Arctic Resilience Action Framework; cooperating for a More Resilient and Prosperous Arctic Region

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Arctic Resilience Action Framework

Cooperating for a More Resilient and Prosperous Arctic Region

Presented to the Senior Arctic Officials by the Arctic Resilience Action Framework Drafting and Review Committees, Co-chaired by Finland, the Saami Council and the United States[*]

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*Summary: Resilience is a cross-cutting topic which has become increasingly important to the Arctic Council in the face of rapid changes. The **Arctic Resilience Action Framework (ARAF)** provides the Arctic Council Member States, Permanent Participants, Working Groups and Observers with a common set of Guiding Principles and Priorities for Action[†], as well as a platform to continue discussing priorities as they evolve. The ARAF can also guide Arctic stakeholders from academia, civil society, the private sector and others across the international community.*

[*] The Arctic Resilience Action Framework Review Committee is co-chaired by Finland and the Saami Council. The Drafting Committee is chaired by the United States. See Appendix D for a full list of Committee members.

[†] See Appendix A for a summary of the ARAF Guiding Principles and Priorities for Action.

I. Introduction

As global temperatures rise, populations grow and pressures on natural resources increase, the world faces exceptional new challenges that will require innovative solutions. These challenges are particularly prominent in the Arctic, where the rate of warming is significantly greater than that of the rest of the planet and is leading to immediate and profound impacts. At the same time, technological innovation offers new opportunities in the Arctic for capacity development and collaboration among countries and peoples.

At a broader systems-level, the rapid changes in the Arctic make any long-term planning and management increasingly difficult. Social and ecological systems in the Arctic are inextricably linked, more closely than most other regions of the world, and some aspects of these systems are changing fundamentally and surpassing thresholds which may be irreversible. Indigenous residents of the Arctic have always adapted to environmental changes, but the current rate and intensity of climate change, combined with other social, environmental, economic and political shifts and constraints, make adaptation extremely challenging in today's Arctic. It is important for governments, Indigenous Peoples and local communities to work collaboratively to build resilience to social-ecological changes.

The Arctic Council, the region's preeminent intergovernmental forum, has taken steps to increase the understanding of the changing Arctic and to address those changes.[‡] Arctic Council assessments such as the *Arctic Climate Impact Assessment* and the *Snow, Water, Ice and Permafrost Assessment* have greatly added to our knowledge foundation about the effects of climate change in the region. The *Adaptation Actions for a Changing Arctic* project is translating science into actionable knowledge to inform climate adaptation actions in three different regions of the Arctic, and the *Arctic Resilience Report* has identified potential "cliffs" or tipping points, assessed challenges to Arctic communities, and identified ways that the Arctic Council might contribute to strengthening resilience across the Arctic. All six of the Arctic Council Working Groups are implementing projects that contribute to the resilience of the region[§].

These efforts to build resilience are extremely timely. Global momentum for addressing climate and other environmental changes and their linkages to human development has markedly increased in recent years, as demonstrated by the adoption of the Sendai Framework for Disaster Risk Reduction in March 2015, the adoption of the 2030 Agenda and its Sustainable Development Goals (SDGs) – several of which directly address building the resilience of vulnerable communities and ecosystems – in September 2015, and the Paris climate agreement of December 2015. In addition to national reporting on

Box 1: Resilience, Climate Adaptation and Social-Ecological Systems

Resilience is the ability of a system to bounce back and thrive during and after disturbances and shocks. **Climate Adaptation** is an adjustment in natural or human systems, in response to climate change, which is intended to minimize disruption or take advantage of opportunities. Implementing effective climate adaptation measures can build resilience, and actions fostering resilience can build the capacity to adapt. For this reason resilience and climate adaptation are closely linked and often described in commensurate terms.

A **social-ecological system** is an integrated system that includes human societies and ecosystems. Its structure is characterized by reciprocal feedbacks. In the Arctic, social and ecological systems are particularly linked. To understand changes in the Arctic and to identify and implement strategies for adaptation and resilience, it is important to consider the linked social-ecological system.

[‡] See Appendix B for a brief overview of the Arctic Council.
[§] See Appendix C for more information.

the agreements above, many international and regional bodies around the world are adopting frameworks and strategies to adapt to climate change and build resilience. In the Arctic, where the rate of warming is double that of the rest of the planet, such a coordinated, regional response to social, economic and environmental changes is timely, relevant and important. The Arctic Council, as the leading intergovernmental forum on issues of sustainable development and environmental protection in the region, is well-positioned to establish a framework that increases our understanding of risks and uncertainties, and supports and encourages measures to improve the resilience of threatened communities and ecosystems.

II. The Scope of the Arctic Resilience Action Framework

The ***Arctic Resilience Action Framework (ARAF)*** provides the Arctic Council Member States, Permanent Participant indigenous peoples' organizations, Working Groups and Observers with a common set of Guiding Principles and Priorities for Action, as well as a platform to continue discussing priorities as they shift. These priorities can also guide and galvanize actions outside of the Arctic Council, bringing together other states, international groups, civil society and the private sector – all of which have an essential role to play in building Arctic resilience.

The ARAF focuses on the resilience of Arctic states, Indigenous Peoples and communities, and the ecosystems upon which they depend, in the face of rapid social-ecological change. Implementing the Priorities for Action that are outlined in the ARAF will increase our understanding of Arctic change and potential risks and strengthen the adaptive capacity and overall resilience in the region. The ARAF is informed by the Arctic Resilience Assessment and other Arctic Council resources, existing national ambitions to build resilience and advance the SDGs outlined in the 2030 Agenda, and stakeholder consultations.

Box 2: The Arctic Council's Recognition of the Importance of Resilience and Adaptation

The Arctic Council has increasingly emphasized the importance of resilience and adaptation in the region. In the Iqaluit Ministerial Declaration (2015), Ministers of the eight Arctic States, joined by the six Permanent Participant organizations of the Arctic Council, "**Recognize** that resilience and adaptation to climate change are critically important for Arctic communities."

Through these priorities and actions, the ARAF aims to achieve the following outcome:

A measurable increase in the capacity of Arctic States and Arctic communities to understand and respond to risks and changes in ways that support socio-economic development and healthy, functioning ecosystems and ecosystem services.

This outcome will only be attained through the commitment of many Arctic stakeholders at all levels of implementation. To attain this outcome, the following Goal will be pursued:

To mobilize and use the broad competence and expertise of all Arctic Council Member States, Permanent Participants, Working Groups and Observers, along with other Arctic stakeholders, to provide the information, tools, analysis and capacity necessary to address immediate and future resilience and adaptation needs in the circumpolar Arctic.

