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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\*

Version: February 3, 2017

*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<sup>†</sup>, 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.*

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\* 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 an at-a-glance summary of the ARAF Guiding Principles and Priorities for Action.

## 39 I. Introduction

40

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

47

48 At a broader systems-level, the rapid changes in the Arctic make any long-term planning and management  
 49 increasingly difficult. Social and ecological systems in the Arctic are inextricably linked, more closely  
 50 than most other regions of the world, and some aspects of these systems are changing fundamentally and  
 51 surpassing thresholds which may be irreversible. Indigenous peoples of the Arctic have always adapted to  
 52 environmental changes, but the current rate and intensity of climate change, combined with other social,  
 53 environmental, economic and political shifts and constraints, make adaptation extremely challenging in  
 54 today's Arctic. In addition to aggressively working to mitigate the causes of climate change, it is  
 55 important for governments, Indigenous Peoples and local communities to work collaboratively to build  
 56 resilience to the social-ecological changes that are already underway.

57

58 The Arctic Council, the region's preeminent  
 59 intergovernmental forum, has taken steps to increase  
 60 the understanding of the changing Arctic and to  
 61 address those changes.<sup>‡</sup> Arctic Council assessments  
 62 such as the *Snow, Water, Ice and Permafrost*  
 63 *Assessment*, the *Arctic Biodiversity Assessment*, and  
 64 the *Arctic Human Development Report II* have greatly  
 65 added to our knowledge foundation about the  
 66 physical, social, and ecological effects of climate  
 67 change in the region. The *Adaptation Actions for a*  
 68 *Changing Arctic* project is translating science into  
 69 actionable knowledge to inform climate adaptation  
 70 actions in three different regions of the Arctic, and the  
 71 *Arctic Resilience Report* has identified potential  
 72 "cliffs" or tipping points, assessed challenges to  
 73 Arctic communities, and identified ways that the  
 74 Arctic Council might contribute to strengthening  
 75 resilience across the Arctic. All six of the Arctic  
 76 Council Working Groups are implementing additional  
 77 projects that contribute to the resilience of the region  
 78 (*see appendix C for more details*).

79

80 These efforts to build resilience are extremely timely.  
 81 Global momentum for addressing climate and other  
 82 environmental changes and their linkages to human  
 83 development has markedly increased in recent years,  
 84 as demonstrated by the adoption of the Sendai  
 85 Framework for Disaster Risk Reduction in March

### **Box 1: Resilience, 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.

<sup>‡</sup> See Appendix B for a brief overview of the Arctic Council.

86 2015, the adoption of the 2030 Agenda and its Sustainable Development Goals (SDGs) – several of which  
87 directly address building the resilience of vulnerable communities and ecosystems – in September 2015,  
88 and the Paris climate agreement of December 2015. In addition to national reporting on the agreements  
89 above, many international and regional bodies around the world are adopting frameworks and strategies  
90 to adapt to climate change and build resilience. In the Arctic, where the rate of warming is double that of  
91 the rest of the planet, such a coordinated, regional response to social, economic and environmental  
92 changes is timely, relevant and important. The Arctic Council, as the leading intergovernmental forum on  
93 issues of sustainable development and environmental protection in the region, is well-positioned to  
94 establish a framework that increases our understanding of risks and uncertainties, and supports and  
95 encourages measures to improve the resilience of threatened communities and ecosystems.

96  
97

98 II. The Scope of the Arctic Resilience Action Framework

99

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

107

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

120

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

122

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

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

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

132 A group of Arctic stakeholders engaged in collective learning and implementation will explore a set of  
133 options for monitoring and assessing progress towards the desired outcome. These options will align with

**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.”

134 other national-level methods and reporting structures, wherever feasible (*See Section V – Implementation*  
135 *of the ARAF*).  
136

### 137 III. Guiding Principles

138 The implementation of the ARAF will be guided by the following principles, while remaining consistent  
139 with domestic laws as well as international obligations and ambitions, and taking into account national  
140 circumstances.  
141

- 142 **1. Build on the strengths of the Arctic Council and its Working Groups as a regional**  
143 **mechanism for cooperation.** Draw upon the diversity and commonalities among circumpolar  
144 countries, Arctic Indigenous Peoples, and communities to ensure the use of collaborative and  
145 participatory approaches.  
146
- 147 **2. Value and draw on Indigenous/Traditional Knowledge and local knowledge.** Integrating  
148 Indigenous/Traditional Knowledge and local knowledge with knowledge and experience from  
149 interdisciplinary science and technical disciplines will create the strongest information foundation  
150 for building resilience, adapting to future change, and protecting natural and cultural resources.  
151
- 152 **3. Build upon existing global, regional and national strategies for sustainable development,**  
153 **climate change adaptation and mitigation, emergency preparedness, and disaster risk**  
154 **reduction.** Pursue coherence across these policies, where appropriate, to align tools and metrics,  
155 foster partnerships, investments and innovations, and maximize impact.  
156
- 157 **4. Support multi-stakeholder engagement.** Scientific and technical institutions, private sector  
158 institutions, and civil society are essential for achieving the goals of resilience. Inclusive  
159 approaches help to ensure that the skills, capacities, and unique needs of all people, including  
160 Indigenous Peoples, women, youth, and Elders, are considered. Indigenous Peoples, in particular,  
161 are at the heart of a sustainable Arctic and their inclusion in building Arctic resilience is crucial.  
162 Stakeholders beyond the Arctic should also be engaged as they impact the region in a multitude  
163 of ways and may be affected by changes in the Arctic region.  
164
- 165 **5. Empower local communities.** Understanding risk and resilience from a community perspective  
166 facilitates locally appropriate actions and investments. Such an understanding requires improved  
167 education and social learning, and benefits from the empowerment of local authorities and  
168 communities through resources, incentives, and support for self-organization as appropriate. Such  
169 empowerment is enhanced by the recognition of Indigenous Peoples and other Arctic residents as  
170 co-producers of knowledge, in particular through community-based monitoring and locally-  
171 driven research.  
172
- 173 **6. Address multiple risks and look for co-benefits.** Arctic communities and ecosystems face  
174 multiple hazards and stresses. Treating hazards and stresses in isolation can create new,  
175 unanticipated risk, but consideration of the interactions among risk factors creates opportunity to  
176 identify measures that deliver multiple co-benefits.  
177
- 178 **7. Consider risk and resilience across temporal and spatial scales.** The development of resilience  
179 strategies and adaptation responses must consider both temporal and spatial scales; the  
180 consequences of decisions may take decades to emerge, and actions and development activities in  
181 one region, within or outside of the Arctic, may have negative impacts in other areas.  
182

183 **8. Encourage innovative investments that prevent and proactively mitigate risk.** Public and  
184 private resilience investments should address the underlying risk factors instead of the impacts  
185 after they have occurred. Building resilience in advance of disruptions or shocks can protect lives,  
186 health and livelihoods; support economic development; protect cultural and environmental assets;  
187 and offer opportunities for future development.  
188

189 **9. Monitor progress and adjust strategies as needed.** Vulnerability and risk in Arctic social-  
190 ecological systems are constantly shifting; this framework, as well as Arctic resilience and  
191 adaptation efforts more generally, must evolve as new information becomes available.  
192

#### 193 IV. Priorities for Action

194 The ARAF has been organized around four key priorities derived from a review of existing global and  
195 regional strategies on climate change, disaster risk reduction and sustainable development; a review of  
196 existing Arctic Council strategies and assessments; and extensive consultations with Permanent  
197 Participant organizations, Arctic Council Member States, Observers, Working Groups and other  
198 stakeholders. The four priority areas are: i) *Analyzing and Understanding Risk and Resilience in the*  
199 *Arctic*; ii) *Building Resilience and Adaptation Capacity*; iii) *Implementing Measures that Build Resilience*  
200 *through Policy, Planning and Cooperation*; and iv) *Encouraging Investment to Reduce Risk and Build*  
201 *Resilience* (see appendix A for a summary diagram).

