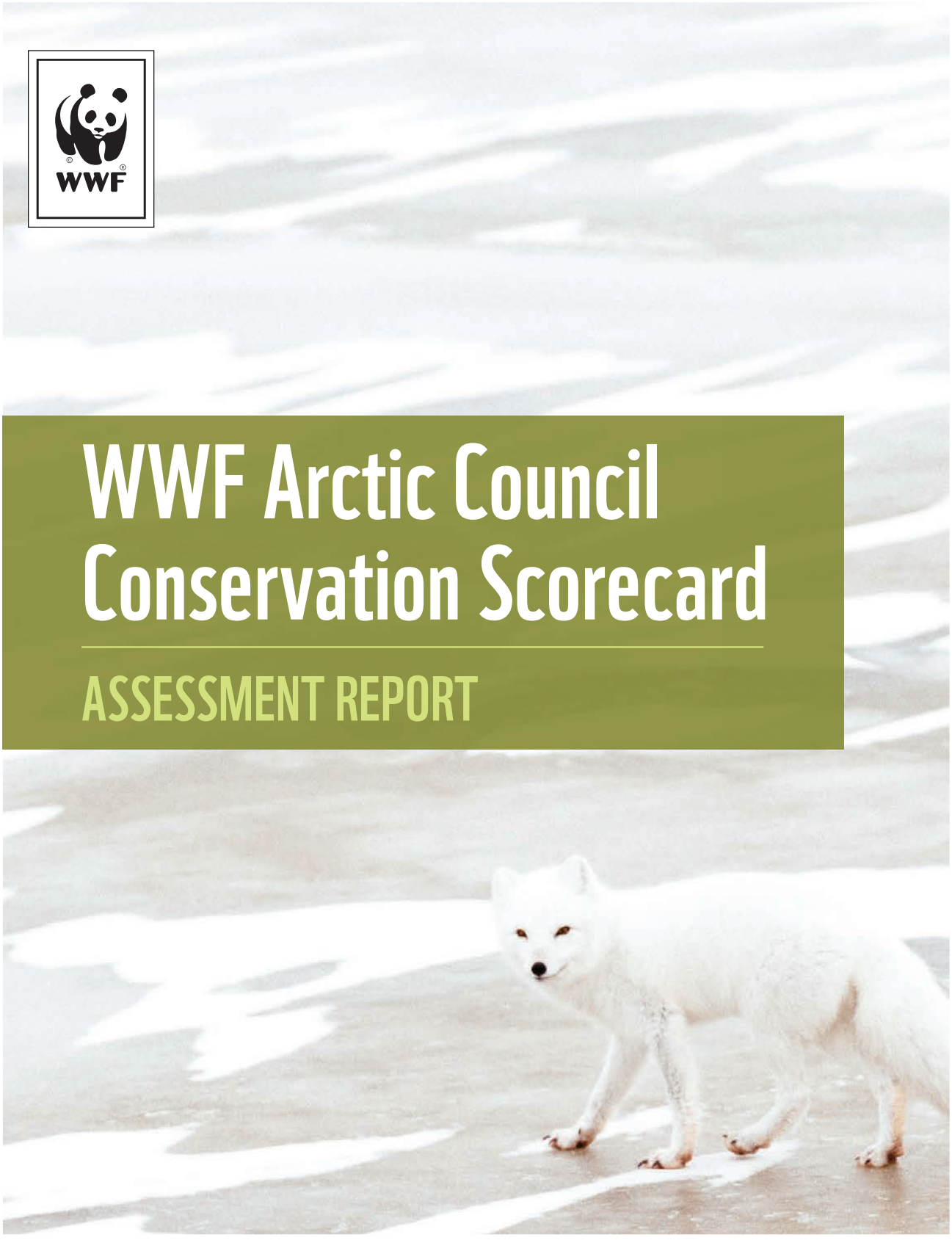
WWF Arctic Council Conservation Scorecard

ASSESSMENT REPORT



For more information, please visit panda.org/acscorecard

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About WWF
WWF has run a programme focused on the circum-Arctic for 25 years.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

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CONTEXT

For more than 20 years, the Arctic states, through the Arctic Council (AC), have pursued conservation efforts to safeguard the Arctic environment.

The Arctic Council's deliberations have resulted in measures to: promote development of conservation areas; establish a biodiversity-monitoring program; strengthen regimes for the prevention and management of invasive species in Arctic waters; set requirements for cooperation on oil spill prevention, preparedness and response; pursue early actions to reduce black carbon emissions; develop and adopt ecosystem-based management principles; and many other actions.

The AC provides direction in the form of ministerial decisions, policy recommendations, guidelines, framework plans and binding agreements. Putting this direction into practice in each country is essential to good Arctic governance, greater environmental protection, and sustainable development in the region.

With the aim of encouraging discussion about the status of implementation of agreed direction and commitments made at the AC, and to enhance Arctic governance, environmental protection, and sustainable development, WWF has produced the first-ever assessment of the implementation of AC direction.

The WWF Arctic Council Conservation Scorecard (the Scorecard) focuses on the biodiversity and conservation-related commitments made at the AC and assesses the period of 2006 to 2013. It shows that, although as a collective body the AC has delivered results, all eight Arctic countries rarely live up to the commitments that they have made through the AC when it comes to concrete, on-the-ground actions to protect Arctic environments. WWF hopes to inform discussions and strengthen the AC by demonstrating where progress is being made and where further action is needed to fulfill existing commitments.

The Scorecard is designed to assist the AC and member states to:

- review progress to date in implementing AC direction;
- identify areas requiring further intervention and action to more effectively implement AC direction;
- further prioritise and focus direction;
- encourage more systematic action in support of the AC's mission of protecting the Arctic environment;
- achieve a strengthened, more transparent and open AC system;
- make timely, effective decisions and identify responsibilities for implementation;
- enhance communication to external audiences of the results achieved by the AC and further build public awareness of the Arctic environment.

"Current knowledge of many Arctic species, ecosystems and their stressors is fragmentary, making the detection and assessment of trends and their implications difficult for many aspects of Arctic biodiversity.

An accurate accounting of the status and trends of the majority of species of Arctic flora and fauna is impossible except for relatively few well-known vertebrates. For many species or species groups, we have data on distribution and sometimes also density, but lack the record through time to assess trends. In addition, many short-term trends reflect cyclical patterns rather than long term increases or declines."

Arctic Biodiversity Assessment report

What the Scorecard does not do

The Scorecard is an assessment of the implementation of conservation- and biodiversity-related agreed direction for the period of 2006-2013. WWF has not assessed Arctic states on:

- their implementation of conservation commitments made outside of the Arctic Council;
- the state of the Arctic environment within their respective jurisdictions;
- the effectiveness of measures taken to follow up on Arctic Council direction.

WWF realises that this gap may produce contradictory messages about overall progress toward efforts to enhance Arctic governance, environmental protection and sustainable development. We also believe that the value of this Scorecard is to encourage discussion about how we can all do more to safeguard the Arctic.

The Arctic consists of about 40 million square kilometres of diverse, largely unfragmented ecosystems that combine unique marine and terrestrial biomes. Life in the Arctic is highly adapted to the presence of ice. Ecosystems across the entire region are in an unprecedented state of flux due to climate change and the Arctic Ocean is projected to be nearly ice-free in the summer within a generation.

The formal economy of the Arctic is largely based on resource extraction. Future development is expected to attract approximately a trillion dollars of new investment during the next 25 years. The current trend of development in the Arctic is a shift from sporadic development to larger-scale development, including new infrastructure. This trend is fed both by climate change and global demand for resources. As the Arctic Ocean opens, it is increasingly vulnerable to industrial exploitation. The problems facing the Arctic also threaten the quality of life experienced by the 4 million people who live in the region. Many people outside the region are also likely to be affected, as changes in the Arctic affect the rest of the planet. Current trends suggest that economic activity in the Arctic is likely to increase substantially and exert even more pressure on natural ecosystems already under stress due to climate change. To address these problems effectively will require new approaches that recognise multiple overlaying pressures and that incorporate an ecosystem-based management approach.

Countries must follow through on their promises to safeguard Arctic biodiversity, because they need to demonstrate to their citizens, as well as to those of other countries, that they are stewards of the Arctic, and are willing and capable of managing the Arctic sustainably.

WWF hopes that providing a picture of the current situation will encourage governments to accelerate progress toward a biodiverse and resilient Arctic that supports ecological processes, along with the social and economic benefits they provide to present and future generations.

FROM WORDS TO ACTIONS

The AC has delivered multiple landmark assessments of the current and likely future state of the Arctic. These assessments, developed through strong cooperation among all Arctic states and often with the help of experts from other countries, have usually been accompanied by non-binding policy recommendations negotiated through AC Working Groups and approved by Senior Arctic Officials and ministers.

Arctic countries have committed to implementing AC direction by taking action both collectively, and domestically at the national and subnational levels. Many decisions and recommendations about environmental protection have been approved over the years, but all eight Arctic states have failed to some degree to rigorously follow through with action and much remains to be done.

WWF believes that it is valuable to evaluate how well governments live up to their promises, as no policy recommendation or ministerial direction – no matter how ambitious – can be successful without equally ambitious implementation on the ground.

MEASURING PROGRESS

As a longstanding AC observer and active participant in the work of the AC working groups and task forces, WWF has long advocated that member states establish clear, transparent monitoring and reporting systems to track progress toward the implementation of their AC commitments. Ultimately, countries must properly evaluate their efforts to safeguard the Arctic environment.

As a conservation organization, WWF has focused primarily on decisions and recommendations related to the AC's conservation portfolio. This Scorecard offers an approach to assessing the implementation of the biodiversity and conservation-related commitments made by Arctic states through the AC.

There are already a number of AC efforts to enhance member-state implementation and reporting. Current efforts include:

- the biennial reports on status of implementation for advancing the *Arctic Marine Shipping Assessment* (AMSA) policy recommendations;
- the iterative roadmap and reporting process set up by the *Actions for Arctic Biodiversity* (ABA);
- measures in the *Framework Plan on Oil Pollution Prevention*;
- monitoring of actions under the *Arctic Marine Strategic Plan*;
- the *Report on the Status of Implementation of the Ecosystem Approach to Management in the Arctic*;
- the AC tracking tool, which monitors the progress of ongoing AC projects;
- a national effort recently announced by the United States, to assess its progress made in implementation of all AC ministerial declarations since the AC's inception.

In support of these efforts, WWF based the Scorecard on a set of key indicators relevant to conservation (see full list in Annex 1). This Scorecard does not address other important aspects of the AC's work, such as those related to sustainable development, health, social and cultural concerns. WWF expects to work with partners to cover those areas in following scorecards.

The Scorecard assesses the following six areas of the AC's work:

Conservation Areas

Biodiversity

Shipping

Cooperation on Oil Spill Prevention, Preparedness and Response

Black Carbon and Adaptation

Ecosystem-Based Management

For each area, WWF looks at the extent to which Arctic states have implemented AC direction nationally (national implementation) and the AC has delivered agreed-upon commitments for joint work within the AC (collective implementation).

For each assessment area, scores are awarded for several indicators (see Annex 1 for a full list) directly related to environmental conservation for both national implementation actions and the AC's collective implementation actions. Adding up scores provides an initial indication of a country's or the AC's performance in implementing its commitments.

Each indicator includes one or more criteria related to the implementation of an AC direction agreed to between 2006 (Salekhard, Russia, ministerial meeting) and 2013 (Kiruna, Sweden, ministerial meeting).

WWF conducted a systematic screening to identify the most measurable AC directions. An AC direction was considered appropriate if it specified a concrete action, a timeline, and a party responsible for implementation.

Overall, WWF found that only about half of all AC directions qualified for assessment under the Scorecard.

Example of measurable direction

"The Arctic states should identify areas of heightened ecological and cultural significance in light of changing climate conditions and increasing multiple marine use and, where appropriate, should encourage implementation of measures to protect these areas from the impacts of Arctic marine shipping, in coordination with all stakeholders and consistent with international law."

Arctic Marine Shipping Assessment 2009

"Arctic states should recognise, in accordance with the recommendations from the Arctic Council EBM Expert Group and the PAME lead Ecosystem Approach expert group, the importance of the following elements when implementing marine Ecosystem-based Management in the Arctic Council working groups: identification of the ecosystem, description of the ecosystem, setting ecological objectives, assessing the ecosystem, valuing the ecosystem and managing human activities."

Arctic Ocean Review report 2013

Example of non-measurable direction

"Members of the Arctic Council and governments at all levels in the Arctic should work to... ensure that standards for environmental management are in place, or can be adapted, to take account of cryospheric change. Develop regulations where necessary."

Snow, Water, Ice and Permafrost in Arctic assessment report 2011

"[The Arctic Council should] urge its Member States to implement adaptation strategies that address all aspects of Arctic change, including ocean acidification, tailored to local and societal needs."

Arctic Ocean Acidification report 2013

RATING SYSTEM

Assessments consider indicators related to AC direction. Each indicator includes criteria related to an implementation action (see Annex 1). Points for individual criteria are summed for each indicator, then aggregated for each assessment area for each Arctic state and for the AC as a whole. WWF assigns an overall rating (using letter rankings A to D) based on the percentage of the maximum possible score achieved for each assessment area (see Table 1).