A "community of practice" of Arctic stakeholders – a group of stakeholders engaged in collective learning and implementation – will explore a set of options for monitoring and assessing progress towards the desired outcome. These options will align with other national-level methods and reporting structures, wherever feasible (*See Section V – Implementing the Framework*).

III. Guiding Principles

The implementation of the ARAF will be guided by the following principles, while remaining consistent with domestic laws as well as international obligations and ambitions, and taking into account national circumstances.

1. **Build on the strengths of the Arctic Council and its Working Groups as a regional mechanism for cooperation**. Draw upon the diversity and commonalities among circumpolar countries, Arctic Indigenous Peoples, and communities to ensure the use of collaborative and participatory approaches.

2. **Value and draw on Indigenous/Traditional Knowledge and local knowledge.** Integrating Indigenous/Traditional knowledge and local knowledge with knowledge and experience from interdisciplinary science and technical disciplines will create the strongest information foundation for building resilience, adapting to future change, and protecting natural and cultural resources.

3. **Build upon existing global, regional and national strategies for sustainable development, climate change adaptation and mitigation, and disaster risk reduction.** Pursue coherence across these policies, where appropriate, to align tools and metrics, foster partnerships, investments and innovations, and maximize impact.

4. **Support multi-stakeholder engagement.** Scientific and technical institutions, private sector institutions, and civil society are essential for achieving the goals of resilience. Inclusive approaches help to ensure that the skills, capacities, and unique needs of all people, including Indigenous Peoples, women, youth, and Elders, are considered. Indigenous Peoples, in particular, are at the heart of a sustainable Arctic and their inclusion in building Arctic resilience is crucial. Stakeholders beyond the Arctic should also be engaged as they impact the region in a multitude of ways and may be affected by changes in the Arctic region.

5. **Empower local communities.** Understanding risk and resilience from a community perspective facilitates locally appropriate actions and investments. Such an understanding requires improved education and social learning and empowerment of local authorities and communities through resources, incentives, and support for self-organization as appropriate. Such empowerment is enhanced by the recognition of indigenous peoples and other Arctic residents as co-producers of knowledge, in particular through community-based monitoring and locally-driven research.

6. **Address multiple risks and look for co-benefits.** Arctic communities and ecosystems face multiple hazards and stresses. Treating these in isolation can create new, unanticipated risk, but consideration of the interactions among risk factors creates opportunity to identify measures that deliver multiple co-benefits.

7. **Consider risk and resilience across temporal and spatial scales.** The development of resilience strategies and adaptation responses must consider both temporal and spatial scales; the consequences of decisions may take decades to emerge, and actions and development activities in one region, within or outside of the Arctic, may have negative impacts in other areas.

8. **Encourage innovative investments that prevent and proactively mitigate risk.** Public and private resilience investments should address the underlying risk factors instead of the impacts after they have occurred. Building resilience in advance of disruptions or shocks can protect lives,

health, livelihoods and support economic development as well as cultural and environmental assets and offers opportunities for future development.

9. **Monitor progress and adjust strategies as needed.** Vulnerability and risk in Arctic social-ecological systems are constantly shifting; this framework, as well as Arctic resilience and adaptation efforts more generally, must evolve as new information becomes available.

IV. Priorities for Action

Utilizing a review of existing ambitions outlined in global and regional strategies on climate change, disaster risk reduction and sustainable development; a review of existing Arctic Council strategies, assessments and ongoing initiatives; and extensive consultations with Permanent Participant organizations, Arctic Council Member States, Observers, Working Groups and other stakeholders, the ARAF has been organized around four key priorities: *i) Analyzing and Understanding Risk and Resilience in the Arctic, ii) Building Resilience and Adaptation Capacity, iii) Implementing Measures that Build Resilience through Policy, Planning and Cooperation, and iv) Encouraging Investment to Reduce Risk and Build Resilience* (*see appendix C for a summary diagram*).

Each of the four priorities includes a subset of Action Areas to further focus resilience efforts in the Arctic. It is likely that this initial list of Action Areas will evolve as challenges, needs, and opportunities change. The ARAF is a living document that shall be updated over time. In order to orient the reader, an example of an implementing action is described below each of the Action Areas; these are examples only – in most cases the Action Areas will require multiple suites of implementing actions.[**]

Addressing these priorities will require the expertise and cooperation of a wide range of stakeholders and knowledge systems. While the Arctic Council is well-positioned to coordinate regional resilience priorities and actions, effective implementation will also require partnership with policy makers, academia, civil society and the private sector at the national level, as well as engagement from other multilateral/international groups.

PRIORITY AREA I: Analyzing and Understanding Risk and Resilience in the Arctic

In recent years, scientific advancements have improved the world's understanding of the Arctic region. However, many information gaps about social and natural processes, and the interactions among them, still exist both within the Arctic region and between the Arctic region and global processes. As the Arctic changes, an improved understanding of risks and opportunities can help communities and governments make better decisions and more effectively enhance their resilience, especially in the face of uncertainty. Documenting and sharing adaptation experiences can help to identify and foster effective responses and best practices as the Arctic faces even more rapid change.

Action Area 1.1: Increase the effectiveness of existing monitoring systems and include social-ecological indicators and their interactions.

Example implementing action: Improve understanding of disease and injuries related to a changing environment.

[**]It is important to note that the Arctic Council Working Groups are already implementing a range of initiatives related to the Action Areas (See Appendix C). Additional focus on these Action Areas by the Arctic Council Working Groups and other stakeholders will more efficiently address the four Priority Areas that are outlined in this framework.

Action Area 1.2: Substantially enhance our understanding of ecologically vulnerable areas and areas in which Arctic-adapted biodiversity can persist under a changing climate.

Example implementing action: Identify and map current and future plant and animal range shifts as Arctic systems transform.

Action Area 1.3: Improve short and long-term projections for the Arctic under different future emission and development scenarios, using natural and social sciences and Indigenous/Traditional Knowledge and local knowledge.

Example implementing action: Develop sea level rise and coastal change projections for the Arctic under future emission pathways, particularly in areas of frequent human use, and identify how these will impact social and ecological resilience and adaptation needs.

Action Area 1.4: Expand the documentation of adaptation responses to changing threats in the Arctic.

Example implementing action: Collect and add new case studies to existing repositories of adaptation and resilience measures for Arctic communities, economies and ecosystems; promote methods to evaluate the effectiveness of these measures and disseminate information about these resources.