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

207 Addressing these priorities will require the expertise and cooperation of a wide range of stakeholders and  
208 knowledge systems. While the Arctic Council is well-positioned to coordinate regional resilience  
209 priorities and actions, effective implementation of the ARAF will also require partnership with policy  
210 makers at all levels, non-Arctic states, academia, civil society and the private sector at the national level,  
211 as well as engagement from other multilateral/international groups. Effective implementation also  
212 requires gender-responsive and gender-balanced approaches, and the participation of local and Indigenous  
213 Peoples.  
214

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

216 In recent years, scientific advancements have improved the world’s understanding of the Arctic region.  
217 However, many information gaps about social and natural processes, and the interactions among them,  
218 still exist both within the Arctic region and between the Arctic region and global processes. As the Arctic  
219 changes, an improved understanding of risks and opportunities can help communities and governments  
220 make better decisions and more effectively enhance their resilience, especially in the face of uncertainty.  
221 Documenting and sharing adaptation experiences can help to identify and foster effective responses and  
222 best practices as the Arctic faces even more rapid change.  
223

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<sup>§</sup>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.

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

226  
227 Example implementing action: Improve understanding of disease and injuries related to a  
228 changing environment.

229  
230 **Action Area 1.2:** Substantially enhance our understanding of ecologically vulnerable areas and areas in  
231 which Arctic-adapted biodiversity can persist under a changing climate.

232  
233 Example implementing action: Identify and map current and future plant and animal range  
234 shifts as Arctic systems transform.

235  
236 **Action Area 1.3:** Improve short and long-term projections for the Arctic under different future  
237 greenhouse gas emission and development scenarios, using natural and social sciences and  
238 Indigenous/Traditional Knowledge and local knowledge.

239  
240 Example implementing action: Develop sea level and coastal change projections for the  
241 Arctic under future greenhouse gas emission pathways, particularly in areas of frequent  
242 human use, and identify how these will impact social and ecological resilience and adaptation  
243 needs.

244  
245 **Action Area 1.4:** Expand the documentation of adaptation responses to changing threats in the Arctic.

246  
247 Example implementing action: Collect and add new case studies to existing repositories of  
248 adaptation and resilience measures for Arctic communities, economies and ecosystems.  
249 Promote methods to evaluate the effectiveness of these measures and disseminate information  
250 about these resources.

251

## 252 **PRIORITY AREA II: Building Resilience and Adaptation Capacity**

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

261

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

264

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

270

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

273  
274 Example implementing action: Expand and consolidate best practices for community-based  
275 observations.

276  
277 **Action Area 2.3:** Improve tools for assessing management strategies in changing Arctic ecosystems.

278  
279 Example implementing action: Develop tools that help resource managers understand how  
280 the fish, wildlife or land resources they manage relate to the resilience of the greater Arctic  
281 region.

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

284  
285 Example implementing action: Actively implement open data policies by making data  
286 available in accordance with common standards and formats in a timely manner.

287  
288 **Action Area 2.5:** Substantially increase the number of communities, youth and emerging leaders that  
289 understand Arctic change using a variety of knowledge approaches.

290  
291 Example implementing action: Provide a resilience training platform and community of  
292 practice for Arctic leaders and expand opportunities for youth engagement in this platform  
293 over time.

294  
295 **Action Area 2.6:** Increase administrative and planning support to communities, governments and  
296 decision-makers at all levels, including support for applying resilience knowledge to decision-  
297 making.

298  
299 Example implementing action: Develop community-based resilience indicators that help  
300 communities make decisions in a timely manner with respect to erosion, inundations and  
301 storm surges.

302  
303 **PRIORITY AREA III: Implementing Measures that Build Resilience through Policy, Planning and**  
304 **Cooperation**

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

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

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

313  
314 **Action Area 3.2:** Enhance the development and deployment of resilient infrastructure,  
315 telecommunications, and technologies to deal with emerging challenges that are unique to the  
316 Arctic (e.g., waste, water security, energy, food security, health, etc.).

317



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

320

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

322

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

325

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

328

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

332 **Action Area 3.5:** Encourage consistent practices and for ensuring public participation and the integration  
333 of Indigenous/Traditional Knowledge and local knowledge in environmental impact assessments  
334 and other decision-making processes.

335

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

338

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

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

350

351 **Action Area 4.1:** Improve our understanding of best practices for resilient and “climate proof<sup>\*\*</sup>”  
352 investments in the Arctic.

353

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

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

---

<sup>\*\*</sup> Climate proof investments refer to investments that have a minimized level of vulnerability to climate variability and climate change.

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

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

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

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

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

370  
371 V. Implementation of the ARAF

372 Implementing the ARAF will require sustained engagement and dialogue among partners. To this end,  
373 the Arctic Council Secretariat (ACS) will help convene an Arctic Resilience Team (ART). Each Arctic  
374 Council Member State, Permanent Participant, and Working Group may nominate a “resilience liaison”  
375 to serve as the primary liaison between their respective SAO or HOD and the ART. In addition to the  
376 resilience liaisons, membership of the ART will be open to other participants, such as Observers and  
377 relevant experts, in accordance with the Arctic Council Rules of Procedure. The ART will be co-Chaired  
378 by the Arctic Council Chairmanship country and will select up to two additional co-chairs among the  
379 ART members.

380 The ART will guide the three implementation elements of the ARAF: 1) collecting and tracking  
381 implementing actions; 2) measuring progress; and 3) planning a biennial resilience forum. The ART  
382 may also explore the use of other approaches, both face-to-face and virtual, to foster the expansion of  
383 networks, sharing of ideas, and enhanced collaboration.

384 Each of the three main implementation elements is described below.

385 **1. Collecting and tracking “Implementing Actions”.**

386 The collection and consolidation of Implementing Actions is primarily a means of collectively assessing  
387 where work has taken place and where work still needs to be done, and for identifying opportunities for  
388 shared learning and cooperation. Many Implementing Actions may build on existing commitments that  
389 have been made through national strategies, working group workplans or international agreements (e.g.,  
390 the UN 2030 Agenda for Sustainable Development). Implementing Actions may change, and States,  
391 Permanent Participants, and Working Groups may withdraw a submitted Action at any time.

392 The ART co-chairs, with the support of the ACS, will request and compile Implementing Actions from  
393 the resilience liaisons and other ART participants every two years. The ACS will provide support to this  
394 process using existing resources and capacity. Each Action Area in Section IV provides an illustrative  
395 example of an Implementing Action.

