultant to facilitate workshop and prepare report.

Main Outcomes

- Taking stock summary of practices
- Workshop report
- Report on current management practices for mitigating noise. If determined that specific guidance would be useful, this will be recommended for a future work plan.

Project Team Structure/Lead Countries

Leads: United States, UK, WWF

Engagement of Permanent Participants

Have Permanent Participants been engaged in the development of the project proposal?

Yes, Permanent Participants from ICC, Saami Council, and AIA have been active in developing the project proposal and will contribute to the conduct and completion of the project. The topic of marine noise is very important to Indigenous Peoples because of threats to their subsistence harvests.

Will the use of TLK lead to better project outcomes?

Yes, the use of Indigenous Knowledge and local knowledge is very important to the understanding of the effects of marine oil and gas activities on subsistence species. Indigenous Knowledge informs different approaches to mitigating effects of noise.

ANNEX 17: Update the Arctic Offshore Oil and Gas Regulatory Resource (AOOGRR)

Project Summary

The Arctic Offshore Oil and Gas Regulators Resource (AOOGRR) was initiated in 2013 and updated in 2014. It is a “one stop shop” web resource of websites of all Arctic Regulatory agencies/departments that have responsibilities for offshore oil and gas activities. (<http://www.pame.is/index.php/projects/offshore-oil-and-gas/mre>).

The AOOGRR provides easily and updatable web-based information and data (for e.g. documents, websites, relevant fora, networks, etc.). The AOOGRR facilitates the sharing of current information on best practices from different Arctic countries and allows better communication in the management, regulation and enforcement of Arctic offshore oil and gas operations, while allowing all stakeholders easy access to this information.

The AOOGRR serves as an outreach tool for Arctic Council and is useful to countries, Working Groups, Permanent Participants, observers, researchers, and other stakeholders. It demonstrates, and profiles Arctic States’ stewardship related to offshore oil and gas activities and provides up-to-date information about the activities and regulatory regimes across the Arctic.

These websites have all changed and need to be updated in the AOOGRR.

Key Objectives

To update the AOOGRR websites and information.

Recommendation 13 of the OGA, calls for the Arctic Council to compile national regulatory laws, standards, guidelines, and procedures for oil and gas activities in force in the Arctic countries.

Strategic Actions form AMSP 2015-2025

7.1 Improve and Expand the Knowledge-base; 7.1.1 and 7.1.7

7.3 Promote Safe and Sustainable Marine Resource Use; 7.3.12 and 7.3.13

Scope

This project will list and link to the websites of offshore regulators.

Structure of the Webpage Resources:

- 1) Country Agencies
- 2) Country Laws, Regulations, Notices, Rules, and Guidance and Management system documents
- 3) Science and Technical Reports
- 4) Strategic Environmental Assessments
- 5) Monitoring methods and results
- 6) Inspection/enforcement procedures and results
- 7) Accident and incident reporting

8) Statistics for discharge types and amounts, waste handling, etc.

Main Components and Implementation

List of Tasks/ Activities

PAME will:

- Check the current AOOGR for broken or out-of-date links.
- Add any new web sites or links.
- Seek clarifications on any website questions.

Timeline and Major Milestones

- 1) Summer 2021 update AOOGR
- 2) PAME II 2021 present to PAME

Budget

In-Kind

Main Outcomes

An updated “one stop shop” for offshore regulatory websites.

Project Team Structure/Lead Countries

USA and PAME Secretariat

Engagement of Permanent Participants

Have Permanent Participants been engaged in the development of the project proposal?

Yes, although this project deals with National and Regional legislation and regulations governing offshore oil and gas activities, the PPs have contributed to the project proposal development as this information is important to Indigenous Peoples.

Will the use of TLK lead to better project outcomes?

Yes, this project deals with gathering information on Arctic states legislation and regulations dealing with offshore oil and gas activities and does not require the use of Indigenous Knowledge.

ANNEX 18: Existing Waste Management Practices and Pollution Control for Marine and Coastal Mining

Project Summary

Arctic coastal mining has a long history. Historically, most of these mines discharged their waste rock and tailings into the ocean. The practice of depositing waste rock and tailings from mines into the ocean as well as discharging mining wastewater has the potential to affect the marine environment.

Currently there are few operations that use the ocean for disposal of waste rock and tailings. But where it is taking place or being planned in the Arctic, it employs submarine disposal of tailings (STD) or deep-sea tailings placement (DSTP). The discharge of mining wastewater is more common. There are also placer mining operations planned that consider discharge of waste sediments and water into the ocean.

This project would inventory current Arctic coastal and marine mining operations, with a view to identifying and assessing current practices for marine discharge of mining residuals like waste rock, tailings, sediments, dust and water.

Note: Project leads are in discussion with CAFF on possible linkages to their Mainstreaming Biodiversity in Arctic Mining Project (MBAM).

Key Objectives

The first objective is to take stock of the current Arctic land-based mining with marine discharge and marine mining operations.

The second objective is to identify and assess existing practices for marine discharge of mining residuals like waste rock, tailings, sediments, water and dust.

The Arctic Marine Strategic Plan (2015-2025) Strategic Actions relevant to this proposal include:

7.1 Improve and Expand the Knowledge-base

7.1.3 Improve the understanding of cumulative impacts on marine ecosystems from multiple human activity-induced stressors such as climate change, ocean acidification, local and long range transported pollution (land and sea-based), marine litter, noise, eutrophication, biomass overharvesting, invasive alien species and other threats.