PRIORITY AREA II: Building Resilience and Adaptation Capacity

Resilient communities have the internal capacity and flexibility to self-organize, but to successfully adapt to environmental and social challenges, local communities and individuals will require support from all levels of government. Encouraging processes that apply Indigenous/Traditional Knowledge, co-developing tools for self-assessment and decision-making, facilitating access and integration of scientific knowledge at the community level and supporting the education and training of local leaders can all contribute to adaptive capacity and enhanced resilience to disruptive changes. Cross-border and circumpolar collaboration can further support resilience of desired local attributes and can collectively enhance regional resilience to disturbance and shocks.

Action Area 2.1: Increase the co-production of knowledge using science, Indigenous/Traditional Knowledge and local knowledge.

Example implementing action: Highlight and share case studies for the successful co-production of science and Indigenous/Traditional Knowledge, in which all partners have been equitably involved and community participation has been encouraged. Case studies could highlight the incentives and enabling environment that led to co-production.

Action Area 2.2: Expand the ability of community-based observation networks to collect critical data for monitoring change and integrate with Earth observations.

Example implementing action: Expand and consolidate guidance for community-based observations.

Action Area 2.3: Improve tools for assessing management strategies in changing Arctic ecosystems.

Example implementing action: Develop tools that help resource managers understand how the fish, wildlife or land resources they manage relate to the resilience of the greater Arctic region.

Action Area 2.4: Ensure data and tools are equitably distributed and easily accessible for local communities, decision makers, and policy makers at all levels.

Example implementing action: Actively implement open data policies by making data available in common formats in a timely manner.

Action Area 2.5: Substantially increase the number of communities, youth and emerging leaders that understand Arctic change using a variety of knowledge approaches.

Example implementing action: Provide a resilience training platform and community of practice for Arctic leaders and expand opportunities for youth engagement in this platform over time.

Action Area 2.6: Increase administrative and planning support to communities, governments and decision-makers at all levels, including support for applying resilience knowledge to decision-making.

Example implementing action: Develop community-based resilience indicators that help communities make decisions in a timely manner with respect to erosion, inundations and storm surges.

PRIORITY AREA III: Implementing Measures that Build Resilience through Policy, Planning and Cooperation

Sound planning and policy processes are essential for implementing measures that build resilience. To be effective, such processes require the engagement and cooperation of a range of stakeholders, especially local and Indigenous communities. These processes also should transcend disciplines and adopt holistic approaches that combine the natural sciences and the social sciences, and multiple knowledge systems. Building resilience requires a diversity of approaches.

Action Area 3.1: Increase the inclusion of local perspectives in local and sub-regional decision-making.

Example implementing action: Establish community-led planning groups to identify social and cultural priorities at the local scale.

Action Area 3.2: Enhance the development and deployment of resilient infrastructure, telecommunications, and technologies to deal with emerging challenges (e.g., waste, water security, energy, food security, health, etc.).

Example implementing action: Develop training platforms that will enhance innovation and enable the sharing of best practices for renewable energy technologies.

Action Area 3.3: Expand the use of ecosystem-based management in the Arctic.

Example implementing action: Identify, and develop measures to protect, crucial areas of importance for biodiversity and food security.

Action Area 3.4: Substantially expand the use of transdisciplinary approaches for understanding change and implementing strategies to enhance resilience.

Example implementing action: Support and showcase pilot programs that demonstrate the transdisciplinary approach to resilience – for example assessing the impact of health investments on adaptation capacity.

Action Area 3.5: Encourage consistent practices for ensuring public participation in environmental impact assessments and other decision-making processes.

Example implementing action: Compare best practices across Arctic states for assessing the environmental and social impacts of resource development.

PRIORITY AREA IV: Encouraging Investment to Reduce Risk and Build Resilience

Arctic communities and ecosystems will face an increasing number of new risks over time. However, financial resources that enable effective planning and response to these risks have thus far been limited. Resilience investments can bring multiple benefits, including a reduction of risk to communities and ecosystems, more local jobs, increases in quality of life, and better return on investments. New, innovative financial mechanisms will need to be explored in order to address near-term and long-term challenges associated with climate change and other drivers of change, and ensure that investments maintain and enhance the resilience of communities and ecosystem services whenever possible. This will require the cooperation of all levels of government, as well as the private sector. Private-public partnership models have been proven to be effective in the Arctic and could be used to increase investments that build resilience.

Action Area 4.1: Improve our understanding of best practices for resilient and "climate proof" investments in the Arctic.

Example implementing action: Assess existing funding streams in the Arctic, identify obstacles and barriers in applying them to resilience challenges, and identify examples of climate-proof investments.

Action Area 4.2: Substantially increase private sector investments that support resilient communities.

Example implementing action: Pilot a public-private resilience fund to facilitate private sector investment in economic development, ecosystem health, public safety and long-term resilience.

Action Area 4.3: Expand the use of innovative financial mechanisms for improving resilience.

Example implementing action: Analyze the use of existing financial mechanisms (e.g., catastrophe bonds, green bonds, climate risk bonds, loan guarantees, tax credits, land swaps, etc.) that reduce risk and build resilience in other regions, and assess the potential for application in the Arctic.

Action Area 4.4: Encourage the identification of specific funding gaps and resilience priorities, as a way to provide guidance to potential donors and catalyze new investments.

Example implementing action: Develop lists of resilience funding priorities for each Member State and Permanent Participant, and make the lists publicly available.

V. ARAF: Implementing the Framework

Implementing the ARAF – as well as monitoring progress toward the outcome and identifying future priorities – will require continuous engagement and conversation by many partners. The following are proposed actions to be taken by the Arctic Council Member States, with participation by a range of other stakeholders:

1. Host a biennial resilience forum.

To facilitate active conversation, monitor progress, and ensure the ARAF remains current, a circumpolar resilience forum could be held every two years – once per Arctic Council Chairmanship. The forum would convene local, sub-regional, and regional Arctic resilience implementers or experts to a) assess progress toward the ARAF outcome and priorities, b) showcase best practices and resilience learning, c) identify and plan for emerging or urgent priorities, and d) encourage public/private resilience investment opportunities. The forum could be organized by the rotating Chair of the Arctic Council. To ensure continuity, it is suggested that the previous and future Chairs could also play key roles in organizing the forum.

Subsequent to the biennial forum, organizers could produce a brief report that summarizes the key findings of the meeting and proposes revisions, updates or additions to the ARAF – to be agreed upon by a Review Committee consisting of resilience experts designated by each Arctic state, Permanent Participant Organization, and Working Group.