396

397

398 **2. Measuring progress.**

399 As with the Implementing Actions described above, the methods for monitoring progress can, where  
400 feasible and appropriate, align with or complement existing internal and external reporting mechanisms.  
401 In addition to assessing the Implementing Actions, the ART will complete an inventory of existing and  
402 emerging measurement protocols – including self-assessment protocols – as well as existing and  
403 emerging indicators in advance of the first biennial Resilience Forum (described below). These  
404 protocols and indicators may help participating states and organizations measure and compare progress  
405 over space and time. Progress and gaps identified will guide further revision of the ARAF as needed and  
406 appropriate.

407 **3. Hosting a biennial resilience forum.**

408 To build an active community of practice and encourage cooperation and shared learning, a circumpolar  
409 resilience forum will be held every two years – once per Arctic Council Chairmanship. The forum will  
410 convene local, sub-regional, and regional Arctic resilience practitioners and experts to a) assess progress  
411 toward the ARAF outcome and priorities, b) showcase best practices and resilience learning, c) identify  
412 and plan for emerging or urgent priorities, d) encourage public/private resilience investment  
413 opportunities, and e) identify opportunities or needs to update the ARAF Priority Areas and Action  
414 Items.

415 Any of the Arctic Council states may host the Arctic Resilience Forum, with a preference for the country  
416 holding the Arctic Council Chairmanship at the time of the forum (Finland has agreed to host the first  
417 Arctic Resilience Forum in 2018). The ART will oversee the planning of the forum. Following each  
418 biennial forum, the ART will oversee production of a brief report that summarizes the key findings of  
419 the meeting and proposes revisions, updates or additions to the ARAF – to be submitted by the ART to  
420 the SAOs for consideration.  
421

422 *Biennial Timeline for Implementation (May 2017 - May 2019): Initial Milestones*

423 May 2017

- 424 • Each Arctic Council Member State, Permanent Participant and Working Group may designate  
425 a “resilience liaison” to participate in the ART.
- 426 • The ACS will disseminate a call for additional interested participants for the ART.
- 427 • The ART will be formed and co-Chairs identified.  
428

429 June 2017

- 430 • The co-Chairs, with the support of the ACS, will work with the resilience liaisons to collect  
431 and consolidate ARAF “Implementing Actions” for 2017-2019.
- 432 • The co-Chairs will invite other interested stakeholders to submit Implementing Actions.  
433

434 June 2018 – December 2018 (Date TBD)

- 435 • The first Arctic Resilience Forum will be held in Finland.  
436

437 VI. Conclusion

438 The ARAF is a collaborative tool for enhancing our understanding and building resilience to disruptive  
439 changes in the Arctic. In addition to providing guidance and a clear focus on shared priorities, it will  
440 facilitate the sharing of Arctic-specific resilience data and information, and therefore increase our global  
441 understanding of risk and opportunity. This is an extraordinary moment for the people and leaders of the

442 Arctic, an opportunity to integrate northern perspectives into global deliberations while at the same time  
443 addressing clear and immediate resilience and adaptation needs. The ARAF will evolve over time as  
444 circumstances and opportunities change, but the influence and global role of Arctic peoples will steadily  
445 increase as global and local efforts align to enhance Arctic resilience.

DRAFT

# Appendix A: Arctic Resilience Action Framework at a Glance

446

## 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 social-ecological 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 Areas

Priority Area 1: Analyzing and Understanding Risk and Resilience in the Arctic	Priority Area 2: Building Resilience and Adaptation Capacity	Priority Area 3: Implementing Measures that Build Resilience with Policy, Planning and Cooperation	Priority Area 4: Encouraging Investment to Reduce Risk and Build Resilience
<p>Increase the effectiveness of existing monitoring systems and include social-ecological indicators and their interactions</p> <p>Substantially enhance our understanding of ecologically vulnerable areas and areas in which Arctic-adapted biodiversity can persist under a changing climate</p> <p>Improve short and long-term projections for the Arctic under different future greenhouse gas emission and development scenarios, using natural and social sciences and Indigenous/Traditional Knowledge and local knowledge</p> <p>Expand the documentation of adaptation responses to changing threats in the Arctic</p>	<p>Increase the co-production of knowledge using science, Indigenous/Traditional Knowledge and local knowledge</p> <p>Expand the ability of community-based observation networks to collect critical data for monitoring change and integrate with Earth observations</p> <p>Improve tools for assessing management strategies in changing Arctic ecosystems</p> <p>Ensure data and tools are equitably distributed and easily accessible for local communities, decision makers, and policy makers at all levels</p> <p>Substantially increase the number of communities, youth and emerging leaders that understand Arctic change using a variety of knowledge approaches</p> <p>Increase administrative and planning support to communities, governments and decision-makers at all levels, including support for applying resilience knowledge to decision-making</p>	<p>Increase the inclusion of local perspectives in local and sub-regional decision-making</p> <p>Enhance the development and deployment of resilient infrastructure, telecommunications, and technologies to deal with emerging challenges that are unique to the Arctic (e.g., waste, water security, energy, food security, health, etc.)</p> <p>Expand the use of ecosystem-based management in the Arctic</p> <p>Substantially expand the use of transdisciplinary approaches for understanding change and implementing strategies to enhance resilience</p> <p>Encourage consistent practices and for ensuring public participation and the integration of Indigenous/Traditional Knowledge and local knowledge in environmental impact assessments and other decision-making processes</p>	<p>Improve our understanding of best practices for resilient or “climate proof” investments in the Arctic</p> <p>Substantially increase private sector investments that support resilient communities</p> <p>Expand the use of innovative financial mechanisms for improving resilience</p> <p>Encourage the identification of specific funding gaps and resilience priorities, as a way to provide guidance to potential donors and catalyze new investments</p>

## Guiding Principles

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>Build on the strengths of the Arctic Council and its Working Groups as a regional mechanism for cooperation</li> <li>Value and draw on Indigenous/Traditional Knowledge and local knowledge</li> <li>Build upon existing global, regional and national strategies for sustainable development, climate change adaptation and mitigation, and disaster risk reduction</li> <li>Support multi-stakeholder engagement</li> </ul> | <ul style="list-style-type: none"> <li>Empower local communities</li> <li>Address multiple risks together and look for co-benefits</li> <li>Consider risk and resilience across temporal and spatial scale</li> <li>Encourage innovative investments that prevent and proactively mitigate risk</li> <li>Monitor progress and adjust strategies as needed</li> </ul> |
|--|--|

447 **Appendix B: The Arctic Council at a Glance**

448

449 The Arctic Council is the leading intergovernmental forum promoting cooperation, coordination and  
450 interaction among the Arctic States, Arctic Indigenous Peoples and other Arctic inhabitants on common  
451 Arctic issues. In particular, the Arctic Council cooperates on issues of sustainable development and  
452 environmental protection in the Arctic.

453

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

459

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

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

466

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

483

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

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

491

492 **Appendix C: Working Group Objectives and Initiatives that May Build**  
493 **Resilience**  
494

495 The following is a list of current and planned Arctic Council Working Group initiatives that could support  
496 ecosystem or community resilience. These initiatives have been divided into three broader categories of  
497 resilience “needs”: Capacity Building; Research and Innovation; and Improved Decision-Making,  
498 Management, and Implementation. These three “needs” categories were used to frame discussions during  
499 the Arctic Council Resilience Workshop on March 14, 2016 in Fairbanks, Alaska, USA. Initiatives have  
500 been drawn from the six Working Groups’ 2015-2017 work plans and the Actions for Arctic Biodiversity  
501 2013-2021: Implementing the recommendations of the Arctic Biodiversity Assessment. Additional  
502 actions from the Arctic Marine Strategic Plan are also listed<sup>††</sup>.