Some criteria are scored using a binary system: the only possible scores are one or zero. Partial points are not possible under this system. Other criteria award extra points for additional actions. This approach is used to acknowledge steps toward complete implementation of AC direction. WWF hopes this system provides a foundation and incentive for the joint development of a more sophisticated tool by Arctic countries and other institutions.

Details on the efforts of individual Arctic states and AC actions for each indicator and criterion are available on request through the WWF Arctic Programme website at panda.org/acscorecard.

Tables 1 through 14 present total scores for assessment areas and feature a colour code:

More than 80% of the maximum score

Full or substantive implementation of the direction.

60-80% of the maximum score

Encouraging progress on implementation of the direction.

40-60% of the maximum score

Some progress on implementation of the direction.

Less than 40% of the maximum score

Little progress on implementation of the direction.

INCENTIVES TO ACT

WWF intends to produce a Scorecard every two years, in sync with the AC ministerial cycle. Each Scorecard would consider direction from 2006 up to the second-last ministerial meeting. WWF will monitor progress, highlight successes and identify priority areas.

In the future, ratings should also address the effectiveness of implementation measures, rather than only whether a specific measure was taken or not. This will require the development of a system of specific indicators related to the status of the Arctic environment. Some elements of such a system were developed by the Conservation of Arctic Fauna and Flora (CAFF) working group as part of its follow-up work on the ABA.

THE WWF ARCTIC COUNCIL CONSERVATION SCORECARD 2017

National implementation

Table 1 provides a total score for each Arctic state's overall national implementation based on the scores for each assessment area. Ratings for each area reflect the percentage of maximum possible score for each country.

Summary of scorecard findings

- Although areas for conservation have been identified, national implementation progress is rather slow for protecting these areas and for safeguarding biodiversity.
- National implementation progress has been rather slow to mainstream Arctic biodiversity into Arctic development planning and to reduce human disturbance outside protected areas.
- Arctic national strategies generally fail to include clear, concrete objectives and provisions for biodiversity.
- Most Arctic countries have not implemented measures to reduce air emissions from Arctic marine shipping.
- Arctic states have successfully established an administrative system for oil spill response, although concerns remain about a lack of on-the-ground capacity and infrastructure.
- Arctic states are progressing toward the implementation of a framework to address black carbon emissions, and are taking early actions to reduce these emissions.
- Arctic states have established observation systems to monitor changes in the cryosphere.
- Arctic states have been slow to implement ecosystem-based management as developed and approved by the AC.

Table 1 – Total Score for national implementation action progress in each assessment area.

ARCTIC STATES	SCORE FOR ASSESSMENT AREAS					
	Conservation Areas	Biodiversity	Shipping	Cooperation on Oil Spills	Black Carbon and Adaptation	EBM
Canada	 6/11 (55%)	 5/17 (29%)	 5/11 (45%)	 19/24 (79%)	 8/8 (100%)	 7/12 (58%)
Kingdom of Denmark	 7/11 (64%)	 6/17 (35%)	 5/11 (45%)	 22/24 (92%)	 7/8 (88%)	 3/12 (25%)
Finland	 3/4 (75%)	 7/14 (50%)	 2/4 (50%)	 12/12 (100%)	 6/7 (86%)	 4/6 (67%)
Iceland	 2/8 (25%)	 3/17 (18%)	 3/11 (27%)	 21/24 (88%)	 4/8 (50%)	 2/12 (17%)
Norway	 7/11 (36%)	 6/17 (35%)	 4/11 (36%)	 21/24 (88%)	 6/8 (75%)	 8/12 (67%)
Russia	 6/11 (55%)	 7/17 (41%)	 3/11 (27%)	 20/24 (83%)	 7/8 (88%)	 2/12 (17%)
Sweden	 1/4 (25%)	 7/14 (50%)	 2/4 (50%)	 12/12 (100%)	 6/7 (86%)	 3/6 (50%)
United States	 7/11 (64%)	 10/17 (59%)	 3/11 (27%)	 23/24 (96%)	 6/8 (75%)	 3/12 (25%)

Implementation of collective actions (as the Arctic Council)

Table 2 presents scores and ratings for assessment subject areas with regards to the implementation performance of the AC. It rates the collective actions that Arctic countries have taken through the AC, based on the AC's score for cooperative action. This is essentially an assessment of the AC's performance in carrying out its own direction.

The AC consistently delivered on its commitments. These results demonstrate that Arctic states' cooperation at the AC is extremely valuable at an analytical and policy/commitment-setting level, but that member states must make further national implementation efforts to secure a healthy Arctic and strengthen the credibility of AC decisions and operations.

Table 2 – Total Score for Arctic Council action progress for each assessment area

SCORE FOR ASSESSMENT AREAS					
Conservation Areas	Biodiversity	Shipping	Cooperation on Oil Spills	Black carbon and Adaptation	EBM
					
1/1 100%	2/6 33%	12/12 100%	7/9 78%	5/5 100%	1/4 25%

A

More than 80% of the maximum score

Full or substantive implementation of the direction.

B

60-80% of the maximum score

Encouraging progress on implementation of the direction.

C

40-60% of the maximum score

Some progress on implementation of the direction.

D

Less than 40% of the maximum score

Little progress on implementation of the direction.

Examples of National Implementation Deliverables

Conservation Areas
Finland completed a comprehensive gap analysis of its protected-area network during 2013-2016 through the Natura 2000 process. Earlier studies showed that conservation gaps existed only in southern Finland; no gaps have been found in Finland's Arctic areas (including Lapland).

Biodiversity
The Kingdom of Denmark supported Greenland Ecosystem Monitoring (GEM), whose mission is: "To provide science-based input on the state of the environment in Greenland and the Arctic for Danish, Greenlandic and international policy development, adaptation and administration." GEM also acts as an early-warning system for the world regarding climate change and its impacts.

Shipping
Canada established the Tarium Niryutait Marine Protected Area in the Beaufort Sea in 2010 and enacted regulations prohibiting shipping in that area. The Marine Protected Area also aims to preserve traditional hunting in the Inuvialuit Settlement Region.

Cooperation on Oil Spill Prevention, Preparedness and Response
The United States has a system to monitor oil pollution incidents under its jurisdiction and authorises the US Coast Guard to monitor all marine pollution, including oil spills. The State of Alaska's Prevention and Emergency Response Program aims to prevent and mitigate effects of oil spills.

Black Carbon and Adaptation
Russia developed systems to observe climate change and its effects on the Russian Federation. The Russian Hydrometeorological Service monitors sea ice and a wide range of other parameters in the Russian Arctic.

Ecosystem-based Management
Norway's marine-management plans for the Norwegian and Barents seas contain a holistic and comprehensive set of ecological objectives and include ecosystem-status reports. The objectives are part of the larger review of the plans, which occurs every 4-10 years.

The following chapters include several examples where Arctic states have made good progress. These successes in individual Arctic states must be shared with, and replicated by, other countries as much as possible.

LIMITATIONS OF THE SCORECARD

Lack of specificity in direction

Many AC recommendations and direction are not readily measurable because they fail to identify responsible parties, or don't call for specific actions and deadlines. As a result, WWF excludes a number of AC decisions and recommendations from consideration in this Scorecard.

Consistency of reporting data

Arctic states report on their implementation efforts using various methods, information and formats, making it difficult to compare performance. Our Scorecard assessment relies only on information publicly available and accessible to non-governmental organizations.

Lack of Arctic-specific information

Few states produce reports dedicated to work done in the Arctic. This is particularly true for reports regarding ecosystem-based management.

Applicability of direction

Some limitations stem from the differences between Arctic states:

- Many AC directions are marine-specific and do not apply to countries without Arctic coastlines (Sweden and Finland).
- Conservation measures for areas that can provide refuge to high-Arctic species apply only to countries with appropriate ecosystems: Canada, the Kingdom of Denmark, Norway, Russia and the United States.
- Criteria related to promoting the active involvement of Indigenous peoples in the management and sustainable use of protected areas does not apply domestically to Iceland.

To accommodate these differences, WWF has assessed some states using a lower maximum of potential total points. This enables a proportional comparison of scores.

Conservation assessment

The selection of measurable AC direction (ministerial decisions contained in ministerial declarations, policy recommendations, guidelines, framework plans and agreements) is based on WWF's view of their direct relevance to conservation and does not support a full performance assessment of the AC and member states. WWF does not evaluate Council direction related to human health, culture, telecommunications, economic development and social issues. WWF encourages other parties to undertake such an analysis and would gladly share lessons learned in designing the Scorecard.

Effectiveness of implementation

WWF often uses a binary system (e.g. a policy was either enacted or not enacted) and analyses involve paper-based reviews. Some – but not all – indicators recognise efforts and steps toward implementation of AC direction. WWF does not assess ultimate effectiveness or actual impacts on Arctic environments.

Also, it is important to note that WWF did not conduct a qualitative assessment of the implementation of AC direction by Arctic states. An in-depth qualitative follow-up would definitely enhance our understanding of where states are at with implementing their commitments, the common challenges encountered and areas where success is more likely. This type of analysis can be pursued with subsequent versions of the Scorecard.

Assessment of commitments

WWF assesses only the actions and commitments each Arctic state made specifically in response to AC direction. WWF recognises that these commitments are sometimes simple, unambitious, incomplete and reflect work already underway. As a result, some commitments may be fulfilled with little or no new activity. This is especially true for areas such as oil spill prevention, preparedness and response or climate change mitigation. WWF considers that the commitments made by Arctic states to address oil spills and climate change do not align with the urgency and complexity of these environmental threats. WWF assesses how well a state fulfills a commitment, regardless the appropriateness of the level of ambition in the commitment.

Relative importance of scores

The maximum scores associated with each criterion do not necessarily reflect the relative importance of the measure or area. This does not detract from the overall effectiveness of the Scorecard as a tool to assess collective action and to compare the actions of one nation with those of another.

National-level assessment

Subnational actions and bilateral cooperation were not assessed, as the Scorecard focuses on the national and pan-Arctic levels of governance. However, many actions can be taken at the subnational and bilateral levels to implement AC direction. Countries that self-assess may capture this information.

Limited timeline for implementation and actions taken prior to Arctic Council direction

WWF assesses actions that respond to AC direction (as per direction starting from Salekhard declaration 2006). When appropriate information was available, WWF also awarded points for actions taken prior to formulation of the relevant AC direction.

LET'S TALK ABOUT IMPLEMENTATION

Details on the efforts of individual Arctic states and AC actions for each indicator and criterion are available on request through the WWF website:

panda.org/acscorecard

CONSERVATION AREAS

Pressure on the Arctic's ecosystems is rapidly growing. Industrial fishing, the disruption of habitats, marine shipping, oil and gas development, and mining all have negative impacts on Arctic biodiversity. Furthermore, climate change represents the most serious threat to Arctic biodiversity and exacerbates all other threats.

National Indicators

1. Identification of Conservation Areas
2. Protecting Areas of Ecological Importance
3. Mechanisms to Safeguard Connectivity

Arctic Council Indicators

1. Cooperation on Biologically, Ecologically and Culturally Important Areas

To reduce threats to Arctic biodiversity and communities dependent on biodiversity, conservation areas should be created to manage or prevent the negative effects of human activities on areas of ecological and cultural significance. The present status of terrestrial protected areas in the Arctic region reveals positive trends. Terrestrial protected areas cover about 20.2% of the Arctic, exceeding the goal set by the UN Convention on Biological Diversity 2020 Aichi target. But only 4.7% of Arctic marine areas are protected; Aichi targets require 10%. Further action is required to establish comprehensive and ecologically coherent networks of specially-managed marine and terrestrial areas in the region.

Indicators for the assessment are based on the outcomes of the *Oil and Gas Assessment*, the *Arctic Offshore Oil and Gas Guidelines*, the AMSA and the ABA. Many criteria for this area relate to the 2013 ABA policy recommendations. Given that these recommendations are less than three years old, WWF recognises that AC member states have had little time to develop policies and establish conservation areas.

Multiple AC directions advance the identification and safeguarding of conservation areas. As indicated below, however, AC reports use various terms to refer to conservation areas. In the Scorecard, the term Conservation Area refers to all of these examples.

ARCTIC COUNCIL REPORT	TERM
Arctic Marine Shipping Assessment:	Areas of Heightened Ecological and Cultural Significance
Oil and Gas Assessment:	Sensitive areas
Arctic Offshore Oil and Gas Guidelines:	Ecologically and culturally sensitive areas
Arctic Biodiversity Assessment:	Large areas of ecologically important marine, terrestrial and freshwater habitats

ARCTIC STATES ASSESSMENT

Results are presented in Table 3.

Indicator 1: Identification of Conservation Areas

One point was awarded for each of the following achievements:

- identified marine areas of heightened ecological significance;
- identified marine areas of heightened cultural significance;
- identified marine areas that are sensitive to oil spills;
- completed a gap analysis of networks of terrestrial protected areas;
- identified areas that can act as a refuge for the high Arctic biodiversity.