2. Develop a community of practice for building resilience in the Arctic.

A community of practice that includes Arctic Council Member States, Permanent Participants, Observers and other Arctic stakeholders could convene or communicate on a regular basis to explore methods for measuring progress towards building resilience in the Arctic and beyond. Such a community of practice would work closely with the organizers of the biennial resilience forum and provide a set of indicators or monitoring options for consideration at the first resilience forum. Methods of monitoring progress should, where feasible and appropriate, align with existing reporting mechanisms, such as national reporting on the SDG indicators currently being developed under the auspices of the United Nations.

VI. Conclusion

The ARAF is a collaborative tool for enhancing our understanding and building resilience to disruptive changes in the Arctic. In addition to providing guidance and a clear focus on shared priorities, it will facilitate the sharing of Arctic-specific resilience data and information, and therefore increase our global understanding of risk and opportunity. This is an extraordinary moment for the people and leaders of the Arctic, an opportunity to integrate northern perspectives into global deliberations while at the same time addressing clear and immediate resilience and adaptation needs. The ARAF will evolve over time as circumstances and opportunities change, but the influence and global role of Arctic peoples will steadily increase as global and local efforts align to enhance Arctic resilience.

Appendix A: Arctic Resilience Action Framework at a Glance

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Outcome

A measurable increase in the capacity of Arctic States and Arctic communities to understand and respond to risks and changes in ways that support positive socio-economic development and healthy, functioning ecosystems and ecosystem services.

Goal

To mobilize and use the broad competence and expertise of all Arctic Council Member States, Permanent Participants, Working Groups and Observers, along with other Arctic stakeholders, to provide the information, tools, analysis and capacity necessary to address immediate and future resilience and adaptation needs in the circumpolar Arctic.

Priority Areas and Action Items

Priority Area 1: Analyzing and Understanding Risk and Resilience in the Arctic

Increase the effectiveness of existing monitoring systems and include social-ecological indicators and their interactions

Substantially enhance our understanding of ecologically vulnerable areas and areas in which Arctic-adapted biodiversity can persist under a changing climate

Improve short and long-term projections for the Arctic under different future emission and development scenarios, using natural and social sciences and Indigenous/Traditional Knowledge and local knowledge

Expand the documentation of adaptation responses to changing threats in the Arctic

Priority Area 2: Building Resilience and Adaptation Capacity

Increase the co-production of knowledge using science, Indigenous/Traditional Knowledge and local knowledge

Expand the ability of community-based observation networks to collect critical data for monitoring change and integrate with Earth observations

Improve tools for assessing management strategies in changing Arctic ecosystems

Ensure data and tools are equitably distributed and easily accessible for local communities, decision makers, and policy makers at all levels

Substantially increase the number of communities, youth and emerging leaders that understand Arctic change using a variety of knowledge approaches

Increase administrative and planning support to communities, governments and decision-makers at all levels, including support for applying resilience knowledge to decision-making

Priority Area 3: Implementing Resilience with Policy, Planning and Cooperation

Increase the inclusion of local perspectives in local and sub-regional decision-making

Enhance the development and deployment of resilient infrastructure, telecommunications, and technologies to deal with emerging challenges (e.g., waste, water security, energy, food security, health, etc.)

Expand the use of ecosystem-based management in the Arctic

Substantially expand the use of transdisciplinary approaches for understanding change and implementing strategies to enhance resilience

Encourage consistent practices for ensuring public participation in environmental impact assessments and other decision-making processes

Priority Area 4: Encouraging Investment to Reduce Risk and Build Resilience

Improve our understanding of best practices for resilient or "climate proof" investments in the Arctic

Substantially increase private sector investments that support resilient communities

Expand the use of innovative financial mechanisms for improving resilience

Encourage the identification of specific funding gaps and resilience priorities, as a way to provide guidance to potential donors and catalyze new investments

Guiding Principles

- Build on the strengths of the Arctic Council and its Working Groups as a regional mechanism for cooperation
- Value and draw on Indigenous/Traditional Knowledge and local knowledge
- Build upon existing global, regional and national strategies for sustainable development, climate change adaptation and mitigation, and disaster risk reduction
- Support multi-stakeholder engagement
- Empower local communities
- Address multiple risks together and look for co-benefits
- Consider risk and resilience across temporal and spatial scale
- Encourage innovative investments that prevent and proactively mitigate risk
- Monitor progress and adjust strategies as needed

Appendix B: The Arctic Council at a Glance

The Arctic Council is the leading intergovernmental forum promoting cooperation, coordination and interaction among the Arctic States, Arctic indigenous communities and other Arctic inhabitants on common Arctic issues. In particular, the Arctic Council cooperates on issues of sustainable development and environmental protection in the Arctic.

The Arctic Council was established in 1996 through the Ottawa Declaration, which designates the following as Member States: **Canada, the Kingdom of Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden** and **the United States**. Chairmanship of the Arctic Council rotates every two years among these eight Member States. Each Member State has a designated Senior Arctic Official, or primary representative, for day-to-day operations within the Arctic Council.

In addition to Member States, there are six Arctic indigenous peoples' organizations, or Permanent Participants, of the Arctic Council, which have full consultation rights with respect to Arctic Council negotiations and decisions. Permanent Participants include: **the Aleut International Association, the Arctic Athabaskan Council, Gwich'in Council International, the Inuit Circumpolar Council, Russian Association of Indigenous Peoples of the North** and **the Saami Council**.

The work of the Arctic Council is primarily carried out by six Working Groups.

- **The Arctic Contaminants Action Program (ACAP)** acts as a strengthening and supporting mechanism to encourage national actions to reduce emissions and other releases of pollutants.
- **The Arctic Monitoring and Assessment Programme (AMAP)** monitors the Arctic environment, ecosystems and human populations, and provides scientific advice to support governments as they tackle pollution and adverse effects of climate change.
- **The Conservation of Arctic Flora and Fauna Working Group (CAFF)** addresses the conservation of Arctic biodiversity, working to ensure the sustainability of the Arctic's living resources.
- **The Emergency Prevention, Preparedness and Response Working Group (EPPR)** works to protect the Arctic environment from the threat or impact of an accidental release of pollutants or radionuclides.
- **The Protection of the Arctic Marine Environment (PAME) Working Group** is the focal point of the Arctic Council's activities related to the protection and sustainable use of the Arctic marine environment.
- **The Sustainable Development Working Group (SDWG)** works to advance sustainable development in the Arctic and to improve the conditions of Arctic communities as a whole.