503

504

505 **I. ACAP**

506

507 **Working Group Objectives:**

508 To prevent adverse effects, reduce and ultimately eliminate pollution of the Arctic Environment<sup>‡‡</sup>

509

510 **Current or Planned Initiatives**

511

512 ***Capacity Building***

- 513 • Expand the coverage of an existing monitoring tool, the Local Environmental Observer (LEO)  
514 network that links traditional knowledge and science, across the Arctic to create a Circumpolar  
515 Local Environmental Observer (CLEO) network. During Phase I of the project, ACAP will create  
516 at least one new North America chapter of the CLEO, including indigenous communities in the  
517 Alaskan and Canadian Arctic, and will develop a framework for expansion of the CLEO to the  
518 Nordic and Russian regions (ACAP 2015-2017 Work Plan<sup>§§</sup>)
- 519 • Assess and develop community-level tools for black carbon reduction in indigenous communities,  
520 to mitigate health and environmental effects from black carbon sources (in Russian and Saami  
521 communities) (ACAP 2015-2017 Work Plan)
- 522 • Organize a conference on best practices on contaminant reduction in indigenous communities  
523 (Actions for Arctic Biodiversity 2013-2021<sup>\*\*\*</sup>)

524

525 ***Improved Decision-Making, Management, and Implementation***

- 526 • Demonstrate environmentally sound clean-up of an old pesticide storage site/burial site, including  
527 destruction of the hazardous waste (ACAP 2015-2017 Work Plan)
- 528 • Reduce diesel black carbon emissions through implementation of a range of alternatives,  
529 including use of renewable fuel, for providing energy upgrades to offgrid Cluster settlements in  
530 Valday, Karelia (ACAP 2015-2017 Work Plan)

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<sup>††</sup> See Sub-Appendix for initiatives referenced in the Arctic Marine Strategic Plan

<sup>‡‡</sup> From Arctic Council Action Plan to Eliminate Pollution of the Arctic, 2000. [https://oaarchive.arctic-](https://oaarchive.arctic-council.org/bitstream/handle/11374/429/ACSAO-US03_6_ACAP.pdf?sequence=1&isAllowed=y)  
[council.org/bitstream/handle/11374/429/ACSAO-US03\\_6\\_ACAP.pdf?sequence=1&isAllowed=y](https://oaarchive.arctic-council.org/bitstream/handle/11374/429/ACSAO-US03_6_ACAP.pdf?sequence=1&isAllowed=y)

<sup>§§</sup> ACAP Work Plan: ACAP Draft SAO Report to Ministers including Work Plan 2015-2017.

[https://oaarchive.arctic-](https://oaarchive.arctic-council.org/bitstream/handle/11374/1437/ACAP_WORKPLAN_Doc1_Draft_submission_to_SAO_Report_includin_g_work_plan_AC_SAO_CA04.pdf?sequence=1&isAllowed=y)  
[council.org/bitstream/handle/11374/1437/ACAP\\_WORKPLAN\\_Doc1\\_Draft\\_submission\\_to\\_SAO\\_Report\\_includin](https://oaarchive.arctic-council.org/bitstream/handle/11374/1437/ACAP_WORKPLAN_Doc1_Draft_submission_to_SAO_Report_includin_g_work_plan_AC_SAO_CA04.pdf?sequence=1&isAllowed=y)  
[g\\_work\\_plan\\_AC\\_SAO\\_CA04.pdf?sequence=1&isAllowed=y](https://oaarchive.arctic-council.org/bitstream/handle/11374/1437/ACAP_WORKPLAN_Doc1_Draft_submission_to_SAO_Report_includin_g_work_plan_AC_SAO_CA04.pdf?sequence=1&isAllowed=y)

<sup>\*\*\*</sup> Actions for Arctic Biodiversity 2013-2021. [http://www.caff.is/administrative-series/293-actions-for-arctic-](http://www.caff.is/administrative-series/293-actions-for-arctic-biodiversity-2013-2021-implementing-the-recommendations-of-th/download)  
[biodiversity-2013-2021-implementing-the-recommendations-of-th/download](http://www.caff.is/administrative-series/293-actions-for-arctic-biodiversity-2013-2021-implementing-the-recommendations-of-th/download)

- 531 • Identify, further develop and apply pollution reduction technologies at a non-ferrous/zinc smelter  
532 in Russia and implement related monitoring (ACAP 2015-2017 Work Plan)
- 533 • Assess contamination of three old pesticides storages/burial sites using a Rapid Environmental  
534 Assessment to assess the risk to local population and the Arctic Environment (ACAP 2015-2017  
535 Work Plan)
- 536 • Assess technologies for environmentally sound destruction of obsolete pesticides in northern  
537 Russia (ACAP 2015-2017 Work Plan)
- 538 • Follow up projects that reduce black carbon, including transport and diesel generator sectors; the  
539 Arctic Case Studies Platform; and convening a conference on best practices on contaminant  
540 reduction in indigenous communities (Actions for Arctic Biodiversity 2013-2021)

541  
542

## 543 **II. AMAP**

544

### 545 **Working Group Objectives:**

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

556

### 557 **Current or Planned Initiatives**

558

#### 559 **Research and Innovation**

- 560 • Update the 2011 Snow, Water, Ice and Permafrost (SWIPA) assessment, using updated climate  
561 change scenarios and more refined models, and develop the Arctic Freshwater Synthesis (this  
562 component of the SWIPA update will prepare the first overall budget of freshwater resources in  
563 the Arctic and a synthesis of the current status) (AMAP 2015-2017 Work Plan<sup>†††</sup>)
- 564 • Update the 2011 Arctic Ocean Acidification Assessment, which will “inform policy development  
565 concerning sustainable marine resources and food security” (AMAP 2015-2017 Work Plan and  
566 Actions for Arctic Biodiversity 2013-2021)
- 567 • Prepare three regional assessments with information to assist local decision-makers and  
568 stakeholders to develop adaptation tools and strategies to deal with climate change and other  
569 environmental stressors and produce an overall integrated report on adaptation actions (AACCA  
570 Part C) (AMAP 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- 571 • Develop ecosystem models that project ecosystem response to climate change and contaminant-  
572 related factors (as part of AACCA-C) (Actions for Arctic Biodiversity 2013-2021)
- 573 • Provide information for assessment of contaminant level trends in ecosystems, and their  
574 biological effects, and improve predictive capacity (ongoing with CAFF) (AMAP 2015-2017  
575 Work Plan and Actions for Arctic Biodiversity 2013-2021)

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††† From AMAP Strategic Framework, 2010-2018. [www.amap.no/documents/download/242](http://www.amap.no/documents/download/242)

††† AMAP Work Plan: 2015-2017 <https://oarchive.arctic-council.org/handle/11374/1443>



- 576 • Prepare an updated assessment of persistent organic pollutants, including chemicals of emerging  
577 Arctic concern, biological effects, and the influence of climate change on POPs (AMAP 2015-  
578 2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)  
579  
580