Only Norway scored five points. All AC member countries with Arctic Ocean shorelines and waters identified marine areas of heightened ecological significance. The Kingdom of Denmark, Norway, Russia and the United States identified some marine and coastal areas of heightened cultural significance, although this work is fragmented and incomplete.

All countries with high Arctic lands and waters (Canada, the Kingdom of Denmark, Norway, Russia and the United States) earned one point for identifying refuge areas in the high Arctic, regardless of whether the areas were identified before or after the approval of the related ABA policy recommendation. However, awarded points do not necessarily suggest that all areas that can act as a refuge for unique biodiversity in the high Arctic are identified. WWF still sees a need for further work, especially in relation to marine areas.

Although most countries scored well (Table 3), the process of identifying conservation areas across the Arctic is not yet complete for both terrestrial and marine ecosystems. The Kingdom of Denmark, Russia and the United States have completed almost all the identification efforts, and therefore received four points. Denmark and the United States still need to complete a gap analysis of networks of terrestrial protected areas, and Russia still needs to identify marine areas that are sensitive to oil spills.

Indicator 2: Protecting Areas of Ecological Importance

WWF awarded one point to countries with Arctic Ocean shorelines and waters that have implemented protection measures for some identified ecologically and biologically important marine areas, and two points if all identified areas are protected.

All countries with Arctic Ocean shoreline and waters received one point for protecting some identified marine conservation areas. For example, Canada established the Anguniaqvia Niqiqyuam marine protected area (MPA), Norway established Framvaren, Tauterryggen and Saltstraumen MPAs, and Russia expanded the Russian Arctic National Park to offer protection to marine areas around the archipelago. No country received the full two points.

Also, countries received one point for each of the following actions contributing to protecting conservation areas:

- filling gaps in networks of terrestrial protected areas;
- implementing conservation measures for areas that can act as a refuge for high Arctic species (in countries where it is applicable);

- promoting the active involvement of Indigenous peoples in the management and sustainable use of protected areas (except for Iceland).

In Finland, the terrestrial protected-area network is very comprehensive, covering 30% of Lapland under Natura 2000. The representativeness of, and gaps in, protected-areas networks are evaluated nationally on a regular basis and by the European Union every six years. Finland also plans a national (including Lapland) project for 2017-2019 to evaluate the representativeness of protected areas under pressure due to climate change, intensive land use and cumulative effects of various stressors. Only Finland completed its Arctic terrestrial protected areas networks.

All countries with high Arctic lands and waters implemented conservation measures for areas that can act as a refuge for high-Arctic species, and earned one point. However, these results do not necessarily signify that all areas with refuge potential have been identified and protected, particularly in marine ecosystems.

In Sweden, the Saami communities manage most of the area of Laponia national parks. Overall more than half of eligible countries received one point for promoting the active involvement of Indigenous peoples in the management of protected areas.

Indicator 3: Mechanisms to Safeguard Connectivity

Not much performance data exists for this indicator of Arctic states' efforts to implement measures/mechanisms to ensure functional connectivity within and between protected areas. No country other than Russia systematically plans MPA networks. WWF did not award a point to any country for this criterion.

ARCTIC COUNCIL ASSESSMENT

The AC has provided a framework for identifying important conservation areas, and through various working groups, especially Protection of the Arctic Marine Environment (PAME) and Conservation of Arctic Flora and Fauna (CAFF), has offered guidance and general tools for member states to develop area-based conservation measures. However, the responsibility of establishing such measures and regimes resides with member states, and with international organizations for areas outside national jurisdiction.

Results are presented in Table 4.

Indicator 1: Cooperation on Biologically, Ecologically, and Culturally Important Areas

WWF aims to measure the AC's progress towards closer cooperation to advance conservation and management of biologically, ecologically or culturally significant areas. The PAME AC working group established a marine protected areas expert group as a cooperative mechanism for marine areas. Thus AC received one point.

In 2015, PAME published the *Framework for a Pan-Arctic Network of Marine Protected Areas* and continues to develop tools to guide Arctic states on how to develop MPA networks (e.g. P*AME MPA Network Toolbox - Area-based Conservation Measures and Ecological Connectivity*).

WWF welcomes the *Arctic Protected Areas: Indicator Report*, a joint effort of two AC working groups (CAFF and PAME), as an important step identifying a baseline for further work on defining networks of conservation areas.

The AC should further integrate its working groups to facilitate greater cooperation on marine, coastal and terrestrial ecosystems, as well as on culturally important areas for the entire Arctic, and to improve connectivity and representation.

CONCLUSIONS

Arctic states are advancing towards the identification of important biodiversity areas that may require conservation. However, the implementation of specific area-based protection measures such as marine protected areas or other management regimes is fragmentary. Arctic countries are not taking the comprehensive and systematic approach to planning ecological networks that is needed to safeguard connectivity and strengthen resilience to climate change.

WWF recommends that Arctic states complete the identification of culturally important areas in a rigorous, systematic way and take specific management and protection measures. There is still no agreed approach and methodology for the identification of culturally important areas.

Half the countries need to complete a gap analysis of their networks of terrestrial protected areas.

Canada, the Kingdom of Denmark, Norway, Russia, and the United States protected one or more areas that can act as a refuge for unique biodiversity in the high Arctic. However, these actions do not necessarily include all areas that can act as refuge for unique biodiversity in the Arctic. Further analysis, particularly analysis of potential climate change scenarios, is still needed.

More work is clearly required to implement protection measures for identified ecologically and biologically important marine areas. The lack of progress in filling geographic gaps for ecologically coherent networks of terrestrial, coastal and marine protected areas is a challenge for the whole region.

Although most countries scored B or C, overall analysis shows that work remains to be done to identify and protect the most important ecological and cultural areas. All countries need to speed up the process and work together to establish an effectively and equitably managed, ecologically representative and well connected system of protected areas and other effective area-based conservation measures that protect and promote the resilience of the biological diversity, ecological processes and cultural heritage of the Arctic.

Table 3 - Total Score - Conservation Areas: National Implementation Progress

ARCTIC STATES	POINTS FOR INDICATORS			TOTAL SCORE	RATING
	Identification of Areas	Protection of Areas	Connectivity		
Canada	3/5	3/5	0/1	6/11	C
Kingdom of Denmark	4/5	3/5	0/1	7/11	B
Finland	1/1	2/2	0/1	3/4	B
Iceland	1/4	1/3	0/1	2/8	D
Norway	5/5	2/5	0/1	7/11	B
Russia	4/5	2/5	0/1	6/11	C
Sweden	0/1	1/2	0/1	1/4	D
United States	4/5	3/5	0/1	7/11	B

A

More than 80% of the maximum score

Full or substantive implementation of the direction.

B

60-80% of the maximum score

Encouraging progress on implementation of the direction.

C

40-60% of the maximum score

Some progress on implementation of the direction.

D

Less than 40% of the maximum score

Little progress on implementation of the direction.

Conservation Areas: National Implementation Progress

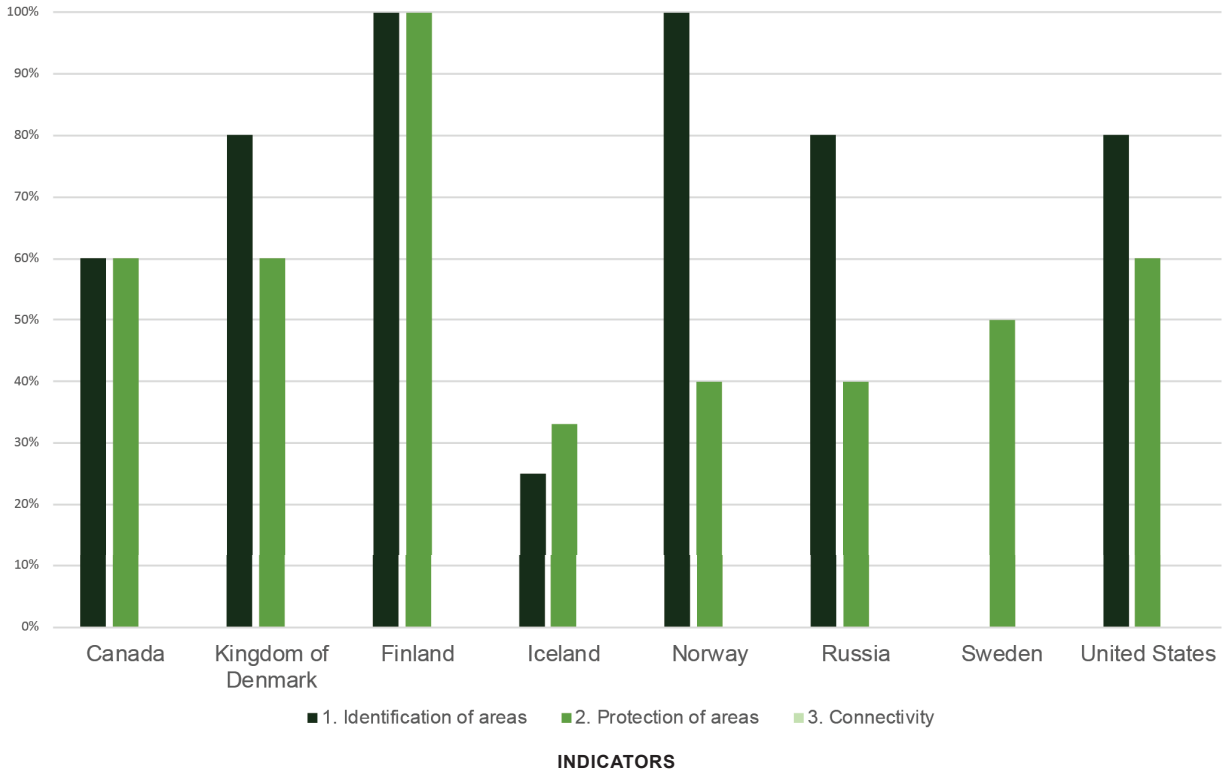

Table 4 – Total Score - Conservation Areas: Arctic Council implementation progress

	POINTS FOR INDICATOR	TOTAL SCORE	RATING
	1		
Arctic Council Action	1/1	1/1	A

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BIODIVERSITY

Biodiversity conservation in the Arctic is a major challenge, given ecosystems are in climate-driven (and increasingly, development-driven) flux and typically have simple food web structures. The magnitude and speed of change, along with growing threats, challenges the ability of Arctic biodiversity to provide ecosystem services to Arctic peoples.

National Indicators

1. Mainstreaming Biodiversity
2. Reducing Human Disturbance outside Protected Areas
3. Sustainable Management of Living Resources and Habitat
4. Biodiversity Research and Monitoring

Arctic Council Indicators

1. Arctic Biodiversity Assessment
2. Arctic Biodiversity Assessment Implementation Plan
3. Mainstreaming Biodiversity
4. Common Measures for Reducing Threat of Invasive Species
5. Pan-Arctic Conservation and Management Plans for Shared Species
6. Researching and Monitoring Biodiversity Stressors and Drivers

Arctic Biodiversity Assessment Key Finding 1:
"Arctic biodiversity is being degraded, but decisive action taken now can help sustain vast, relatively undisturbed ecosystems of tundra, mountains, fresh water and seas and the valuable services they provide."

WWF assessed efforts to reduce human impacts on biodiversity outside protected areas. There is slow progress across the Arctic in this arena.

Arctic states are slow to mainstream biodiversity and to incorporate strategies for resilience and adaptation of biodiversity in their plans for development, legislation, and management practices.

Arctic countries developed fishing technologies and practices to reduce by-catch of marine mammals, seabirds and non-target fish, as well as to avoid significant adverse impacts to benthic communities.

Arctic states demonstrate progress toward developing biodiversity monitoring systems.

ARCTIC STATES ASSESSMENT

This section of the Scorecard focuses on national implementation of the ABA policy recommendations, which called for implementation action from AC member states. In addition, one criterion was developed from CAFF's *Life Linked to Ice* report and another from the 2006 Salekhard Declaration. The ABA policy recommendations specific to conservation areas are considered in the Conservation Areas section of the Scorecard.

Results are presented in Table 5.

Indicator 1: Mainstreaming Biodiversity

To assess performance on mainstreaming biodiversity, the Scorecard awarded one point if biodiversity objectives and provisions were incorporated into plans specific to development in the Arctic for either terrestrial or marine areas. A maximum of two points was awarded if these objectives and provisions were incorporated into both terrestrial and marine ecosystems.

Countries with a plan (or plans) for Arctic development that incorporate resilience and adaptation of biodiversity to climate change for either terrestrial or marine areas received one point and two points if plans address these factors in both terrestrial and marine areas.

For these criteria, WWF relied on a broad definition of plan, including national strategies. For federal states (Canada, Russia and the United States) WWF did not analyze subnational development plans, such as the emerging Nunavut Land Use Plan. To recognise the different jurisdictional systems of Arctic countries at the subnational level, WWF hopes to collaborate with Arctic countries and collect information about subnational plans. Future Scorecards can follow up on this indicator with additional data.

Russia's Arctic Development Strategy calls for ensuring the conservation of biological diversity of Arctic flora and fauna during both the expansion of economic activities and global climate change. Russia received two points.

Sweden was the only Arctic state to incorporate resilience and adaptation of biodiversity to climate change into its Arctic strategy, and received one point.