In addition to the Working Groups, temporary Task Forces and Expert Groups are sometimes created to work on a specific issue for a limited period of time. Recent examples include the Expert Group on Ecosystem-Based Management and the Task Force for Enhancing Scientific Cooperation in the Arctic.

Many non-Arctic states and inter-governmental or non-governmental organizations participate in the Arctic Council as Observers. They are invited to observe the work of the Arctic Council and are sometimes invited to make relevant contributions, primarily through engagement at the level of the Working Group.

Appendix C: Working Group Objectives and Initiatives that May Build Resilience

The following is a list of current and planned Arctic Council Working Group initiatives that could support ecosystem or community resilience. These initiatives have been divided into three broader categories of resilience "needs": Capacity Building, Research and Innovation, and Improved Decision-Making, Management, and Implementation. These three "needs" categories were used to frame discussions during the Arctic Council Resilience Workshop on March 14, 2016 in Fairbanks, Alaska, USA. Initiatives have been drawn from the six Working Groups' 2015-2017 work plans and the Actions for Arctic Biodiversity 2013-2021: Implementing the recommendations of the Arctic Biodiversity Assessment. Additional actions from the Arctic Marine Strategic Plan are also listed[††].

In addition to the Working Groups, temporary Task Forces and Expert Groups are sometimes created to work on a specific issue for a limited period of time. The deliberations and products of these Task Forces and Expert Groups may also support resilience and contribute to our understanding of risks and opportunities in the Arctic. For example, the Ecosystem-Based Management (EBM) Expert Group provided definitions and principles for EBM, an integrated approach to management with a goal of improving the sustainability of linked social ecological systems.

I. ACAP

Working Group Objectives:
To prevent adverse effects, reduce and ultimately eliminate pollution of the Arctic Environment[‡‡]

Current or Planned Initiatives by Resilience "Need"

Capacity Building

- Expand the coverage of an existing monitoring tool, the Local Environmental Observer (LEO) network that links traditional knowledge and western science, across the Arctic to create a Circumpolar Local Environmental Observer (CLEO) network. During Phase I of the project, ACAP will create a North America chapter of the CLEO, including indigenous communities in the Alaskan and Canadian Arctic, and will develop a framework for expansion of the CLEO to the Nordic and Russian regions (ACAP 2015-2017 Work Plan[§§])
- Assess and develop community-level tools for black carbon reduction in indigenous communities, to mitigate health and environmental effects from black carbon sources (in Russian and Saami communities) (ACAP 2015-2017 Work Plan)
- Organize a conference on best practices on contaminant reduction in indigenous communities (Actions for Arctic Biodiversity 2013-2021[***])

[††] See Sub-Appendix for initiatives referenced in the Arctic Marine Strategic Plan
[‡‡] From Arctic Council Action Plan to Eliminate Pollution of the Arctic, 2000. https://oaarchive.arctic-council.org/bitstream/handle/11374/429/ACSAO-US03_6_ACAP.pdf?sequence=1&isAllowed=y
[§§] ACAP Work Plan: ACAP Draft SAO Report to Ministers including Work Plan 2015-2017. https://oaarchive.arctic-council.org/bitstream/handle/11374/1437/ACAP_WORKPLAN_Doc1_Draft_submission_to_SAO_Report_including_work_plan_AC_SAO_CA04.pdf?sequence=1&isAllowed=y
[***] Actions for Arctic Biodiversity 2013-2021. http://www.caff.is/administrative-series/293-actions-for-arctic-biodiversity-2013-2021-implementing-the-recommendations-of-th/download

Improved Decision-Making, Management, and Implementation

- Demonstrate environmentally sound clean-up of an old pesticide storage site/burial site, including destruction of the hazardous waste (ACAP 2015-2017 Work Plan)
- Reduce diesel black carbon emissions through implementation of a range of alternatives, including use of renewable fuel, for providing energy upgrades to offgrid Cluster settlements in Valday, Karelia (ACAP 2015-2017 Work Plan)
- Identify, further develop and apply pollution reduction technologies at a non-ferrous/zinc smelter in Russia and implement related monitoring (ACAP 2015-2017 Work Plan)
- Assess contamination of three old pesticides storages/burial sites using a Rapid Environmental Assessment to assess the risk to local population and the Arctic Environment (ACAP 2015-2017 Work Plan)
- Assess technologies for environmentally sound destruction of obsolete pesticides in northern Russia, when such capacity becomes available (ACAP 2015-2017 Work Plan)
- Identification of PCB-containing waste on Graham Bell, Heiss and Hoffman Islands, their collection and analysis, elimination of liquid waste using a SKGO-10 mobile facility, technical and biological remediation and monitoring of contaminated areas and development of proposals for improving the system to identify, gather, store and dispose of PCB in the Arctic zone of the Russian Federation (ACAP 2015-2017 Work Plan)

II. AMAP

Working Group Objectives:

1. Assessments: Produce scientific assessments and products from which strong science based policy recommendations can be made; Identify gaps and key questions that are needed for the best possible assessment of cumulative environmental stressors, their causes, and impacts on ecosystems and people
2. Communications and Outreach: Develop a closer cooperation with other AC working Groups, PPs, governments, observers, educational institutions, media, and other organizations; effectively communicate the results of AMAP activities
3. Monitoring: Sustained, robust circumpolar monitoring network effective at detecting changes and discerning trends; develop and maintain circumpolar monitoring guidelines for standardized collection of data and analysis; work with and support community-based monitoring[†††]

Current or Planned Initiatives by Resilience "Need"

Research and Innovation

- Update of 2011 Snow, Water, Ice and Permafrost (SWIPA) assessment, using updated climate change scenarios and more refined models, and the development of the Arctic Freshwater Synthesis (this component of the SWIPA update will prepare the first overall budget of freshwater resources in the Arctic and a synthesis of the current status) (AMAP 2015-2017 Work Plan[‡‡‡])
- Update the 2011 Arctic Ocean Acidification Assessment, which will "inform policy development concerning sustainable marine resources and food security" (AMAP 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)

[†††] From AMAP Strategic Framework, 2010-2018. www.amap.no/documents/download/242
[‡‡‡] AMAP Work Plan: 2015-2017 https://oaarchive.arctic-council.org/handle/11374/1443