7.1.9 Strengthen, where feasible, the collection, observation, monitoring and dissemination of relevant data on the Arctic marine environment. This could include hydrographic and bathymetric data; oceanographic data (including tides and currents) and meteorological information for numerical modeling and forecasting; pollutants; climate change-related impacts (especially ocean acidification); and ecosystem and biodiversity status and trends (including invasive species and other metrics of environmental change).

7.2 Conserve and Protect Ecosystem Function and Biodiversity

7.2.1 Promote the implementation of the ecosystem approach to management in the Arctic through synthesis and application of the results of relevant work by the Arctic Council and associated efforts by relevant organizations.

7.2.2 Identify and assess threats and impacts to areas of heightened ecological and cultural significance and how such areas may be influenced in the future by climate change and other human induced changes and activities.

7.2.3 Identify and develop tools and methodologies for assessing cumulative impacts and risks

for Arctic marine ecosystems and areas of heightened ecological and cultural significance with the aim of using them for integrated assessments.

7.2.4 Encourage the Arctic states to implement appropriate measures, or to pursue such measures at relevant international organizations to protect Arctic marine Areas of Heightened Ecological and Cultural Significance. Focus should be on species and ecosystems particularly at risk from climate change and cumulative impacts, including areas of refuge for ice-associated species that are, or are expected to become particularly important to Arctic marine biodiversity under future climate conditions.

7.3 Promote Safe and Sustainable Marine Resource Use

7.3.1 Advance ecosystem-based management as an overarching framework for conservation and sustainable use of living and non-living resources in the Arctic marine environment, taking into account cumulative impacts on the Arctic and the need for adaptation to climate change.

7.3.2 Improve the understanding of risks and risk reducing measures related to Arctic shipping

and oil and gas exploration and development activities, including gap analysis and sharing of best practices related to oil spill prevention, preparedness and response to emergencies in the Arctic.

7.3.6 Advance continuous improvement of safety and environment protection performance and the use of best and most appropriate practices and technology for all marine activities.

7.3.8 Promote the management of human activities in the circumpolar Arctic in accordance with Ecosystem Based Management and international law to ensure long term sustainability of stocks and ecosystems.

7.3.9 Strengthen the development of a common Arctic protocol for ecotoxicological assessment and screening of chemicals used in resource extraction activities in the Arctic.

7.3.12 Strengthen the dialogue with relevant business, industry and environmental stakeholders and Arctic inhabitants in order to foster conservation and sustainable use of the Arctic marine environment.

7.3.13 Strengthen the dialogue with industry (including through the Arctic Economic Council) in order to foster sustainable development in the Arctic.

7.4 Strengthen Capacity to adapt to changes

7.4.1 Improve meaningful engagement of Arctic indigenous peoples and other Arctic inhabitants in relevant decisions, including through the consideration and use of traditional and local knowledge (TLK) in avoiding or mitigating negative environmental, subsistence, and cultural impacts, as well as in maintaining or increasing well-being and socioeconomic opportunities.

7.4.3 Assess vulnerabilities and adaptation options of Arctic coastal communities to changes in climate and the marine environment, as well as challenges and opportunities related to these changes and new patterns of activity.

7.4.4 In cooperation with the Permanent Participants, encourage engagement, as appropriate, with indigenous peoples organizations and bodies, that have specialized in traditional knowledge and that can inform the work of the Arctic Council in the protection of the marine environment and in enhancing the well-being and the capacity of Arctic inhabitants, including Arctic indigenous peoples to deal with a changing Arctic and increased activity.

Scope

The scope of this project includes:

- 1) Taking stock of current Arctic coastal and near shore mining operations that discharge into the ocean mining residuals such as waste rock, tailings, sediments, water and dust.
- 2) Identify and assess existing practices for marine discharge of mining residuals.
- 3) This proposed project will explore possible links to CAFF's *Mainstreaming Biodiversity in Arctic Mining* project. This may entail that the project when assessing existing practices for marine discharge of mining residuals includes assessing the impact on biodiversity of existing practices for marine discharge of mining residuals.
- 4) Identify possible future work.

Main Components and Implementation

List of Tasks/Activities

- 1) Take stock of current Arctic marine and coastal mining activities.
- 2) Hold a workshop to elaborate on existing waste management practices and pollution control including environmental monitoring for marine disposal of waste rock, tailings, sediments, water and dust dispersal to the marine environment.
- 3) Prepare a report identifying and assessing existing practices and discuss potential best practice and possible future work.

Timeline and Major Milestones

PAME I 2021: Approval of the project proposal.

PAME II 2021: Take stock of Arctic marine and coastal mining activities.

PAME I 2022: Workshop on marine and coastal mining (to coincide with PAME meeting).

PAME II 2022: Draft Report identifying existing practices and possible future work.

Budget

Estimated Budget: In-kind in addition to \$10K USD for workshop and \$25K USD for consultant to facilitate workshop and prepare report.

Main Outcomes

- Stock taking summary of current activities.
- A workshop report.
- Report describing and assessing existing practices for waste rock, tailings, wastewater disposal and dust dispersal to the marine environment.
- Identify possible future work.

Project Team Structure/Lead Countries

Co-leads: Canada and Kingdom of Denmark

Engagement of Permanent Participants

Have Permanent Participants been engaged in the development of the project proposal?

Yes, Permanent Participants from ICC and Saami Council have contributed to the development of the project proposal and will (may) contribute to the conduct and completion of the project. The topic of marine disposal of mining waste is very important to Indigenous Peoples because of threats to their health, culture and subsistence harvests.

Will the use of TLK lead to better project outcomes?

Yes, the use of Indigenous Knowledge and local knowledge is very important to the understanding of the effects of marine disposal of mining waste on people's health, culture and subsistence. Indigenous Knowledge informs different approaches to avoidance or mitigation of effects of mine waste products in the marine environment.

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