WWF also assessed progress toward completing a national evaluation of the ecosystem services provided by Arctic biodiversity, and toward creating regional development plans that account for Arctic ecosystem services. Only the Kingdom of Denmark received a point for completing a national evaluation. Finland received one point as the only country that governs state-owned lands with multi-objective natural-resources management plans that prioritise the maintenance of biodiversity.

Indicator 2: Reducing Human Impacts Outside Protected Areas

WWF assessed whether each country had developed guidelines to reduce human impacts outside protected areas in habitats critical for Arctic species during sensitive life stages. The United States Fish and Wildlife Service and National Marine Fisheries Service published a handbook that outlines the processes that must be followed to ensure that critical habitats of endangered species are considered when planning projects and activities. The United States was the only country to receive a point for this criterion. It should be noted, however, that US guidelines consider only endangered species, while the AC requests action for all Arctic species regardless of their status.

WWF awarded one point to countries that have identified areas outside of protected areas that are critical during sensitive life stages of Arctic species. Countries received one point for implementing appropriate spatial and temporal measures in some important areas critical during sensitive life stages of Arctic species that are outside of protected areas and two points for implementing such measures in all important areas. Russia received one point for identifying terrestrial and marine areas that are critical for sensitive life stages of Arctic species that are outside of protected areas. The United States received a point for listing critical habitats in a federal registrar and stating their specific locations.

Indicator 3: Sustainable Management of Living Resources and Habitat

WWF assessed current practices and legislation for sustainable management of living resources and habitat. Points were awarded as follows:

- one point if the country developed fishing practices to reduce bycatch of marine mammals, seabirds and non-target fish;
- one point if the country developed fishing practices to avoid significant adverse impacts to the seabed;
- one point if these practices are mandatory under specific legislation or regulations.

Norway utilises various measures to reduce bycatch, including sorting grids, discard bans, area closures and banning of harmful gear in vulnerable coral-reef areas. Norway received three points. The United States enacted the Arctic Fisheries Management Plan in 2009, which closed commercial fishing north of the Bering Strait. The United States and Canada also earned three points.

Indicator 4: Biodiversity Research and Monitoring

WWF assessed how countries dealt with the need to research and monitor Arctic biodiversity. If a country identified measures for detecting early warnings of sea-ice associated biodiversity change and triggering conservation actions, it earned one point. No country could show that such measures had been identified. Clearly, more work is needed to develop measures that can detect early warnings of biodiversity change and trigger conservation actions.

One point was awarded to countries that research stressors and drivers of relevance to Arctic biodiversity, with a focus on stressors expected to have rapid and significant impacts, and on issues where knowledge is lacking. All Arctic countries except Iceland received a point for this criterion.

One point was awarded to countries that monitor stressors and drivers of relevance to Arctic biodiversity, with a focus on stressors that are expected to have rapid and significant impacts and on issues where knowledge is lacking. All Arctic countries except Canada and Iceland received a point for this criterion.

All countries received one point for providing data that increased knowledge and improved the management of biodiversity in the Arctic through the Circumpolar Biodiversity Monitoring Programme (CBMP).

ARCTIC COUNCIL ASSESSMENT

Results are presented in Table 6.

Indicator 1: Arctic Biodiversity Assessment (ABA)

In the 2006 Salekhard Declaration, AC ministers requested greater assessment of Arctic biodiversity. The Council delivered the ABA, acknowledged by the 2013 Kiruna Declaration, and developed and approved policy recommendations based on the ABA. By ministerial decision, all Arctic states are encouraged to follow up on these. The Arctic Council received one point for this action.

Indicator 2: Arctic Biodiversity Assessment Implementation Plan

Actions for Arctic Biodiversity 2013-2021 provides the framework for the implementation of the ABA policy recommendations. The document is reviewed and updated every two years, and it complements the AC working groups' work plans on biodiversity issues. The AC received one point for this criterion.

Indicator 3: Mainstreaming Biodiversity

Actions for Arctic Biodiversity 2013-2021 outlines the actions relevant to all 17 ABA policy recommendations, as well as to individual recommendations, including policy recommendation 4, that call for mainstreaming biodiversity into all AC work. WWF supports the AC's efforts to mainstream biodiversity, along with the transparency of its efforts. WWF did not award a point for this criterion, however, as the task of mainstreaming is incomplete. Biodiversity provisions must still be included in all of the AC's work streams.

Indicator 4: Common Measures for Reducing Threat of Invasive Species

Actions for Arctic Biodiversity: Action Ad

Encourage states to develop national implementation plans consistent with this implementation plan for the ABA recommendations as an essential adaptation measure.

The AC is currently developing a strategy for the prevention and management of invasive species (the finalised action plan was released at the May 2017 ministerial meeting). The incorporation of common protocols for the early detection and reporting of non-native invasive species into monitoring plans under the CBMP (ABA policy recommendation 9) is scheduled to be completed during following chairmanships. The task of developing common measures will need to continue beyond the US chairmanship. The point could be awarded in a future Scorecard if the Council develops common measures for early detection and reporting, identifying and blocking pathways of introduction, and sharing best practices and techniques for monitoring, eradication and control of invasive non-native species.

Indicator 5: Pan-Arctic Conservation and Management Plans for Shared Species

Actions for Arctic Biodiversity 2013-2021 indicates that the implementation of ABA policy recommendation 10b will be completed during the third phase (2017-2019). The implementation of this policy recommendation is not yet complete, so no point was awarded. The AC has taken steps toward implementation. Strategies will be based on the identification of relevant species, which is already underway. A future Scorecard will award one point once the AC develops conservation and management plans for identified shared species that are, or will potentially be, harvested or commercially exploited.

Indicator 6: Researching and Monitoring Biodiversity Stressors and Drivers

Actions for Arctic Biodiversity 2013-2021 outlines the steps toward complete implementation of ABA policy recommendation 16, including indicator development. The work on two deliverables on “robust indicators” began during the 2015-2017 timeframe: *Land Cover Change Index* (16.3 b.) and the *Arctic Migratory Bird Index* (16.3. d.). The update of the *Arctic Biodiversity Trends 2010: Selected Indicators of Change* report is marked as “ongoing” (16.3. a.). A future Scorecard could award one point once the AC develops robust quantitative indicators for biodiversity stressors through the CBMP.

CONCLUSIONS

Three years is a short time to develop strategies that follow the 2013 ABA policy recommendations. Many of the evaluated national strategies were developed before the release of the ABA policy recommendations. WWF recommends that future national biodiversity-strategies, plans and updates be developed with the objective of implementing the ABA policy recommendations. WWF also expects more direct references to Arctic biodiversity targets in National Biodiversity Strategies and Action Plans as developed within the Convention on Biological Diversity framework. The direction and ambitions of the AC are evolving as new knowledge emerges; implementation actions also continue to evolve.

WWF recommends that Arctic states develop specific national implementation-plans consistent with *Actions for Arctic Biodiversity 2013-2021*, as initially scheduled (for 2015-17). WWF assumes that these plans are well underway and looks forward to their presentation at the Second Arctic Biodiversity Congress in 2018.

Although Finland, Russia, Sweden and the United States have slightly higher scores than the other Arctic countries, progress on the protection of Arctic biodiversity has been slow. All countries need to speed up the mainstreaming of Arctic biodiversity, as well as to reduce human disturbances outside protected areas. Arctic strategies generally fail to provide clear and concrete objectives and provisions for biodiversity in their development plans. Arctic countries are taking some action to sustainably manage living resources and habitats, and to research and monitor biodiversity.

The AC did not yet deliver all actions as directed by the ABA policy recommendations. However, WWF welcomes the *Actions for Arctic Biodiversity 2013-2021* implementation plan, which outlines a pathway to the fulfillment of the ABA policy recommendations.

Table 5 - Total Score - National Biodiversity Implementation Action Progress

ARCTIC STATES	POINTS FOR INDICATORS				TOTAL	RATING
	Mainstreaming & resilience	Disturbance outside protected areas	Management of living resources	Research and monitoring		
Canada	0/6	0/4	3/3	2/4	5/17	D
Kingdom of Denmark	1/6	0/4	2/3	3/4	6/17	D
Finland	1/4	1/4	2/3	3/3	7/14	C
Iceland	0/6	0/4	2/3	1/4	3/17	D
Norway	0/6	0/4	3/3	3/4	6/17	D
Russia	2/6	1/4	1/3	3/4	7/17	C
Sweden	1/4	1/4	2/3	3/3	7/14	C
United States	0/6	4/4	3/3	3/4	10/17	C

A

More than 80% of the maximum score

Full or substantive implementation of the direction.

B

60-80% of the maximum score

Encouraging progress on implementation of the direction.

C

40-60% of the maximum score

Some progress on implementation of the direction.

D

Less than 40% of the maximum score

Little progress on implementation of the direction.

Biodiversity: National Implementation Progress

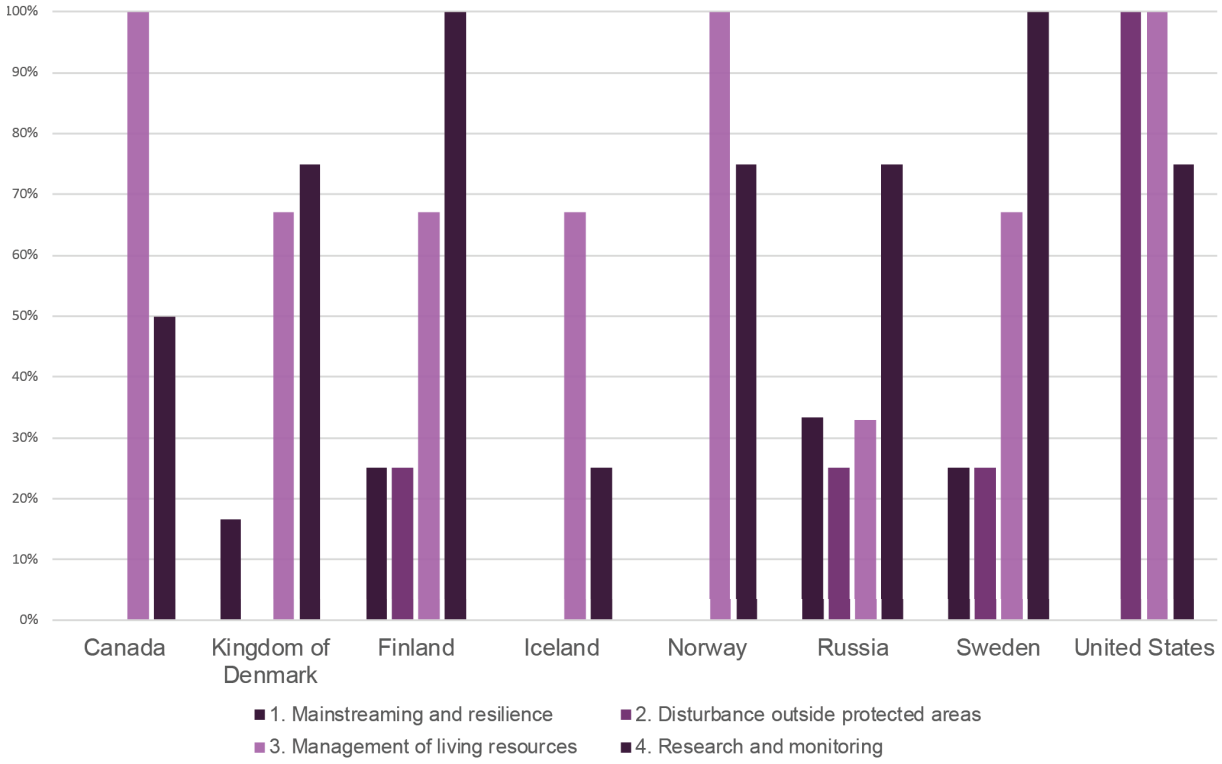


Table 6 - Total Score – Biodiversity: Arctic Council implementation progress

	POINTS FOR INDICATORS						TOTAL SCORE	RATING
	1	2	3	4	5	6		
Arctic Council Action	1/1	1/1	0/1	0/1	0/1	0/1	2/6	D

SHIPPING

Arctic shipping – both destinational and transit – has increased significantly during the past decade. This trend is projected to continue due to increased demand for resources and shortened routes as Arctic shipping lanes become free of ice for longer periods. Both factors increase the risk of major environmental impacts.

National Indicators

1. Areas of Heightened Ecological and Cultural Significance
2. Protection from Invasive Species
3. Reducing Air Emissions from Shipping
4. Arctic Marine Traffic System

Arctic Council Indicators

1. Completion of the Arctic Marine Shipping Assessment
2. Implementing AMSA Policy Recommendations

Selected policy recommendations of AMSA (PAME; 2009) informed the development of indicators and criteria for this area. Shipping recommendations of the *Arctic Ocean Review* (AOR, PAME; 2013) were not considered relevant, given that most outline cooperative actions to finalise and implement the International Maritime Organization (IMO) Polar Code. Direction from AC declarations regarding shipping mostly requests pan-Arctic cooperative actions and active cooperation within the IMO to develop relevant measures to reduce the environmental impacts of shipping in Arctic waters. Therefore, AC Declarations are not relevant to the measurement of progress toward national implementation. AC direction specific to oil pollution by ships is considered in the section on cooperation on oil spill prevention, preparedness and response. The IMO Polar Code, which entered into force in January 2017, covers several measures to enhance marine safety and environmental protection in the Arctic. The Scorecard is not an assessment of the Polar Code implementation.