- Prepare three regional assessments with information to assist local decision-makers and stakeholders to develop adaptation tools and strategies to deal with climate change and other environmental stressors and produce an overall integrated report on adaptation actions (AACA Part C) (AMAP 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Develop ecosystem models that project ecosystem response to climate change and contaminant-related factors (as part of AACA-C) (Actions for Arctic Biodiversity 2013-2021)
- Provide information for assessment of contaminant level trends in ecosystems, and their biological effects, and improve predictive capacity (ongoing with CAFF) (AMAP 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Prepare an updated assessment of persistent organic pollutants, including chemicals of emerging Arctic concern, biological effects, and the influence of climate change on POPs (AMAP 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)

III. CAFF

Working Group Objectives:

1. To enhance efforts to monitor Arctic biodiversity, especially which are of great ecological, cultural, social, economic or scientific value
2. Support and implement measures for the conservation of Arctic genetic resources, species, and their habitats
3. Establish protected areas in the Arctic region where they contribute to the conservation of ecosystems, habitats, and species
4. Manage activities outside protected areas in order to ensure the conservation of biodiversity
5. Enhance integration of biodiversity conservation and sustainable use objectives into sectoral and cross-sectoral plans and policies[§§§]

Current or Planned Initiatives by Resilience "Need"

Capacity Building

- The Circumpolar Biodiversity Monitoring Program (CBMP) is enhancing biodiversity monitoring and increasingly incorporating traditional and local knowledge (CAFF 2015-2017 Work Plan[****] and Actions for Arctic Biodiversity 2013-2021)
- Develop a Pan-Arctic Digital Elevation Map , in order to improve access to Arctic topographical information to facilitate monitoring and assessment activities and to inform decisions on development, land management and scientific analyses (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Develop educational tool-kits for school children (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Increase engagement of youth and early career scientists in the activities of CAFF to train the next generation of conservation leaders (Actions for Arctic Biodiversity 2013-2021)
- Complete the circumpolar boreal vegetation map (Actions for Arctic Biodiversity 2013-2021)
- Further develop community-based monitoring as a tool to aid in tracking populations, harvest and harvest management (Actions for Arctic Biodiversity 2013-2021)

[§§§] From The Strategic Plan for the conservation of Arctic Biological Diversity (1997). https://oaarchive.arctic-council.org/handle/11374/164

[****] CAFF Work Plan: 2015-2017. https://oaarchive.arctic-council.org/handle/11374/398

- Advance and sustain the Arctic Biodiversity Data Service (ABDS) to facilitate access, integration, analysis and display of biodiversity information to understand, conserve and manage the Arctic's wildlife ecosystems. (Actions for Arctic Biodiversity 2013-2021)
- Develop and apply standards of the Arctic Spatial Data Infrastructure and further develop use of remote sensing as a tool for better information decisions and more efficient administration of the Arctic (Actions for Arctic Biodiversity 2013-2021)
- Convene, and report the results of the second Arctic Biodiversity Congress to promote the conservation and sustainable use of Arctic biodiversity focusing on the results of the CBMP state of the Arctic biodiversity reports, progress on implementation of ABA recommendations, and attainment of Aichi Targets (Actions for Arctic Biodiversity 2013-2021).
- Promote the active involvement of indigenous peoples in the management and sustainable use of protected areas (Actions for Arctic Biodiversity 2013-2021).
- Develop tools to raise awareness of Arctic biodiversity, and the multiple challenges it faces, and create publications, articles, films, social media, media campaigns and educational kits (Actions for Arctic Biodiversity 2013-2021).

Research and Innovation

- Contribute to pan-Arctic MPA network: Map areas of high species abundance and unique Arctic diversity; analyze existing Arctic marine protected areas to identify gaps and priorities including the most climate-change resilient Arctic areas, connectivity gaps and missing buffer zones (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- The Salmon River Peoples' Project will look at trends of salmon in three rivers of the circumpolar Arctic to advance understanding of the importance of freshwater fish to food security for indigenous people using a co-production of knowledge approach (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Improve our understanding of climate change vulnerabilities and impacts on sea-ice associated biodiversity (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- TEEB Scoping Study (which could lead to further recommendations) (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Explore the possibility of developing a case study on walrus to demonstrate Inuit food security and ecosystem approach (Actions for Arctic Biodiversity 2013-2021)
- Identify species that could benefit from range-wide adaptive management strategies (2015-2017 and ongoing) (Actions for Arctic Biodiversity 2013-2021)
- Incorporate common protocols for early detection and reporting of non-native invasive species in the Arctic into CBMP monitoring plans (Actions for Arctic Biodiversity 2013-2021)
- Follow-up as appropriate on the TEEB (The Economics of Ecosystems and Biodiversity) approach to evaluate the benefits people receive from Arctic biodiversity (Actions for Arctic Biodiversity 2013-2021)
- Report on changes in Arctic species, ecosystems, and the effects of stressors through state of Arctic biodiversity (Marine, Freshwater, Terrestrial, Coastal) reports (Actions for Arctic Biodiversity 2013-2021)
- Prepare a report on traditional knowledge on biodiversity change in the North American Arctic (Actions for Arctic Biodiversity 2013-2021)
- Develop the community observation network for adaptation and security (CONAS) to increase the contribution of community-based monitoring and knowledge from Arctic peoples to existing knowledge (Actions for Arctic Biodiversity 2013-2021)
- Analyse the state of knowledge and data on cumulative effects and identify priorities, adding the biotic parameters to abiotic work (Actions for Arctic Biodiversity 2013-2021)

- Continue to develop and report on key robust indicators of Arctic biodiversity, in particular ones that can be used to track and understand cumulative effects, e.g. Arctic Species Trend Index, Land Cover Change Index, etc. (Actions for Arctic Biodiversity 2013-2021)
- Improve data and assessments on populations, harvest and harvest management, including both traditional knowledge and science, as foundation for harvest management (e.g., Arctic Geese) (Actions for Arctic Biodiversity 2013-2021)