### 581 **III. CAFF**

#### 582 **Working Group Objectives:**

- 584 1. To enhance efforts to monitor Arctic biodiversity, especially which are of great ecological,  
585 cultural, social, economic or scientific value  
586 2. Support and implement measures for the conservation of Arctic genetic resources, species, and  
587 their habitats  
588 3. Establish protected areas in the Arctic region where they contribute to the conservation of  
589 ecosystems, habitats, and species  
590 4. Manage activities outside protected areas in order to ensure the conservation of biodiversity  
591 5. Enhance integration of biodiversity conservation and sustainable use objectives into sectoral and  
592 cross-sectoral plans and policies<sup>§§§</sup>  
593

#### 594 **Current or Planned Initiatives**

##### 595 *Capacity Building*

- 596 • Enhance biodiversity monitoring and increasingly incorporate traditional and local knowledge,  
597 through the Circumpolar Biodiversity Monitoring Program (CBMP) (CAFF 2015-2017 Work  
598 Plan<sup>\*\*\*\*</sup> and Actions for Arctic Biodiversity 2013-2021)  
599 • Develop a Pan-Arctic Digital Elevation Map, in order to improve access to Arctic topographical  
600 information to facilitate monitoring and assessment activities and to inform decisions on  
601 development, land management and scientific analyses (CAFF 2015-2017 Work Plan and Actions  
602 for Arctic Biodiversity 2013-2021)  
603 • Develop educational tool-kits for school children (CAFF 2015-2017 Work Plan and Actions for  
604 Arctic Biodiversity 2013-2021)  
605 • Increase engagement of youth and early career scientists in the activities of CAFF to train the  
606 next generation of conservation leaders (Actions for Arctic Biodiversity 2013-2021)  
607 • Complete the circumpolar boreal vegetation map (Actions for Arctic Biodiversity 2013-2021)  
608 • Further develop community-based monitoring as a tool to aid in tracking populations, harvest and  
609 harvest management (Actions for Arctic Biodiversity 2013-2021)  
610 • Advance and sustain the Arctic Biodiversity Data Service (ABDS) to facilitate access,  
611 integration, analysis and display of biodiversity information to understand, conserve and manage  
612 the Arctic's wildlife ecosystems. (Actions for Arctic Biodiversity 2013-2021)  
613 • Develop and apply standards of the Arctic Spatial Data Infrastructure and further develop use of  
614 remote sensing as a tool for better information decisions and more efficient administration of the  
615 Arctic (Actions for Arctic Biodiversity 2013-2021)  
616 • Convene, and report the results of the second Arctic Biodiversity Congress to promote the  
617 conservation and sustainable use of Arctic biodiversity focusing on the results of the CBMP state  
618 of the Arctic biodiversity reports, progress on implementation of ABA recommendations, and  
619 attainment of Aichi Targets (Actions for Arctic Biodiversity 2013-2021)  
620

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§§§ 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>

- 621 • Promote the active involvement of indigenous peoples in the management and sustainable use of  
622 protected areas (Actions for Arctic Biodiversity 2013-2021)
- 623 • Develop tools to raise awareness of Arctic biodiversity, and the multiple challenges it faces, and  
624 create publications, articles, films, social media, media campaigns and educational kits (Actions  
625 for Arctic Biodiversity 2013-2021)
- 626  
627

### ***Research and Innovation***

- 629 • Contribute to a pan-Arctic MPA network: 1) Map areas of high species abundance and unique  
630 Arctic diversity; 2) Analyze existing Arctic marine protected areas to identify gaps and priorities  
631 including the most climate-change resilient Arctic areas, connectivity gaps and missing buffer  
632 zones (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- 633 • The Salmon River Peoples' Project will look at trends of salmon in three rivers of the circumpolar  
634 Arctic to advance understanding of the importance of freshwater fish to food security for  
635 indigenous people using a co-production of knowledge approach (CAFF 2015-2017 Work Plan  
636 and Actions for Arctic Biodiversity 2013-2021)
- 637 • Improve our understanding of climate change vulnerabilities and impacts on sea-ice associated  
638 biodiversity (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- 639 • Complete the Economics of Ecosystems and Biodiversity (TEEB) Scoping Study (which could  
640 lead to further recommendations) (CAFF 2015-2017 Work Plan and Actions for Arctic  
641 Biodiversity 2013-2021)
- 642 • Follow-up as appropriate on the TEEB approach to evaluate the benefits people receive from  
643 Arctic biodiversity (Actions for Arctic Biodiversity 2013-2021)
- 644 • Explore the possibility of developing a case study on walrus to demonstrate Inuit food security  
645 and ecosystem approach (Actions for Arctic Biodiversity 2013-2021)
- 646 • Identify species that could benefit from range-wide adaptive management strategies (2015-2017  
647 and ongoing) (Actions for Arctic Biodiversity 2013-2021)
- 648 • Incorporate common protocols for early detection and reporting of non-native invasive species in  
649 the Arctic into CBMP monitoring plans (Actions for Arctic Biodiversity 2013-2021)
- 650 • Report on changes in Arctic species, ecosystems, and the effects of stressors through state of  
651 Arctic biodiversity (Marine, Freshwater, Terrestrial, Coastal) reports (Actions for Arctic  
652 Biodiversity 2013-2021)
- 653 • Prepare a report on traditional knowledge on biodiversity change in the North American Arctic  
654 (Actions for Arctic Biodiversity 2013-2021)
- 655 • Develop the community observation network for adaptation and security (CONAS) to increase  
656 the contribution of community-based monitoring and knowledge from Arctic peoples to existing  
657 knowledge (Actions for Arctic Biodiversity 2013-2021)
- 658 • Analyse the state of knowledge and data on cumulative effects and identify priorities, adding the  
659 biotic parameters to abiotic work (Actions for Arctic Biodiversity 2013-2021)
- 660 • Continue to develop and report on key robust indicators of Arctic biodiversity, in particular ones  
661 that can be used to track and understand cumulative effects, e.g. Arctic Species Trend Index,  
662 Land Cover Change Index, etc. (Actions for Arctic Biodiversity 2013-2021)
- 663 • Improve data and assessments on populations, harvest and harvest management, including both  
664 traditional knowledge and science, as foundation for harvest management (e.g., Arctic Geese)  
665 (Actions for Arctic Biodiversity 2013-2021)
- 666

### ***Improved Decision-Making, Management, and Implementation***

- 668 • Develop a circumpolar strategy for the prevention and management of invasive species (CAFF  
669 2015-2017 Work Plan and Actions for Arctic Biodiversity 2013-2021)

- 670 • Promote the implementation of ecosystem-based management approaches (CAFF 2015-2017
- 671 Work Plan and Actions for Arctic Biodiversity 2013-2021)
- 672 • Encourage the mainstreaming of biodiversity by developing a set of principles on incorporating
- 673 biodiversity objectives and safeguards into Arctic Council work (CAFF 2015-2017 Work Plan
- 674 and Actions for Arctic Biodiversity 2013-2021)
- 675 • Assess, monitor, and develop conservation plans for Arctic seabirds (CAFF 2015-2017 Work
- 676 Plan)
- 677 • Develop the Circumpolar Vegetation Map, red-list for Arctic plants, moss and lichen check lists
- 678 (CAFF 2015-2017 Work Plan)
- 679 • Through the Arctic Migratory Bird Initiative (AMBI), coordinate the implementation of work
- 680 plans in different flyways (CAFF 2015-2017 Work Plan and Actions for Arctic Biodiversity
- 681 2013-2021)
- 682 • Broker commitments by non-Arctic countries to safeguarding important Arctic migratory bird
- 683 habitats outside of the Arctic (part of the AMBI) (Actions for Arctic Biodiversity 2013-2021)
- 684 • Develop options for safeguarding marine and terrestrial refuge areas (Actions for Arctic
- 685 Biodiversity 2013-2021)
- 686 • Continue implementation of existing species conservation strategies (Black-legged Kittiwakes,
- 687 caribou) (ongoing) (Actions for Arctic Biodiversity 2013-2021)
- 688 • Develop range-wide adaptive management strategies for harvested species (2017-2019) (Actions
- 689 for Arctic Biodiversity 2013-2021)
- 690 • Identify management actions that will enhance the resilience of species in adapting to rapid
- 691 change (2017-2019) (Actions for Arctic Biodiversity 2013-2021)
- 692 • Identify species that could benefit from, but are not covered by, range-wide adaptive management
- 693 strategies and follow-up as appropriate and develop range-wide adaptive management strategies
- 694 for those harvested species (Actions for Arctic Biodiversity 2013-2021)