The assessment revealed the following key trends:

- Arctic states are taking steps to protect areas of heightened ecological and cultural significance from the impacts of Arctic shipping, although implementation is not yet complete.
- Arctic states are very slow in reducing air emissions from shipping.
- Arctic states are acting to prevent the introduction of invasive species.
- Arctic states are establishing marine-traffic monitoring systems.

ARCTIC STATES ASSESSMENT

Results are presented in Table 7.

Indicator 1: Areas of Heightened Ecological and Cultural Significance

If a country implemented measures to protect against impacts of Arctic marine shipping for some areas of heightened ecological significance, one point was awarded. If a country implemented protection measures in all areas of heightened ecological significance, two points were awarded. Canada, the Kingdom of Denmark, Norway and Russia received one point for implementing protection measures for some areas of heightened ecological significance. For instance, Canada established the Tarium Niryutait Marine Protected Area in the Beaufort Sea with regulations that prohibit shipping in the area (with exceptions for public safety, law enforcement and national security). The Kingdom of Denmark's regulations for the Melville Bay Nature Reserve specifically prohibit shipping. No country received two points.

For the second criterion, one point was awarded to countries that implemented protection measures in some areas of heightened cultural significance; two points were awarded for protection measures in all areas of heightened cultural significance. Only Canada and the Kingdom of Denmark established measures for some of these areas. For instance, the Tarium Niryutait Marine Protected Area also aims to preserve traditional hunting in the Inuvialuit Settlement Region.

Indicator 2: Protection from Invasive Species

There are few international shipping agreements, ratified or in the process of being ratified, that address environmental threats and impacts from maritime transport, and are relevant to the Arctic. WWF uses the ratification of the Ballast Water Management Convention (BWMC) as the first criterion under this indicator. One point was awarded for ratifying this convention; all Arctic countries except Iceland and the United States received one point.

WWF awarded one point to countries with legislation or regulations relating to the prevention and management invasive species in Arctic waters. All countries except Russia received one point.

Arctic Marine Shipping Assessment

"As climate and sea ice conditions continue to change, the timing and movements of the animals' activity will also be modified, making predictions of the potential interactions between shipping and animals increasingly complex."

Indicator 3: Reducing Air Emissions from Shipping

Emissions of greenhouse gases (GHGs), Nitrogen Oxides (NOx), Sulfur Oxides (SOx) and Particulate Matter (PM) harm the environment and human health. One point was awarded for each of the following:

- State has national regulations aiming to reduce air emissions from Arctic shipping. The Kingdom of Denmark complies with the EU Directive 2016/2284 on the reduction of national emissions of certain atmospheric pollutants (sulphur dioxide, nitrogen oxides, and others (Art. 1(1)). However, EU regulations do not apply to Greenland, so no countries were awarded a point for this criterion.
- State has regulatory requirements, including economic incentives (e.g. tax credits) to switch technologies or adopt practices (e.g. scrubbers, liquefied natural gas, slow steaming, etc.). Legislation in the United States outlines vessel-discharge requirements, including discharge standards for exhaust-gas-scrubber wastewater. As a result, the United States is the only country that received one point for this criterion.
- State has sulfur and nitrogen emission-control areas and/or emissions restrictions for all Arctic waters. Only Iceland earned a point for this criterion.
- State bans the use of heavy fuel oil in all Arctic waters. No country earned a point for this criterion. WWF welcomes Norway's ban on the use of heavy fuel oil around Svalbard – the only such initiative in the Arctic.

Overall, Arctic countries have taken few actions to reduce these emissions.

Canada and the United States exclude their Arctic waters from the North American Emission Control Area (ECA). WWF recommends that Arctic states take collective action to establish an ECA across the Arctic Ocean, as is currently the case for the Baltic Sea and North Sea.

Indicator 4: Arctic Marine Traffic System

WWF awarded one point to countries with national marine-traffic monitoring systems covering Arctic waters. All countries earned this point and progress has been made on this criterion. The Marine Exchange of Alaska, a public-private partnership, is likely the world's most advanced ship-surveillance and monitoring system. Norway also established a sophisticated system. However, WWF did not assess the comprehensiveness of these systems.

ARCTIC COUNCIL ASSESSMENT

Indicators and criteria were based on the AC declarations signed in Salekhard and Tromso to assess AC actions related to the completion of the AMSA and the implementation of its policy recommendations.

Results are presented in Table 8.

Indicator 1: Completion of the Arctic Marine Shipping Assessment

Arctic Council received one point for completing the AMSA for the Sixth Ministerial Meeting.

The Council was awarded another point for ensuring that the AMSA included necessary information on traditional uses of the offshore by Arctic Indigenous peoples. Under "Protecting Arctic People and the Environment," the AMSA initiated a survey of Arctic Indigenous Marine Use.

Indicator 2: Implementing AMSA Policy Recommendations

WWF assesses the AC's follow-up actions after the publication of the 2009 AMSA and the approval of its recommendations by Arctic states. One point was awarded for implementation of each recommended AC action (I(C), I(D), I(E), II(A), II(B), II(H), III(A), III(B), III(C)). Another point was awarded for monitoring these actions. The AC received a perfect score of 10 points for this indicator.

CONCLUSIONS

During the eight years since the publication of the AMSA, many actions have been taken to implement AMSA policy recommendations. However, more actions are needed to complete national implementation in general and particularly to reduce air emissions and to protect identified areas of heightened ecological and cultural significance from the impacts of Arctic marine shipping.

As the AC is now contemplating an update of the AMSA policy recommendations, it is important to note that some recommendations are not fully implemented at the national level and that AMSA remains a key strategic guide to meeting the many challenges of increased Arctic shipping.

The follow-up actions listed in each of the biennial reports on the *Status on Implementation of the AMSA 2009 Report Recommendations* (2011, 2013, 2015) by the AC remains a significant accomplishment in terms of the AC's transparency and accountability. The mere existence of the *Status of Implementation*

reports is remarkable. They clearly are an example of successful monitoring of AC actions and deserve to be replicated in other areas.

Although shipping is an area where countries have made tangible progress, many AMSA commitments remain unfulfilled and more action is required at the national level and through the International Maritime Organization (IMO).

Table 7 - Total Score - Shipping: national implementation progress

ARCTIC STATES	POINTS FOR INDICATORS				TOTAL SCORE	RATING
	Protection of Areas	Invasive Species	Air Emissions	Traffic System		
Canada	2/4	2/2	0/4	1/1	5/11	C
Kingdom of Denmark	2/4	2/2	0/4	1/1	5/11	C
Finland	N/A	2/2	0/2	N/A	2/4	C
Iceland	0/4	1/2	1/4	1/1	3/11	D
Norway	1/4	2/2	0/4	1/1	4/11	D
Russia	1/4	1/2	0/4	1/1	3/11	D
Sweden	N/A	2/2	0/2	N/A	2/4	C
United States	0/4	1/2	1/4	1/1	3/11	D

A

More than 80% of the maximum score

Full or substantive implementation of the direction.

B

60-80% of the maximum score

Encouraging progress on implementation of the direction.

C

40-60% of the maximum score

Some progress on implementation of the direction.

D

Less than 40% of the maximum score

Little progress on implementation of the direction.

Shipping: National Implementation Progress

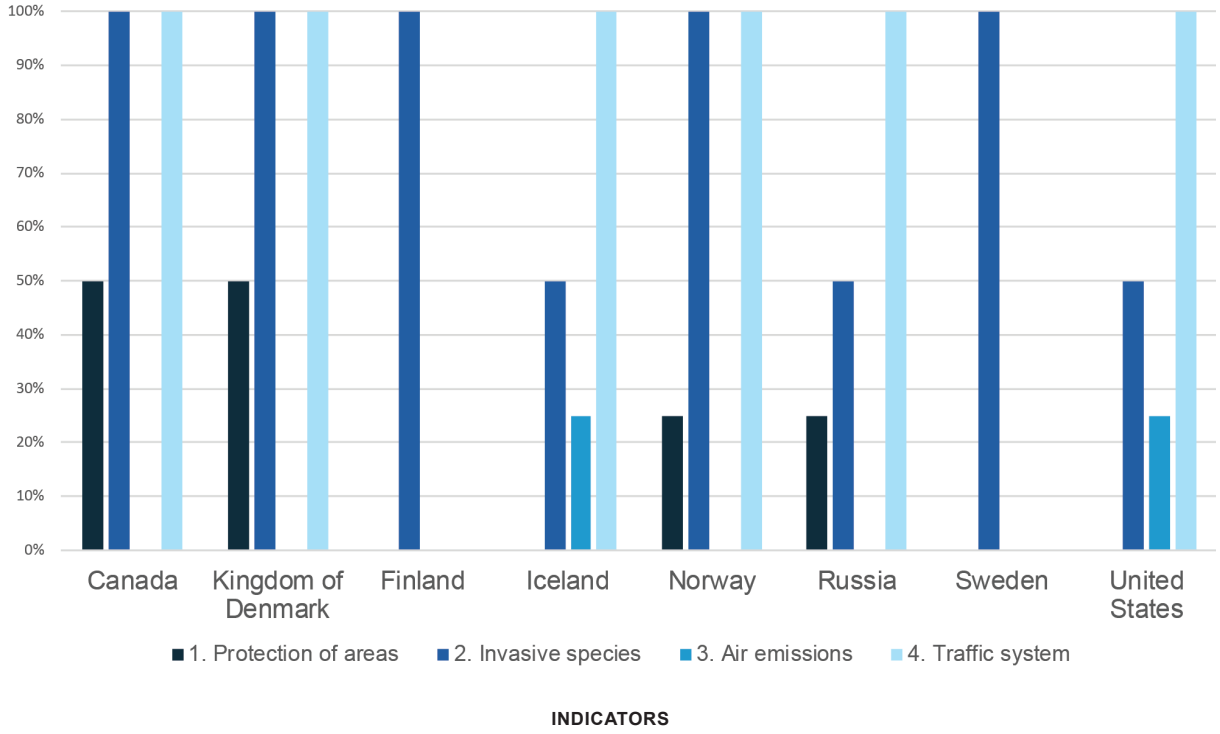
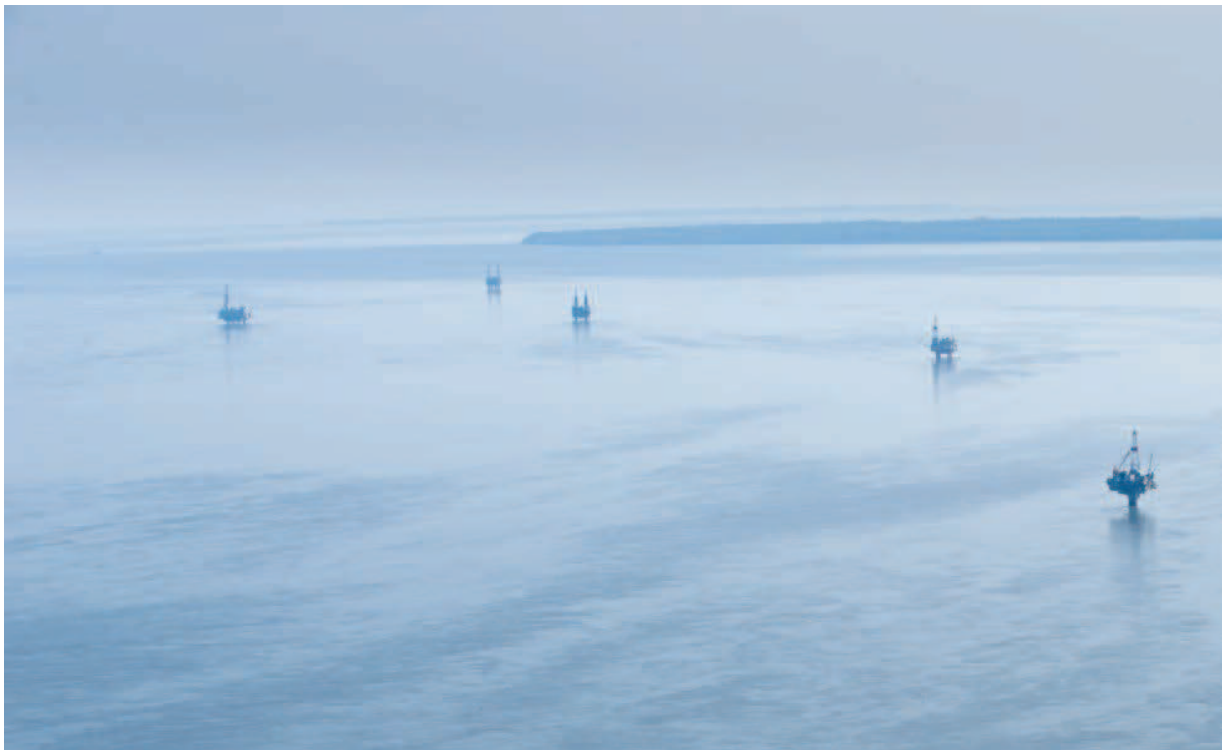


Table 8 - Total Score – Shipping: Arctic Council implementation progress

	POINTS FOR INDICATORS		TOTAL SCORE	RATING
	1	2		
Arctic Council Action	2/2	10/10	12/12	A



COOPERATION ON OIL SPILL PREVENTION, PREPAREDNESS AND RESPONSE

Oil spills from both shipping and oil and gas development represent significant threats to ecosystem health.