Improved Decision-Making, Management, and Implementation

- Circumpolar strategy for the prevention and management of invasive species (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Promote the implementation of ecosystem-based management approaches (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Encourage the mainstreaming of biodiversity by developing a set of principles on incorporating biodiversity objectives and safeguards into Arctic Council work (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Assess, monitor, and develop conservation plans for Arctic seabirds (CAFF 2015-2017 Work Plan)
- Develop the Circumpolar Vegetation Map, red-list for Arctic plans, moss and lichen check lists (CAFF 2015-2017 Work Plan)
- The Arctic Migratory Bird Initiative (AMBI) entails the implementation of work plans in different flyways (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Develop options for safeguarding marine and terrestrial refuge areas (Actions for Arctic Biodiversity 2013-2021)
- Broker commitments by non-Arctic countries to safeguarding important Arctic migratory bird habitats outside of the Arctic (part of the AMBI) (Actions for Arctic Biodiversity 2013-2021)
- Continue implementation of existing species conservation strategies (Black-legged Kittiwakes, caribou) (ongoing) (Actions for Arctic Biodiversity 2013-2021)
- Develop range-wide adaptive management strategies for harvested species (Actions for Arctic Biodiversity 2013-2021)
- Identify management actions that will enhance resilience of species in adapting to rapid change (2017-2019) (Actions for Arctic Biodiversity 2013-2021)
- Identify species that could benefit from, but are not covered by, range-wide adaptive management strategies and follow-up as appropriate and develop range-wide adaptive management strategies for those harvested species (Actions for Arctic Biodiversity 2013-2021)

IV. EPPR

Working Group Objectives:

To deal with the prevention, preparedness and response to environmental emergencies in the Arctic. EPPR is not an operational response organization. Its goal is to contribute to the protection of the Arctic environment from the threat or impact from an accidental release of pollutants or radionuclides. In addition, EPPR considers questions related to the consequences of natural disasters.[††††]

Current or Planned Initiatives by Resilience "Need"

[††††] From EPPR Strategic Plan (Working Document – Draft) (2015). http://arctic-council.org/eppr/wp-content/uploads/2015/06/2015_11_09_EPPR_Strategic_Plan_draft_posted.pdf

Capacity Building

- Develop database of Arctic response assets (EPPR 2015-2017 Work Plan)[‡‡‡‡]
- Develop of a scoping workshop for the project "Prevention, Preparedness and Response for Small Communities" (EPPR 2015-2017 Work Plan)
- Second live exercise for oil spill scenario response (hosted by the U.S.; Canada hosted the first) (EPPR 2015-2017 Work Plan)
- Member States will provide datasets to the Artic ERMA (Environmental Response and Mapping Application) mapping tool (EPPR 2015-2017 Work Plan)

Research and Innovation

- Develop a circumpolar oil spill gap analysis (EPPR 2015-2017 Work Plan)

Improved Decision-Making, Management, and Implementation

- Follow up projects that reduce black carbon, including transport and diesel generator sectors; the Arctic Case Studies Platform; and convening a conference on best practices on contaminant reduction in indigenous communities (Actions for Arctic Biodiversity 2013-2021)

V. PAME

Working Group Objective:
To address policy and non-emergency pollution prevention and control measures related to the protection of the Arctic marine environment.[§§§§]

Current or Planned Initiatives by Resilience "Need"

Capacity Building

- Create a guidebook that will enable communities to independently map their interactions with the marine environment. To test and better refine the guidebook, a mapping project will be conducted using the draft guidebook in three communities (PAME Work Plan 2015-2017[*****])
- Potential follow-up to the Arctic Marine Tourism Plan includes producing site-specific guidance templates or compiling a publicly available repository on Arctic tourism (PAME 2015-2017 Work Plan)
- Potential follow-up to Arctic Marine Shipping Assessment includes developing a compendium of case study information on maritime incidents in the Arctic that resulted in a spill or release of HFO and the environmental impact thereof (PAME 2015-2017 Work Plan)
- Continue to pursue opportunities (including through the proposed Arctic Shipping Data Service) for updating Arctic ship traffic data contained in the AMSA report for use in studies, assessments, trend analyses and development of recommendations that enhance Arctic marine safety and support protection of Arctic people and environment (PAME 2015-2017 Work Plan)

Research and Innovation

[‡‡‡‡] EPPR Working Group Meeting: Drawn from 2- Page highlights to SAO chair – EPPR II Working Group Meeting. http://www.arctic-council.org/eppr/wp-content/uploads/2014/10/Two-pager_EPPR_Meeting_Dec_2014_Final1.pdf

[§§§§] From PAME Website. http://www.pame.is/index.php/shortcode/about-us

[*****] PAME Work Plan: 2015-2017. http://www.pame.is/images/01_PAME/Work_Plan/PAME%20Work%20Plan%202015-2017.pdf

- Support a Marine Protected Areas (MPA) Network through stakeholder engagement, inventory mapping of existing MPAs, and a desktop study on area-based conservation measures and its linkages to categories of Arctic Biodiversity (PAME 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)

Improved Decision-Making, Management, and Implementation

- Continue ongoing activities of the Ecosystem-Approach (EA) Group: contribute to the development of ecological objectives, follow up actions on integrated ecosystem assessments, continue fostering implementation of EA in the Arctic (August 2016 workshop), consider issues of scale in EA, and support a community of practice working to implement EA (PAME 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Promote collaboration among Arctic states as they implement the Polar Code (PAME 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Develop a circumpolar strategy for the prevention and management of invasive species (with CAFF) (PAME 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- Develop an Arctic Regional Reception Facilities Plan as a long-term solution to help meet the challenges posed by increased shipping activity (the aim is for environmentally sound management of ship waste) (PAME 2015-2017 Work Plan)
- Invite AMAP, CAFF, SDWG and PAME to denote areas within the high seas area of the Central Arctic Ocean that are particularly vulnerable to shipping and further explore possible international protection measures that could be pursued by Arctic States, individually, or collectively at the IMO (PAME 2015-2017 Work Plan)

VI. SDWG

Working Group Objectives:
To propose and adopt steps to be taken by the Arctic States to advance sustainable development in the Arctic. This includes pursuing opportunities to protect and enhance the environment and the economies, culture and health of indigenous peoples and Arctic communities. The guiding tenet is to pursue initiatives that provide practice knowledge and contribute to the capacity of indigenous peoples and Arctic communities to respond to the challenges and benefits from the opportunities in the Arctic region.[†††††]

Current or Planned Initiatives by Resilience "Need"

Capacity Building

- Continue supporting the Arctic Adaptation Exchange Portal (AAEP), in association with the University of Alaska Fairbanks. To the extent possible, Member States will build on their open data policies to consolidate and facilitate access to their respective climate-related Arctic datasets, and link this data to the Arctic Adaptation Exchange Portal (SDWG 2015-2017 Work Plan[‡‡‡‡‡])
- Create common metrics for evaluating suicide prevention efforts through the Arctic RISING SUN program, in order to aid health workers and policy makers measure progress and identify challenges (SDWG 2015-2017 Work Plan)