#### 697 **IV. EPPR**

##### 698 **Working Group Objectives:**

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

##### 703 **Current or Planned Initiatives**

##### 704 **Capacity Building**

- 705 • Develop a stand-alone, searchable database of major Arctic response assets (both government and
- 706 industry owned), which will be linked to the Arctic Environmental Response Management
- 707 Application (ERMA) (EPPR 2015-2017 Work Plan)<sup>\*\*\*\*</sup>
- 708 • Develop “Prevention, Preparedness and Response for Small Communities” implementation
- 709 strategy, which engages communities in a self-assessment of their preparedness for oil spill
- 710
- 711
- 712
- 713

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††† 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](http://arctic-council.org/eppr/wp-content/uploads/2015/06/2015_11_09_EPPR_Strategic_Plan_draft_posted.pdf)

\*\*\*\* 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](http://www.arctic-council.org/eppr/wp-content/uploads/2014/10/Two-pager_EPPR_Meeting_Dec_2014_Final1.pdf)

- 714 response, as well as risk and impact. The outcomes from the project will be: (1) greater awareness  
715 of risk and preparedness at a local level, and access to best practices, (2) the ability for national  
716 governments to address misperception or lack of awareness, and (3) the identification of gaps in  
717 preparedness relative to risk (EPPR 2015-2017 Work Plan)
- 718 • Conduct second functional table top exercise of the MOSPA Agreement in June 2016. The table  
719 top exercise will result in the After Action Report, which will provide background for the next  
720 exercise planning cycle. Establish the 2017-2019 Exercise Design Team that will lead and  
721 prepare the next exercise under the Finnish Chairmanship (EPPR 2015-2017 Work Plan)
  - 722 • Member States will provide datasets to the Arctic ERMA (Environmental Response and Mapping  
723 Application) mapping tool (EPPR 2015-2017 Work Plan)
  - 724 • Update the Field Guide for Oil Spill Response in Arctic Waters: The updated Field Guide will  
725 include the addition of new sections on “Health and Human Safety in the Arctic”, “Wildlife  
726 Response in the Arctic”, and “Logistics and Response Strategies in the Arctic”. Improvements  
727 will include, (1) updated information in a useful tactics-focused document, (2) complement the  
728 recent strategy-focused 2015 EPPR “Guide to Oil Spill Response in Snow and Ice Conditions in  
729 the Arctic”, (3) restructure some sections to reduce the size of the document and provide a logical  
730 flow to the material, and (4) improve the “friendliness” of the document by adding a “User  
731 Guide” at the beginning as part of the Preface or Introduction (Arctic Council Website)

732

### 733 **Research and Innovation**

- 734 • Develop Oil Spill Circumpolar Response Viability Analysis: Estimate how often different types  
735 of response systems can be effectively deployed in different areas of the Arctic based on  
736 historical metocean conditions (EPPR 2015-2017 Work Plan)

737

738

## 739 **V. PAME**

740

### 741 **Working Group Objective:**

742 To address policy and non-emergency pollution prevention and control measures related to the protection  
743 of the Arctic marine and coastal environment from both land and sea-based activities. These measures  
744 include coordinated strategic plans as well as developing programs, assessments and guidelines, intended  
745 to complement or supplement efforts and existing arrangements for the sustainable development of the  
746 Arctic marine environment.<sup>§§§§</sup>

747

748 The four strategic goals of the Arctic Marine Strategic Plan provide the structural framework of PAMEs  
749 work i.e.:

- 750 1. Improve knowledge of the Arctic marine environment, and continue to monitor and assess current  
751 and future impacts on Arctic marine ecosystems.
- 752 2. Conserve and protect ecosystem function and marine biodiversity to enhance resilience and the  
753 provision of ecosystem services.
- 754 3. Promote safe and sustainable use of the marine environment, taking into account cumulative  
755 environmental impacts.
- 756 4. Enhance the economic, social and cultural well-being of Arctic inhabitants, including Arctic  
757 indigenous peoples and strengthen their capacity to adapt to changes in the Arctic marine  
758 environment.

759

760

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<sup>§§§§</sup> From PAME Website. <http://www.pame.is/index.php/shortcode/about-us>

761 **Current or Planned Initiatives**

762

763 **Capacity Building**

764 • Create a guidebook that will enable communities to independently map their interactions with the  
765 marine environment. To test and better refine the guidebook, a mapping project will be conducted  
766 using the draft guidebook in three communities (PAME Work Plan 2015-2017\*\*\*\*\*)

767 • Follow-up to the Arctic Marine Shipping Assessment (2009) to include the following activities  
768 (PAME 2015-2017 Work Plan):

769 ○ Continue to monitor and, as appropriate, identify opportunities to engage and collaborate  
770 with international organizations on issues of common interest to advance implementation  
771 of the AMSA Recommendations and other Arctic Council-related Shipping  
772 Recommendations (e.g. AOR Final Report Recommendations)

773 ○ Continue to promote collaboration among Arctic states as they implement the Polar Code

774 ○ Develop a compendium of case study information on maritime incidents in the Arctic that  
775 resulted in a spill or release of HFO and the environmental impact thereof

776 ○ Potential follow-up to the Arctic Marine Tourism Plan to include producing site-specific  
777 guidance templates or compiling a publicly available repository on Arctic tourism

778 ○ Provide regular updates and status provided on infrastructure aspects such as the IMO's  
779 GISIS Port Reception Facility database

780 ○ Continue to pursue opportunities and develop the Arctic shipping Traffic Data (ASTD)  
781 project where the objective is to develop a long-term, sustainable collection of Arctic  
782 shipping information consisting of a repository with selected ship traffic data provided by  
783 Arctic Council Member States and a web application/tool to extract information from the  
784 repository, allowing for trend analysis and other related uses, allowing the Arctic Council  
785 Member States and the Arctic Council subsidiary bodies to facilitate trend analyses on  
786 ship traffic in the Arctic

787 ○ Develop AMSA Shipping Progress Implementation Report for submission to the Arctic  
788 Council Ministerial meeting in 2017. This report should also address work pursuant to  
789 other Arctic Council shipping mandates and recommendations

790 • Continue the development of a cross-cutting oil & gas, shipping and MPA project on *Meaningful*  
791 *Engagement of Indigenous Peoples and Local Communities in Marine Activities* with the aim to  
792 prepare a narrative report of information on existing mechanisms, including legal mandates,  
793 declarations, guidelines, recommendations and best practices developed by the Arctic Council, its  
794 member governments, States, international and regional bodies, industry and other stakeholders,  
795 for engagement by indigenous peoples and local communities in Arctic marine activities (PAME  
796 Work Plan 2015-2017)

797 • Continue to develop tools to raise awareness of the Arctic Marine Environment and the multiple  
798 challenges it faces through the AMSP Implementation Plan and the AMSP Communication Plan

799 • Enhance work on a Pan-Arctic Network of Marine Protected Areas (MPAs)

800 • Liaise and exchange information with relevant organizations and programs (e.g. UNEP Regional  
801 Seas Programme) regions, OSPAR, and other regional programs) (PAME 2015-2017 Work Plan)

802

803 **Research and Innovation**

804 • Enhance a Marine Protected Areas (MPA) Network (2015) through stakeholder engagement,  
805 inventory mapping of existing MPAs, and a desktop study on area-based conservation measures

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\*\*\*\* PAME Work Plan: 2015-2017.