National Indicators

1. National Contingency Plans for Preparedness and Response
2. Authorities and Capacity for Oil Pollution Response
3. Oil Spill Monitoring and Compliance
4. Funding for Prevention and Response Measures
5. Measures to Control Oil and Gas Activities in Sensitive Areas
6. Oil Extraction and Conservation Areas

Arctic Council Indicators

1. Completion of the Oil and Gas Assessment
2. Completion of the Revised Arctic Offshore Oil and Gas Guidelines 2009
3. Completion of Behaviour of oil and other Hazardous Substances in Arctic waters (BoHaSA)
4. Major Preparedness and Response Deliverables
5. Oil Spill Prevention Cooperation

Despite a recent drop in oil prices and recent decisions by some Arctic governments and international companies, long-term planning for oil and gas development in the Arctic is underway. The equipment and techniques used in standard responses to oil spills are ineffective in the Arctic due to harsh weather, long periods of darkness, high waves, strong winds, remoteness and sea ice.

AC direction for oil spills during 2006-2013 focused only on a minimum level of administrative prevention, preparedness and response, and recognised what it is already in place. Overall, Arctic states perform well against these unambitious commitments. The provisions of the 2013 *Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic* (MOPSA) are very general and high level, as well as unambitious because they do not address specific response actions, standards, infrastructure development, availability and requirements for equipment and other areas important for effective preparedness and response operations. The Scorecard is limited to the review of existing plans, work program and regulations, and does not assess whether response capacity and funding are sufficient for actual oil spill responses. The Scorecard does not analyze response gaps.

WWF believes there are major gaps in Arctic oil spill preparedness and response. In particular, no effective technology exists to recover oil on, in and under ice. In addition, insufficient infrastructure is in place, there are no unified standards for operations, little on-shore capacity and insufficient training for local communities.

ARCTIC STATES ASSESSMENT

The assessment is based on the following AC products: 2013 *Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic* (MOSPA); *Recommended Practices for Arctic Oil Spill Prevention* (EPPR; RP3; 2013); the *Arctic Offshore Oil and Gas Guidelines* (AOOGG) (PAME; 2009); *Arctic Oil and Gas Assessment 2007* (OGA, AMAP, 2007).

Results are presented in Table 9.

Indicator 1: National Contingency Plans for Preparedness and Response

WWF assesses each country on five criteria related to national contingency plans for preparedness and response. Countries earn one point for each of the following:

- the State developed a contingency plan (or plans) that accounts for preparedness and response to oil pollution incidents in Arctic waters;
- contingency plan(s) account for both particular activities and locales most likely to give rise to or suffer from an oil pollution incident and anticipated risks to areas of special ecological significance;
- contingency plan(s) include the organizational relationships among the various public or private bodies involved, and take into account guidelines developed pursuant to MOSPA and other relevant international agreements;
- the State has clear reference(s) to the application of the precautionary approach in the national regulations of Arctic oil and gas activities;
- the State has clear reference(s) to the application of the polluter-pays principle in the national regulations of Arctic oil and gas activities.

Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic

"Conscious of the threat from marine oil pollution to the vulnerable Arctic marine environment and to the livelihoods of local and indigenous communities"

Most Arctic countries are implementing these actions systematically and are performing well in this respect. For instance, Greenland requires companies holding exploration licenses for specific blocks to create contingency plans. The Greenlandic Mineral Resources Act includes the polluter-pay principle and the United States' Oil Pollution Act 1990 requires that the liable party pay for damages.

Indicator 2: Authorities and Capacity for Oil Pollution Response

The next indicator relates to organizational steps to deal with the risks of oil pollution incidents. The first criterion assesses the structure of a state's national system for responding to oil pollution incidents. Countries earn one point for the existence of each of the following:

- a competent national authority or authorities responsible for oil pollution preparedness and response;
- a national 24-hour operational contact point or points responsible for the receipt and transmission of oil pollution reports;
- an authority or authorities entitled to act on behalf of the state to request or to render assistance.

All Arctic countries earned three points.

WWF awards one point for each of the following:

- the State has established a minimum level of pre-positioned equipment to combat oil spills, commensurate with the risk involved, along with programs for its use;
- the State has established a program of exercises for oil pollution response organizations and training of relevant personnel;
- the State has established plans and communications capabilities for responding to oil pollution incidents
- the State has established a mechanism or arrangement to coordinate responses to oil pollution incidents with, if appropriate, the capabilities to mobilise necessary resources.

All Arctic countries earned maximum scores.

While all countries received a point for a minimum level of pre-positioned equipment to combat oil spills, the siting of this equipment did not necessarily follow a comprehensive risk assessment. WWF believes that there are major concerns regarding response capacity and infrastructure. According to a 2005 Danish Defence report, the Kingdom's response capacity in Greenland currently consists of two vessels based in Frederikshavn in Denmark. The shortest route between Frederikshavn and Greenland is about three thousand kilometres. The Canadian Coast Guard has three icebreakers to cover the entire Northwest Passage and those vessels may not be positioned anywhere near the passage at a time when they may be needed.

Indicator 3: Oil Spill Monitoring and Compliance

WWF assesses actions taken by Arctic states to monitor oil spills and compliance with oil spill regulations. If a country has a system to monitor oil pollution incidents in its jurisdiction it earned one point; if a country undertakes appropriate monitoring activities – to the extent feasible – in adjacent areas beyond national jurisdiction, it earned an additional point. Each Arctic country earned one point for having a system to monitor oil pollution incidents in its jurisdiction. In Norway, the Department for Emergency Response monitors oil spills, usually in cooperation with a Vessel Traffic Service (VTS) centre if a vessel is involved. Five VTS centres are distributed along the Norwegian coast; the one in Vardø is responsible for the Barents Sea and the marine areas around Svalbard. More work is clearly needed by all Arctic states to monitor activities in areas beyond national jurisdiction.

This indicator also assesses whether countries cooperate with other AC states to improve the detection of hazardous ice. Countries earned one point for each of satellite services and real-time production and dissemination of ice maps. All countries earned two points.

Finally, WWF awarded one point if a country has laws that authorise regulatory-agency personnel to access installations and verify relevant documentation and equipment at any time. Two additional points were awarded if a country's laws authorise appropriate responses to violations and noncompliance; and the failure of an operator to respond to dangerous situations. All countries earned three points.

Indicator 4: Funding for Prevention and Response Measures

Arctic countries earned one point for evaluating the funding levels required to ensure full support for oil spill prevention and response measures, including enforcement of these measures. Alaska's Oil and Hazardous Substance Release Prevention and Response Fund is updated regularly, making the United States unique among Arctic states.

Indicator 5: Measures to Control Oil and Gas Activities in Sensitive Areas

WWF assesses whether regulations stringently control oil and gas activities in sensitive marine areas. Not all countries have identified which areas are sensitive to oil spills, but for the sake of this analysis it is assumed that conservation areas are sensitive. All countries except Canada and Iceland earned one point. In Greenland, the National Environmental Research Institute has identified marine areas vulnerable to oil spills, but government still can decide to authorise seismic activity in these areas. However, Greenland's Law on Mineral Resources governs hydrocarbon activities and requires that the impact assessments of projects proposed in sensitive marine areas consider the conservation objectives of the area.

Indicator 6: Oil Extraction and Conservation Areas

WWF awarded one point to countries whose permitting process incorporates sound conservation practices as a means to minimise environmental impacts. Countries that did not permit oil and gas activities in conservation areas received two points. Both criteria apply only to offshore activities, because the indicator is based on the Arctic Offshore Oil and Gas Guidelines.

All relevant countries (those with offshore oil production potential) except Canada received one point for implementing sound conservation practices through their permitting processes. WWF recommends that the AC develop clear criteria for conservation practices in permitting processes or list the practices it considers sound.

WWF awarded two points to all Arctic countries for prohibiting oil and gas activities in conservation areas.

ARCTIC COUNCIL ASSESSMENT

Indicators are based on the AC's *Salekhard Declaration* (2006), *Tromso Declaration* (2009), *Nuuk Declaration* (2011), *Kiruna Declaration* (2013), and the AMSA (2009) policy recommendation II(F) regarding Oil Spill Prevention.

Results are presented in Table 10.

Indicator 1: Completion of the Oil and Gas Assessment

The Arctic Council developed recommendations based on the assessment of *Oil and Gas Activities in the Arctic* (approved by Tromsø Declaration) and received one point.

Indicator 2: Completion of the Revised Arctic Offshore Oil and Gas Guidelines 2009

The AC received one point for completing and approving the revised *Arctic Offshore Oil and Gas Guidelines*. Arctic ministers also urged all States to apply these Guidelines as a minimum standard throughout the Arctic.

Indicator 3: Completion of Behavior of oil and other Hazardous Substances in Arctic waters report

The AC received one point for completing the report *Behaviour of Oil and Other Hazardous Substances in Arctic Waters* (BoHaSa).

Indicator 4: Major Preparedness and Response Deliverables

WWF awarded one point to the AC for developing the 2013 MOSPA, which was negotiated under its auspices. The AC earned an additional point for encouraging contingency plans, training and exercises. The second exercise for the MOSPA Agreement and its operational guidelines was conducted in 2016.

Indicator 5: Cooperation on Oil Spill Prevention

WWF awarded one point to the AC for developing recommendations and best practices for preventing marine oil pollution (report on *Recommended Practices in the Prevention of Arctic Marine Oil Pollution*, referenced in the 2013 Kiruna Declaration).

The AMSA recommended (recommendation IIF) enhanced cooperation in oil spill prevention. The AC earned one point for its 2015 endorsement of the *Framework Plan for Cooperation on Prevention of Oil Pollution from Petroleum and Maritime Activities in the Marine Areas of the Arctic*. The Emergency Prevention, Preparedness and Response (EPPR) working group is now responsible for ensuring and tracking the development and implementation of appropriate follow-up actions.

The Scorecard also measures the AC's progress toward a mechanism that supports research into the prevention of oil releases into Arctic waters (one point), as well as a mechanism that supports related technology transfers (one additional point). The AC did not complete this task. However, the EPPR working group's strategic plan calls for improved prevention measures to reduce accidents that could result in environmental emergencies in the Arctic. Other objectives listed in EPPR's strategic plan are information exchange, the creation and adaptation of technological solutions to harsh Arctic conditions, and "international cooperation and communication of lessons learned/best practices" to "create programs, maximise resources, and find solutions to common problems."

CONCLUSIONS

Arctic countries are delivering on their AC commitments regarding cooperation on oil spills prevention, preparedness and response. However, WWF underlines that these commitments are not ambitious enough to safeguard Arctic environments from potential adverse impacts of oil spills. WWF did not assess the extent and efficiency of responses to actual oil spills in Arctic waters.

The assessment shows that appropriate administrative and legal foundations are in place at the national level. It is now important for Arctic countries to build on this foundation and invest in response capacity and infrastructure. While there are plans and standards in place, there are also gaps and uncertainties throughout the Arctic regarding oil spill response capacity.

Most Arctic countries have national contingency plans and established authorities and administrative systems for oil pollution preparedness and response. Arctic countries also have systems to monitor oil spills; they should, however, actively undertake monitoring activities in areas outside national jurisdiction. There is an urgent need to evaluate the sufficiency of funding for prevention and response

measures. WWF recommends that Arctic countries evaluate funding levels to ensure full support for oil spill prevention and response measures, including the enforcement of these measures. Further, WWF recommends that Arctic states consider enacting liability regulations to ensure that companies have the resources needed (either on their own or through an insurer) to respond adequately to spills.

WWF welcomes the decisions made in 2016 by Canada, Russia and the United States to suspend oil and gas licensing in their Arctic waters.

The AC has honoured agreed-upon commitments through its own work, such as the MOPSA, and the *Framework Plan for Cooperation on Prevention of Oil Pollution from Petroleum and Maritime Activities in the Marine Areas of the Arctic.*

In the Arctic's extreme physical environment, responding successfully to an oil spill is at best challenging and at worse impossible. As the infamous BP blowout off the Louisiana coast in 2010 demonstrated, a rapid, effective response is difficult even in a favorable environment with the best capacity in the world. The response equipment and technology currently in the Arctic is not commensurate with the level of risk and it is imperative that Arctic states invest in pre-positioned response assets and local capacity, and clearly identify areas where oil and gas activities are not allowed – no-go zones.

WWF recommends that the AC expand its work on oil spill prevention to include the development of low-impact shipping corridors and other spatial measures.