[†††††] From SDWG website. http://www.sdwg.org/about-us/mandate-and-work-plan/
[‡‡‡‡‡] SDWG Work Plan: 2015-2017. https://oaarchive.arctic-council.org/handle/11374/1480

- The EALLU project will raise awareness of climate change among indigenous youth and document TK about food cultures of reindeer herding indigenous peoples (SDWG 2015-2017 Work Plan)

Research and Innovation

- Networks Academy (ARENA) addresses the need for the development of community energy experts to ensure affordable, reliable, renewable source energy solutions for Arctic communities. It integrates web-based seminars with classroom learning and field exposure (SDWG website)
- Arctic Energy Summit is a forum to share information that can lead to innovative practices in renewable energy (SDWG 2015-2017 Work Plan)
- Convene workshop to facilitate collaboration between researchers, engineers, manufacturers, vendors and health experts on measures to increase access to and reduce the operating costs of in-home running water and sewer in remote communities, attract investment, improve public health, and spur public-private partnerships (SDWG 2015-2017 Work Plan)
- The third Economy of the North (ECONORIII) project will give a statistical overview of economic, social conditions, and environmental change, through the contribution of national statistics agencies (SDWG 2015-2017 Work Plan)
- The Arctic as a Food Producing Region project will assess the potential for increased production and added value of food from the Arctic and will identify important factors for developing the Arctic as a food-producing region (SDWG 2015-2017 Work Plan)

Improved Decision-Making, Management, and Implementation

- Establish One Health 'hubs' across the Arctic (essentially, linking institutions) to enable the more effective implementation of the One Health approach (SDWG 2015-2017 Work Plan)

Sub-Appendix: Actions Identified in the Arctic Marine Strategic Plan

Current or Planned Initiatives by Resilience "Need"

Capacity Building

- Enhance local involvement in the collection of information and monitoring of the marine environment including traditional and local knowledge
- Develop and standardize data sharing and management at a circumpolar level
- Improve awareness of Arctic shipping activity and its impacts by promoting expanded information sharing of ship traffic data
- Strengthen the collection, observation, monitoring and dissemination of data on the Arctic marine environment
- Map areas of the marine environment that are vulnerable to the effects of ocean acidification
- Facilitate coastal community exchanges between Arctic states to improve sharing of knowledge and experiences
- Encourage engagement with indigenous peoples organizations to inform the work of the Arctic Council in the protection of the marine environment, including through the use of traditional and local knowledge
- Strengthen the Arctic Council's communication to the public in Arctic and non-Arctic countries pointing out ongoing changes in the Arctic and their likely impact on non-Arctic areas
- Improve understanding of risks related to shipping and oil and gas exploration, including gap analysis and sharing of best practices

- Develop circumpolar indicators of changes and stressors across the Arctic marine environment
- Create inventories of and reduce emissions of short-lived climate forcers, including black carbon and methane (also in ACAP 2015-2017 Work Plan)

Research and Innovation

- Identify and develop tools for assessing cumulative impacts, threats and risks to areas of ecological and cultural significance
- Improve remote sensing capabilities to support ice detection, monitoring and forecasting (CAFF ongoing activity)
- Support research, development and implementation of oil spill detection, migration measures, and response technologies in ice-covered and ice-infested waters

Improved Decision-Making, Management, and Implementation

- Implement measures to protect Arctic marine areas of ecological and cultural significance, focusing on areas of refuge for ice-associated species
- Develop a pan-Arctic network of marine protected areas (also in PAME 2015-2017 Work Plan)
- Support efforts, in cooperation with indigenous peoples, to:
    - Reduce long-range pollution accumulating in the Arctic marine food-chains
    - Reduce emissions and implement adaptation measures
- Support research, development and implementation of oil spill detection, migration measures, and response technologies in ice-covered and ice-infested waters
- Improve safety and environment protection performance and the use of best practices and technology for all marine activities
- Support international efforts and cooperation to continue to identify, assess and reduce existing and emerging contaminants
- Implement an ecosystem approach to management in the Arctic (also in CAFF 2015-2017 Work Plan)
- Implement measures for early detection and reporting of marine invasive species in the Arctic marine environment (also in CAFF 2015-2017 Work Plan)

Appendix D: ARAF Drafting Committee and Review Committee Members

Two committees, a Drafting Committee and a Review Committee, have been responsible for developing the ARAF. The Drafting Committee Chair and Review Committee co-Chairs were responsible for collaborating to negotiate final edits to the ARAF.

Drafting Committee:

The Drafting Committee is a voluntary committee of technical and policy experts. Drafting Committee members were responsible for suggesting a draft of the ARAF, after analyzing a variety of inputs to the ARAF development process.

Joel Clement (Chair), U.S. Department of the Interior
Sarah Abdelrahim, U.S. Department of the Interior
Tom Armstrong, AMAP
Nikolaj Bock, European Environment Agency
Glenn Dolcemascolo, United Nations International Strategy for Disaster Reduction
Jim Gamble, Aleut International Association
Robert Kadas, Foreign Affairs Canada
Jaana Kaipainen, Finnish Ministry of Agriculture and Environment
Gary Kofinas, University of Alaska Fairbanks
Jeanette Krantz, Swedish Ministry of the Environment
Johan Kuylenstierna, Stockholm Environment Institute
Karen Murphy, Western Alaska Landscape Conservation Center
Martin Sommerkorn, World Wildlife Fund
Jannie Staffansson, Saami Council
Julian Wilson, DG Joint Research Centre, European Commission

Facilitator: Sarah Palmer, U.S. Department of the Interior

Review Committee:

Each Arctic Council Member State, Permanent Participant and Working Group was requested to nominate an individual to serve on the Review Committee. Review Committee members were responsible for reviewing ARAF drafts and suggesting additions and revisions.

Jaana Kaipainen (co-Chair), Finland
Gunn-Britt Retter (co-Chair), Saami Council
Tom Barry, CAFF
Patti Bruns, ACAP and EPPR
Jon Fuglestad, AMAP
Bernard Funston, SDWG
Jim Gamble, Aleut International Association
Soffia Guðmondstdóttir, PAME
Rachel Joo, Canada
Jeanette Krantz, Sweden
Marianne Kroglund, Kingdom of Norway

Aleksei Nesterov, Russia
Joan Nymand Larsen, Iceland
Ann Meceda, United States of America
Maksim Semin, Russia
Chief Michael Stickman, Arctic Athabaskan Council
Jim Stotts, Inuit Circumpolar Council
Inge Thaulow, Kingdom of Denmark