[http://www.pame.is/images/01\\_PAME/Work\\_Plan/PAME%20Work%20Plan%202015-2017.pdf](http://www.pame.is/images/01_PAME/Work_Plan/PAME%20Work%20Plan%202015-2017.pdf)

- 806 and its linkages to categories of Arctic Biodiversity (PAME 2015-2017 Work Plan and Arctic  
807 Marine Strategic Plan 2015-2025)
- 808 • Improve data on shipping in the Arctic through the Arctic Ship Traffic Data project (PAME  
809 2015-2017 Work Plan and Arctic Marine Strategic Plan 2015-2025)
  - 810 • Continue reporting on status of implementation on the AMSA 2009 Recommendations (PAME  
811 2015-2017 Work Plan)
  - 812 • Continue to develop a community of practice within the framework of Ecosystem Approach to  
813 Management (EA) (PAME 2015-2017 Work Plan)

814

### 815 ***Improved Decision-Making, Management, and Implementation***

- 816 • Continue ongoing activities of the joint Ecosystem-Approach (EA) Expert Group: contribute to  
817 the development of ecological objectives, follow up actions on integrated ecosystem assessments,  
818 continue fostering implementation of EA in the Arctic (August 2016 International Conference),  
819 consider issues of scale in EA, and support a community of practice working to implement EA  
820 (PAME 2015-2017 Work Plan, Joint EA Expert Group ToR and Arctic Marine Strategic Plan  
821 2015-2025)
- 822 • Continue to monitor and, as appropriate, identify opportunities to engage and collaborate with  
823 international organizations on issues of common interest to advance implementation of the  
824 AMSA Recommendations and other Arctic Council-related Shipping Recommendations (e.g.  
825 AOR Final Report Recommendations)
- 826 • Promote collaboration among Arctic states as they implement the Polar Code (PAME 2015-2017  
827 Work Plan)
- 828 • Develop a circumpolar strategy for the prevention and management of invasive species (with  
829 CAFF) (PAME 2015-2017 Work Plan, AMSA 2009, AOR Final Report (2013) and Arctic  
830 Marine Strategic Plan 2015-2025)
- 831 • Develop an Arctic Regional Reception Facilities Plan as a long-term solution to help meet the  
832 challenges posed by increased shipping activity (the aim is for environmentally sound  
833 management of ship waste) (PAME 2015-2017 Work Plan)
- 834 • Continue selected Updates of the 2009 Arctic Offshore Oil and Gas Guidelines (AOOGG 2009)  
835 and develop concept papers on in this regard such as updating non-emergency operating practices  
836 and environmental monitoring sections of the AOOGG (2009) (PAME 2015-2017 Work Plan)
- 837 • Strengthen communication and collaboration with EPPR and external bodies such as the Arctic  
838 Offshore Oil and Gas Regulators Forum, OSPAR and Oil and Gas Producers International on  
839 non-emergency operating practices and environmental monitoring
- 840 • Continue the development and reporting on the Tracking Matrix for the recommendations of the  
841 2014 “Arctic Offshore Oil and Gas Guidelines Systems Safety Management and Safety Culture  
842 Report: Avoiding Major Disasters in Arctic Offshore Oil and Gas Operations”
- 843 • Continue the work in the ICES Working Group on Integrated Ecosystem Assessment for the  
844 Central Arctic Ocean (WGICA)
- 845 • Strengthen collaboration with other Arctic Council working groups by review their respective  
846 work plans to identify areas for cooperation and respond accordingly

847

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## 849 **VI. SDWG**

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### 851 **Working Group Objectives:**

852 To propose and adopt steps to be taken by the Arctic States to advance sustainable development in the  
853 Arctic. This includes pursuing opportunities to protect and enhance the environment and the economies,  
854 culture and health of indigenous peoples and Arctic communities. The guiding tenet is to pursue



855 initiatives that provide practical knowledge and contribute to the capacity of indigenous peoples and  
856 Arctic communities to respond to the challenges and benefits from the opportunities in the Arctic  
857 region.<sup>††††</sup>

858

## 859 **Current or Planned Initiatives**

860

### 861 ***Capacity Building***

- 862 • Continue supporting the Arctic Adaptation Exchange Portal (AAEP), in association with the  
863 University of Alaska Fairbanks. To the extent possible, Member States will build on their open  
864 data policies to consolidate and facilitate access to their respective climate-related Arctic datasets,  
865 and link this data to the Arctic Adaptation Exchange Portal (SDWG 2015-2017 Work Plan<sup>\*\*\*\*</sup>)
- 866 • Create common metrics for evaluating suicide prevention efforts through the Arctic RISING SUN  
867 program, in order to aid health workers and policy makers measure progress and identify  
868 challenges (SDWG 2015-2017 Work Plan)
- 869 • Through the EALLU project, raise awareness of climate change among indigenous youth and  
870 document traditional knowledge about food cultures of reindeer herding indigenous peoples  
871 (SDWG 2015-2017 Work Plan)
- 872 • The Gender Equality in the Arctic project promotes and expands the dialogue on Gender  
873 Equality in the Arctic region, building on previous SDWG projects, initiatives and  
874 conferences (SDWG Website)

875

### 876 ***Research and Innovation***

- 877 • Networks Academy (ARENA) addresses the need for the development of community energy  
878 experts to ensure affordable, reliable, renewable source energy solutions for Arctic communities.  
879 It integrates web-based seminars with classroom learning and field exposure (SDWG Website)
- 880 • The online Arctic Renewable Energy Atlas (AREA) is intended to contribute to sustainable  
881 development and healthy, resilient communities in the Arctic, by providing energy resources  
882 maps that allow easy visualization of localized supply and demand and encourage clean energy  
883 prospecting and investment (SDWG Website)
- 884 • Arctic Energy Summit is a forum to share information that can lead to innovative practices in  
885 renewable energy (SDWG 2015-2017 Work Plan)
- 886 • The WASH project, Improving Health through Safe and Affordable Access to Household  
887 Running Water and Sewer (WASH), focuses on water-related health challenges and innovation in  
888 Arctic and Sub-Arctic communities (SDWG Website) Convene workshop to facilitate  
889 collaboration between researchers, engineers, manufacturers, vendors and health experts on  
890 measures to increase access to and reduce the operating costs of in-home running water and sewer  
891 in remote communities, attract investment, improve public health, and spur public-private  
892 partnerships (SDWG 2015-2017 Work Plan) The third Economy of the North (ECONORIII)  
893 project will give a statistical overview of economic, social conditions, and environmental change,  
894 through the contribution of national statistics agencies (SDWG 2015-2017 Work Plan)
- 895 • The Arctic as a Food Producing Region project will assess the potential for increased production  
896 and added value of food from the Arctic and will identify important factors for developing the  
897 Arctic as a food-producing region (SDWG 2015-2017 Work Plan)