Table 9 - Total Score – Cooperation on oil spill prevention, preparedness and responses: national implementation progress

ARCTIC STATES	POINTS FOR INDICATORS						TOTAL SCORE	RATING
		Authorities	Monitoring	Funding	Control Measures	Conservation		
Canada	4/5	7/7	6/7	0/1	0/1	2/3	19/24	B
Kingdom of Denmark	5/5	7/7	6/7	0/1	1/1	3/3	22/24	A
Finland	3/3	7/7	2/2	N/A	N/A	N/A	12/12	A
Iceland	5/5	7/7	6/7	0/1	0/1	3/3	21/24	A
Norway	4/5	7/7	6/7	0/1	1/1	3/3	21/24	A
Russia	3/5	7/7	6/7	0/1	1/1	3/3	20/24	A
Sweden	3/3	7/7	2/2	N/A	N/A	N/A	12/12	A
United States	5/5	7/7	6/7	1/1	1/1	3/3	23/24	A

Through the Council, Arctic states have agreed to implement measures related to oil spill response and preparedness, but WWF believes these measures are inadequate to address the levels of risk raised by both shipping and developing offshore Arctic oil fields.

Cooperation on Oil Spill Prevention, Preparedness and Responses: National Implementation Progress

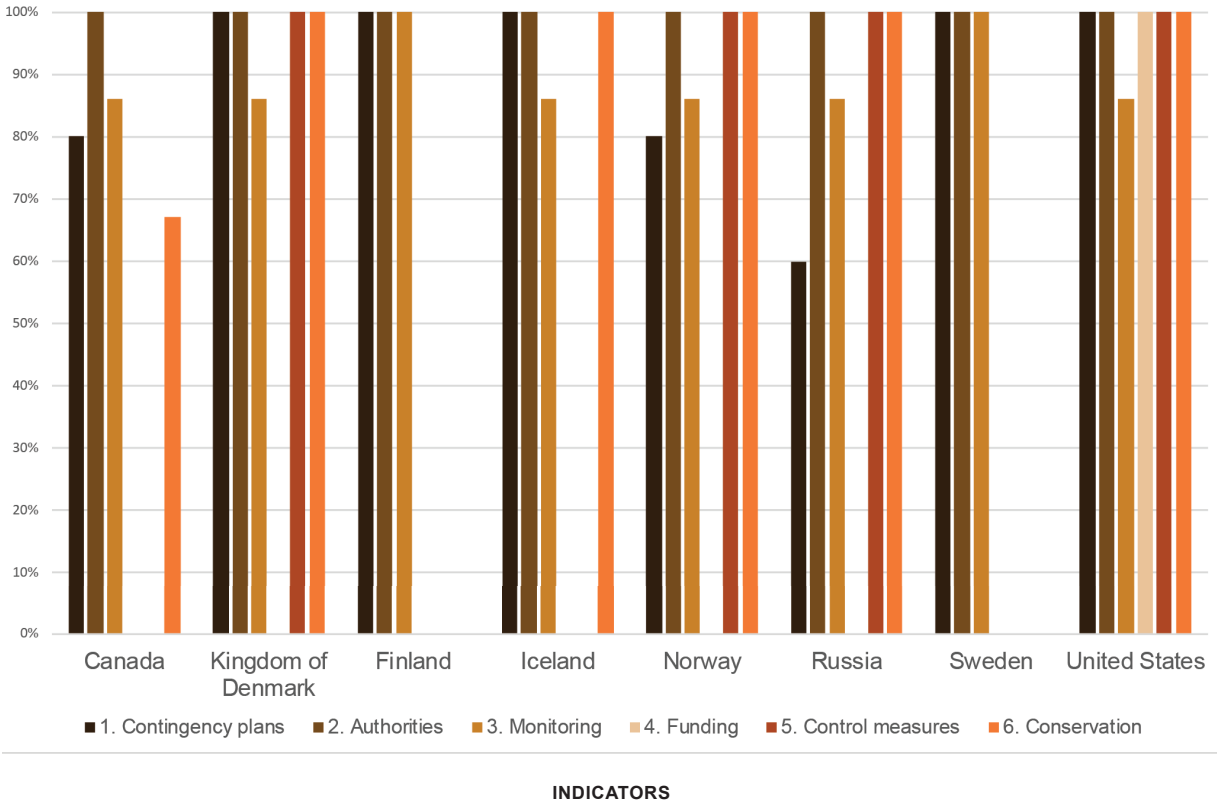


Table 10 – Total Score - Cooperation on oil spill prevention, preparedness and responses: Arctic Council implementation progress

	POINTS FOR INDICATORS					TOTAL SCORE	RATING
	1	2	3	4	5		
Arctic Council Action	1/1	1/1	1/1	2/2	2/4	7/9	B

A

More than 80% of the maximum score

Full or substantive implementation of the direction.

B

60-80% of the maximum score

Encouraging progress on implementation of the direction.

C

40-60% of the maximum score

Some progress on implementation of the direction.

D

Less than 40% of the maximum score

Little progress on implementation of the direction.

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BLACK CARBON AND ADAPTATION

Climate change is the single most important driver of change in the Arctic.

National Indicators

1. Black Carbon Emissions Inventories
2. Black Carbon Early Actions
3. Emissions from Flaring
4. Climate Change Adaptation
5. Climate Change Observation

Arctic Council Indicators

1. Climate Monitoring and Observation
2. Coordination on Black Carbon and Methane Emissions Reduction

Snow, Water, Ice and Permafrost in the Arctic, 2017 (Finding 1)

"The Arctic's climate is shifting to a new state. With each additional year of data, it becomes increasingly clear that the Arctic as we know it is being replaced by a warmer, wetter, and more variable environment. This transformation has profound implications for people, resources, and ecosystems worldwide. "

Arctic states committed to work within the United Nations Framework Convention on Climate Change (UNFCCC) to mitigate human impacts. The Parties to UNFCCC agreed in Paris in 2015 to take mitigation actions to limit the increase in average global temperature to 1.5/2°C above pre-industrial levels. WWF strongly believes that Arctic states must use the Climate Change Paris Agreement to work with other countries and limit the increase in average global temperature to less than 1.5°C above pre-industrial levels, and take additional national and regional measures to help slow the pace of change in the Arctic.

Canada, Norway, Russia and the United States exploit massive oil resources, leading to increased emissions of greenhouse gases and significantly contributing to climate change. WWF urges Arctic states to move swiftly toward a low-carbon economy and reduce greenhouse-gas (GHG) emissions. In 2015, Arctic states collectively accounted for 21.4% of global carbon-dioxide emissions.

At the Kiruna Ministerial meeting (2013), Arctic states acknowledged that they and other countries substantially contribute to global GHG emissions. A concerted global effort could make a significant difference in combating climate change and Arctic countries plan to undertake their climate-change-mitigation efforts through the UNFCCC rather than through the AC.

Reduction of black carbon has been a focus of the AC since the Salekhard ministerial meeting (2006) because the emissions within and near the Arctic have regional, short-term impacts on climate, human health and the economy. The AC also recommended actions regarding climate-change observation and adaptation.

The Scorecard focused on regional efforts with respect to short-lived climate forcers, in particular black carbon. WWF did not assess the overarching climate-change policies of Arctic states, their actions to reduce GHG emissions or their UNFCCC commitments.

Emissions of black carbon (BC) in the Arctic darken snow and ice, reducing their ability to reflect sunlight. WWF focused on local efforts by Arctic states to mitigate emissions of black carbon. WWF commends most Arctic states for implementing early actions to reduce black carbon emissions.

ARCTIC STATES ASSESSMENT

WWF focused on inventories of black carbon emissions and early actions taken to reduce these emissions. The Scorecard documents the progress of Arctic states toward requiring specific licenses or permits for gas flaring, as well as on actions related to climate-change adaptation and observation.

Assessment is based on the following AC products: *Report of the Arctic Council Task Force on Short-Lived Climate Forcers* (2013); *Progress Report and Recommendations for Ministers of the Arctic Council Task Force on Short-Lived Climate Forcers* (2011); the *Arctic Offshore Oil and Gas Guidelines* (AOOGG) (PAME; 2009); and the *Executive Summary: Snow, Water, Ice and Permafrost in the Arctic* (SWIPA, AMAP, 2011).

Results are presented in Table 11.

Indicator 1: Black Carbon Emissions Inventories

The AC established a process for Arctic states (Observer states were also invited) to provide inventories of black carbon emissions. Compiling extensive inventories in the Arctic is an important preliminary step toward the implementation of mitigation strategies. One point was given if a country had developed and submitted an inventory of BC emissions to the AC. All Arctic countries earned one point; WWF did not assess the contents of the reports.

Indicator 2: Black Carbon Early Actions

The AC recommended that Arctic states work individually and collectively to implement early actions to reduce black carbon emissions. All countries except Iceland received one point. A joint project involving Russia and the United States Environmental Protection Agency, for instance, reduced black carbon emissions from diesel sources in Murmansk Oblast.

Indicator 3: Emissions from Flaring

The energy sector accounts for approximately one-fifth of black carbon emissions from AC nations; flaring by the oil and gas industry accounts for 75% of this amount. WWF awarded one point to countries with current or potential oil and gas production that require licenses or permits for flaring in the Arctic offshore environment. Canada, Russia and the United States received one point. Russia grants licenses (Law No. 2395-I on subsoil) and limits flare gas in relation to production volume.

Indicator 4: Climate Change Adaptation

If a country developed and implemented adaptation strategies for the Arctic appropriate to the scale and character of anticipated changes, it was awarded one point. All countries except Russia and the United States earned one point for this criterion.

WWF welcomes progress on the Adaptation Actions for a Changing Arctic (AACA) project, including regional reports, and recommends that the AC collaborate with member states to aggregate all adaptation actions underway in their Arctic regions, regardless of scale.

Indicator 5: Climate Change Observation

WWF awarded one point for each of the following:

- development of regional-scale assessments of cryospheric change and the associated risks; all Arctic countries received one point.
- surface-based monitoring of the cryosphere; all Arctic countries except Iceland earned one point. For instance, the Greenland Ecosystem Monitoring Programme monitors the surface mass of glaciers and the influence of climate change.
- supporting the development of remote-sensing methods for observing the cryosphere; all countries except Iceland earned one point. NASA uses a satellite system to document sea ice in the Arctic, for instance.
- systematically observing the cascading effects of cryospheric change on ecosystems and societies; only half of all Arctic countries earned a point for this criterion. Russia is enhancing its satellite observation, and the Russian Hydrometeorological Service and its Planeta research center provide a centralised system of data processing and monitoring.

WWF recommends that Arctic states actively enhance their systems to observe the cascading effects of cryospheric change on ecosystems and societies.

ARCTIC COUNCIL ASSESSMENT

The AC's actions to address climate change were evaluated based on direction from the Salekhard and Nuuk Declarations.

Results are presented in Table 12.

Indicator 1: Climate Monitoring and Observation

WWF awarded a total of two points to the AC for reviewing needs and gaps in climate monitoring since 2006, and for establishing an Arctic observation network.

Following decisions taken at Salekhard, AMAP produced several assessments, including the monitoring of climate conditions in the Arctic such as the 2011 *Assessment on Changes in Arctic Snow, Water, Ice and Permafrost* (SWIPA) and its update for the 2017 ministerial meeting.

The AC established Sustaining Arctic Observing Networks (SAON), following a process that had begun as early as 2006. WWF did not assess the comprehensiveness of the SAON.

Indicator 2: Coordination on Black Carbon and Methane Emissions Reduction

WWF awarded one point to the AC for each of the following actions:

- establishing a process to submit periodic national reports and action plans;
- creating an expert group to synthesise relevant policy information from national inventories;
- establishing a Task Force to develop arrangements on actions to achieve reductions in emissions of black carbon and methane. The Task Force developed the Arctic Council Framework for Action on Enhanced Black Carbon and Methane Emissions Reductions (2015).

CONCLUSIONS

Arctic countries must step up and reduce their GHG emissions, given that climate change represents the biggest threat to the Arctic environment. WWF did not assess actions taken by Arctic countries to reduce anthropogenic GHG emissions.

Countries submitted black carbon inventories to the AC and took early action to reduce BC emissions. Progress was also made in regulating gas flaring.

It is important to note that WWF did not assess the extent to which the implementation of existing plans or regulations will lead to actual reductions of black carbon emissions and gas-flaring levels.

Most countries are assessing the risks associated with cryospheric change and are in the process of developing adaptation strategies. More efforts are needed to understand and prepare for climate change. *Adaptation Actions for a Changing Arctic* (AACA) describes some of the sustained local efforts required to advance adaptation actions and help conserve the biodiversity on which Arctic peoples depend. Most countries have systems to observe changes in the cryosphere. Establishing or enhancing systems to observe the cascading effects of cryospheric change on ecosystems and societies should be a priority for Arctic countries.

AC actions to coordinate the reduction of black carbon emissions are examples of successful institutional arrangements flowing from specific AC direction. Key elements of the *Arctic Council Framework for Action on Enhanced Black Carbon and Methane Emissions Reductions* (2015) include a common vision, national and collective action, and action by others.

WWF recommends that the AC and Arctic countries develop and implement coordinated actions to communicate Arctic changes to the world, raise global awareness, and inspire a global agenda to mitigate and adapt to climate change.