898

### 899 ***Improved Decision-Making, Management, and Implementation***

- 900 • The Arctic One Health project seeks to forge co-equal, all-inclusive collaborations across  
901 multiple scientific disciplines and Arctic communities in order to enhance resiliency of the Arctic

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†††† 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>

902 inhabitants through an enhanced understanding of climatic change impacts on health risks to  
903 people, animals, and the environment. The project will establish One Health ‘hubs’ across the  
904 Arctic (essentially, linking institutions) to enable the more effective implementation of the One  
905 Health approach (SDWG 2015-2017 Work Plan)  
906  
907

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

### 909 **Current or Planned Initiatives**

#### 910 ***Capacity Building***

- 911 • Enhance local involvement in the collection of information and monitoring of the marine  
912 environment including traditional and local knowledge
- 913 • Develop and standardize data sharing and management at a circumpolar level
- 914 • Improve awareness of Arctic shipping activity and its impacts by promoting expanded  
915 information sharing of ship traffic data
- 916 • Strengthen the collection, observation, monitoring and dissemination of data on the Arctic  
917 marine environment
- 918 • Map areas of the marine environment that are vulnerable to the effects of ocean acidification
- 919 • Facilitate coastal community exchanges between Arctic states to improve sharing of  
920 knowledge and experiences
- 921 • Encourage engagement with indigenous peoples organizations to inform the work of the  
922 Arctic Council in the protection of the marine environment, including through the use of  
923 traditional and local knowledge
- 924 • Strengthen the Arctic Council’s communication to the public in Arctic and non-Arctic  
925 countries pointing out ongoing changes in the Arctic and their likely impact on non-Arctic  
926 areas
- 927 • Improve understanding of risks related to shipping and oil and gas exploration, including gap  
928 analysis and sharing of best practices
- 929 • Develop circumpolar indicators of changes and stressors across the Arctic marine  
930 environment
- 931 • Create inventories of and reduce emissions of short-lived climate forcers, including black  
932 carbon and methane (also in ACAP 2015-2017 Work Plan)
- 933
- 934

#### 935 ***Research and Innovation***

- 936 • Identify and develop tools for assessing cumulative impacts, threats and risks to areas of  
937 ecological and cultural significance
- 938 • Improve remote sensing capabilities to support ice detection, monitoring and forecasting  
939 (CAFF ongoing activity)
- 940 • Support research, development and implementation of oil spill detection, migration measures,  
941 and response technologies in ice-covered and ice-infested waters  
942

#### 943 ***Improved Decision-Making, Management, and Implementation***

- 944 • Implement measures to protect Arctic marine areas of ecological and cultural significance,  
945 focusing on areas of refuge for ice-associated species
- 946 • Develop a pan-Arctic network of marine protected areas (also in PAME 2015-2017 Work  
947 Plan)
- 948 • Support efforts, in cooperation with indigenous peoples, to:  
949



- 950                   ○ Reduce long-range pollution accumulating in the Arctic marine food-chains
- 951                   ○ Reduce emissions and implement adaptation measures
- 952                   • Support research, development and implementation of oil spill detection, migration measures,
- 953                   and response technologies in ice-covered and ice-infested waters
- 954                   • Improve safety and environment protection performance and the use of best practices and
- 955                   technology for all marine activities
- 956                   • Support international efforts and cooperation to continue to identify, assess and reduce
- 957                   existing and emerging contaminants
- 958                   • Implement an ecosystem approach to management in the Arctic (also in CAFF 2015-2017
- 959                   Work Plan)
- 960                   • Implement measures for early detection and reporting of marine invasive species in the Arctic
- 961                   marine environment (also in CAFF 2015-2017 Work Plan)

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1000 **Appendix D: ARAF Drafting Committee and Review Committee Members**

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1002 Two committees, a Drafting Committee and a Review Committee, have been responsible for developing  
1003 the ARAF. The Drafting Committee Chair and Review Committee co-Chairs were responsible for  
1004 collaborating to negotiate final edits to the ARAF.

1005 **Drafting Committee:**

1006

1007 The Drafting Committee is a voluntary committee of technical and policy experts. Drafting Committee  
1008 members were responsible for suggesting a draft of the ARAF, after analyzing a variety of inputs to the  
1009 ARAF development process.

1010

1011 Joel Clement (Chair), U.S. Department of the Interior

1012 Sarah Abdelrahim, U.S. Department of the Interior

1013 Tom Armstrong, AMAP

1014 Nikolaj Bock, European Environment Agency

1015 Glenn Dolcemascolo, United Nations International Strategy for Disaster Reduction

1016 Jim Gamble, Aleut International Association

1017 Robert Kadas, Foreign Affairs Canada

1018 Jaana Kaipainen, Finnish Ministry of Agriculture and Environment

1019 Gary Kofinas, University of Alaska Fairbanks

1020 Jeanette Krantz, Swedish Ministry of the Environment

1021 Johan Kuylenstierna, Stockholm Environment Institute

1022 Karen Murphy, Western Alaska Landscape Conservation Center

1023 Martin Sommerkorn, World Wildlife Fund

1024 Jannie Staffansson, Saami Council

1025 Julian Wilson, DG Joint Research Centre, European Commission

1026

1027 Facilitator: Sarah Palmer, U.S. Department of the Interior

1028

1029

1030 **Review Committee:**

1031

1032 Each Arctic Council Member State, Permanent Participant and Working Group was requested to  
1033 nominate an individual to serve on the Review Committee. Review Committee members were responsible  
1034 for reviewing ARAF drafts and suggesting additions and revisions.

1035

1036 Jaana Kaipainen (co-Chair), Ministry of Agriculture and Forestry, Finland

1037 Saara Lilja-Rothsten (co-Chair), Ministry of Agriculture and Forestry, Finland

1038 Gunn-Britt Retter (co-Chair), Saami Council

1039 Tom Barry, CAFF

1040 Patti Bruns, ACAP and EPPR

1041 Jon Fuglestad, AMAP

1042 Bernard Funston, SDWG

1043 Jim Gamble, Aleut International Association

1044 Soffia Guðmondstdóttir, PAME

1045 Rachel Joo, Environment and Climate Change Canada, Canada

1046 Jeanette Krantz, Ministry of the Environment, Sweden

1047 Marianne Kroglund, Norwegian Environment Agency, Kingdom of Norway

1048 Aleksei Nesterov, Ministry of Economic Development, Russia

- 1049 Joan Nymand Larsen, Stefansson Arctic Institute, Iceland
- 1050 Ann Meceda, Department of State, United States of America
- 1051 Maksim Semin, Ministry of Economic Development, Russia
- 1052 Chief Michael Stickman, Arctic Athabaskan Council
- 1053 Jim Stotts, Inuit Circumpolar Council
- 1054 Inge Thaulow, Ministry of Foreign Affairs, Government of Greenland, Kingdom of Denmark

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