Table 11 - Total Score - Black Carbon and Adaptation: national implementation progress

ARCTIC STATES	POINTS FOR INDICATORS					TOTAL SCORE	RATING
	BC Inventories	BC Actions	Flaring	CC Adaptation	CC Observation		
Canada	1/1	1/1	1/1	1/1	4/4	8/8	A
Kingdom of Denmark	1/1	1/1	0/1	1/1	4/4	7/8	A
Finland	1/1	1/1	N/A	1/1	3/4	6/7	A
Iceland	1/1	0/1	0/1	1/1	2/4	4/8	C
Norway	1/1	1/1	0/1	1/1	3/4	6/8	B
Russia	1/1	1/1	1/1	0/1	4/4	7/8	A
Sweden	1/1	1/1	N/A	1/1	3/4	6/7	A
United States	1/1	1/1	1/1	0/1	3/4	6/8	B

Climate change is identified in numerous Council documents as the largest threat to the Arctic environment. Actions taken through the Council only relate to black carbon and adaptation, and should not be construed as an adequate response to climate change.

A

More than 80% of the maximum score

Full or substantive implementation of the direction.

B

60-80% of the maximum score

Encouraging progress on implementation of the direction.

C

40-60% of the maximum score

Some progress on implementation of the direction.

D

Less than 40% of the maximum score

Little progress on implementation of the direction.

Black carbon and adaptation: National Implementation Progress

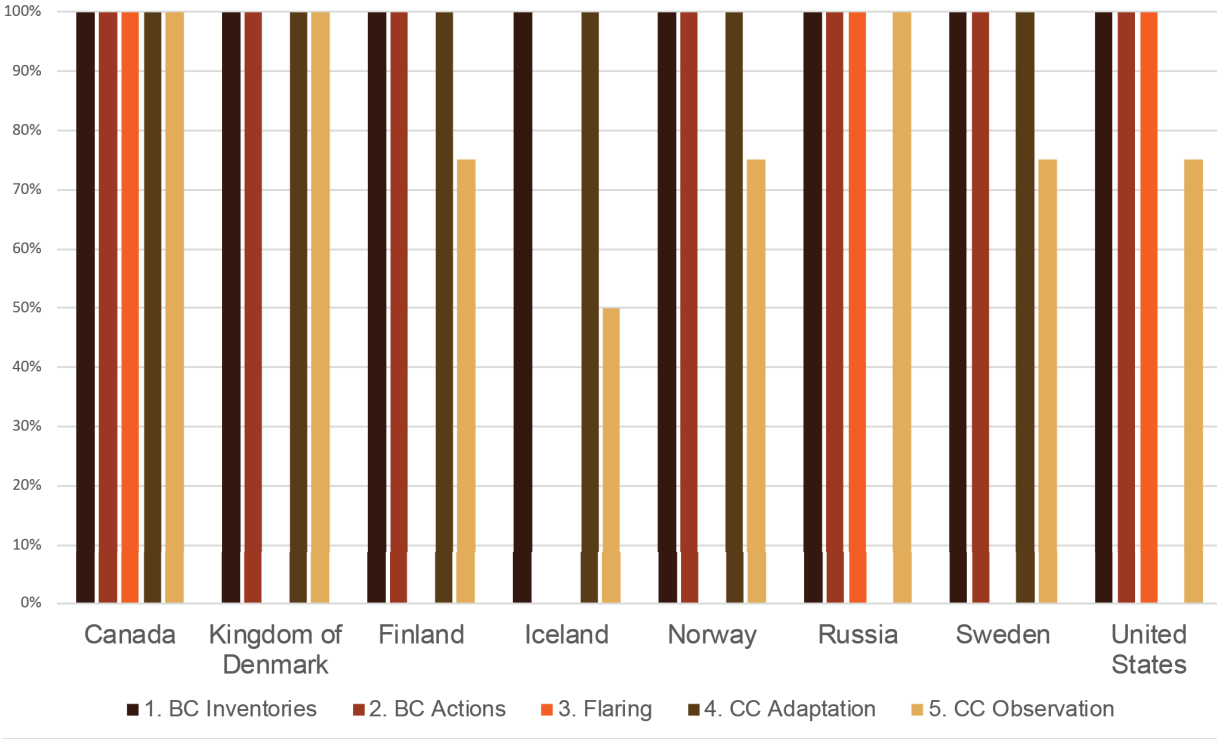

Table 12 - Total Score – Black carbon and adaptation: Arctic Council implementation progress

	POINTS FOR INDICATORS		TOTAL SCORE	RATING
	1	2		
Arctic Council Action	2/2	3/3	5/5	A

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ECOSYSTEM-BASED MANAGEMENT

Ecosystem-based management (EBM) is an effective, coordinated and coherent way of managing ecosystems and their services in changing conditions. Uncoordinated national management plans, or management plans that focus only on one piece of an ecosystem, such as a specific species, source (sector) of development or impact, along with plans that consider ecosystems static, are insufficient.

National Indicators

1. Environmental Impact Assessments (EIAs), Strategic Environmental Assessments (SEAs) and risk assessments
2. Assessments of combined effects of multiple stressor
3. Applying the ecosystem approach
4. Cooperation in advancing implementation of EBM

Arctic Council Indicators

1. Completion of AC EBM Expert Group Report
2. Developing an Arctic EBM goal
3. Updating observed best practices in ecosystem-based ocean management in the Arctic

The AC has worked on EBM for many years and produced a wealth of associated products. Arctic countries are committed to implementing EBM and Arctic ministers requested its implementation.

A further benefit of EBM is its effectiveness and flexibility in managing the cumulative impacts of development and enhancing the likelihood of achieving ecological-health objectives. EBM also recognises community interests, and addresses cultural and traditional economy needs.

The outlook for national efforts to implement EBM in the Arctic is bleak. Arctic states need to invest in the ecosystem approach as requested by Arctic ministers; their poor performance to date can be attributed to a lack of specific research on the combined effects of multiple stressors, as well as a lack of political leadership.

ARCTIC STATES ASSESSMENT

The rapid pace of the changes in social-ecological systems, coupled with increased industrial activities in the Arctic environment, requires an adaptive-management approach to shape Arctic change. Council direction recommended the development and implementation of EBM for the Arctic Ocean. The PAME working group is now past the stage of discussing the definition of EBM and now focuses on the practical implementation of EBM. However, a measure of EBM implementation has yet to be established. This assessment area uses indicators based on six elements for implementing EBM as developed by PAME.

Results are presented in Table 13.

Indicator 1: Environmental Impact Assessments (EIAs), Strategic Environmental Assessments (SEAs), and Risk Assessments

WWF assessed requirements for different types of integrated assessments. Countries were awarded one point if they had regulations requiring the completion of:

- environmental impact assessments prior to the approval of new exploration and/or exploitation activities. All countries received one point.
- strategic environmental-assessments prior to the approval of new exploration and/or exploitation activities. All countries except the Kingdom of Denmark, Russia and the United States, received one point.

"...Welcome the report on Ecosystem Based Management, approve the definition, principles and recommendations, encourage Arctic States to implement recommendations both within and across boundaries, and ensure coordination of approaches in the work of the Arctic Council's Working Groups."

Kiruna Declaration, 2013

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

Ecosystem-Based Management in the Arctic, Arctic Council, 2013

- risk assessments prior to the approval of new exploration and/or exploitation activities. Only Canada, the Kingdom of Denmark, Finland and the United States received one point.

The AC called on member states to conduct rigorous assessments. This reference to rigour is important because there were examples in the Arctic where a distinct lack of rigour in conducting and completing those assessments legitimised the avoidance of any substantive treatment of long-term cumulative effects and multiple stressors. However, the rigour and the quality of specific assessments is not within the current scope of the Scorecard.

Indicator 2: Assessments of Combined Effects of Multiple Stressors

WWF assessed whether Arctic states made efforts to identify, monitor and assess the combined effects of multiple stressors within Arctic ecosystems, as recommended by the Arctic Ocean Review. If a country studied and identified the combined effects of multiple stressors on marine species and ecosystems, it was awarded one point. Only Canada, the Kingdom of Denmark and Norway earned one point. For example, the Danish Centre for Environment and Energy at the University of Aarhus wrote a report for the Government of Greenland that discussed possible ecosystem-based approaches to the management of shipping in Disko Bay and Store Hellefiskebanke. The report reviews the impacts of shipping in combination with other activities and assessed their cumulative effects.

If a country monitors on an ongoing basis the combined effects of multiple stressors on marine species and ecosystems, one additional point was given. No countries earned a point for this criterion; WWF urges Arctic countries to develop appropriate monitoring programs.

Indicator 3: Applying the Ecosystem Approach

WWF assessed how countries dealt with the need to apply EBM. Countries received one point for each of the following actions:

- completed identification of marine geographical areas based on biogeographical criteria including identification of responsible agencies and jurisdictional aspects, and the legitimate stakeholders for each area;
- published descriptions of its Arctic marine ecosystems;
- developed a holistic and comprehensive set of ecological objectives, including management actions for all of its Large Marine Ecosystems (LMEs);
- published ecosystem status reports for all respective LMEs;
- completed and regularly updates the Arctic Ecosystem Services Inventory for all of its LMEs;
- integrated policies for all of its LMEs and for ecosystems that straddle national boundaries.

Only Canada and Norway completed the identification of marine geographical areas based on biogeographical criteria including identification of responsible agencies and jurisdictional aspects, and the legitimate stakeholders for each area. Fisheries and Oceans Canada established five Large Ocean Management Areas (LOMAs) to pilot test this integrated management approach. Collaborative governance, advisory and technical committees were formed at the regional or sub-regional level for each LOMA to support integrated oceans-management (DFO, 2011). Only one LOMA is in the Arctic — in the Beaufort Sea region.

Only Norway published descriptions of its Arctic marine ecosystems and developed a holistic and comprehensive set of ecological objectives including management actions for all of its LMEs; Canada and Norway published ecosystem-status reports for all respective LMEs.

No countries completed and regularly updated the Arctic Ecosystem Services Inventory for all of their LMEs, and none had integrated policies for all of their LMEs, including for ecosystems straddling national boundaries.

Indicator 4: Cooperation in Advancing Implementation of EBM

Finally, WWF assessed if Arctic countries had at least one joint EBM initiative with a neighbouring state(s). All countries except the Kingdom of Denmark and Iceland, earned one point. Atlantic salmon reproduce in two rivers (Teno/Tana and Näätämöjoki/Neidenelva) that define the border between Finland and Norway. In recent years, Norway and Finland renewed the bilateral agreement and negotiations are underway to conclude fisheries-management regulations.

ARCTIC COUNCIL ASSESSMENT

Results are presented in Table 14.

Indicator 1: Completion of AC EBM Expert Group Report

WWF awarded one point to the AC for completing the EBM report. The EBM expert group was established by the 2011 Nuuk Declaration and developed the EBM report before the ministerial meeting in 2013. AC states welcomed the report in the 2013 *Kiruna Declaration* (p. 5), and inter alia approved the EBM definition, principles and recommendations.

Indicator 2: Developing an Arctic EBM goal

One point was available for progress toward the development of an overarching EBM goal that includes supporting objectives. A second point was available if the AC endorsed the EBM goal and objective. WWF awarded no points for these criteria. As of February 2017, the AC had not developed practical guidelines for an EBM approach, although these were requested in 2015.

Indicator 3: Updating Observed Best Practices in Ecosystem-based Ocean Management in the Arctic

One point was available if the AC had updated Observed Best Practices in Ecosystem-based Ocean Management in the Arctic to make it applicable to all environments, including marine, coastal and terrestrial. As of April 2017, the PAME *Status of Implementation Draft Report* did not include this update. The Report does, however, mention exchanges on several topics that most likely included examples of best practices. This point may be awarded in a future Scorecard.

CONCLUSIONS

Finland and Norway lead other Arctic countries in national efforts to advance EBM in the Arctic. WWF's assessment shows that countries require environmental-impact assessments (EIAs) and strategic environmental-assessments (SEAs). However, half of all AC states do not require the completion of risk assessments prior to the approval of new exploration and/or exploitation activities.

It is imperative that Arctic countries identify, monitor and assess the combined effects of multiple stressors within Arctic ecosystems. No countries monitor those effects on an ongoing basis.

Applying EBM requires the efforts of all Arctic countries. The AC developed practical steps toward EBM implementation. WWF calls on AC countries to follow these steps in ways that align with their particular national circumstances.

An example of appropriate cooperation is the sharing of scientific knowledge about the Barents Sea by the Joint Norwegian-Russian Commission on Environmental Protection. This should be replicated for other key transboundary Arctic areas, such as the Bering Sea, Beaufort Sea and Baffin Bay.

The AC created many products to inform EBM implementation, including the 2013 EBM Expert Group report Ecosystem-Based Management in the Arctic. However, the AC needs to develop an overarching EBM goal that includes supporting objectives, and update Observed Best Practices in Ecosystem-based Ocean Management in the Arctic to make it applicable to all environments, including marine, coastal and terrestrial.

Arctic countries should be held accountable for their commitments to applying EBM in the Arctic and should act to ensure that activities are kept within the limits of ecosystem capacities.

Table 13 - Total Score - Ecosystem-based Management: National implementation progress:

ARCTIC STATES	POINTS FOR INDICATORS				TOTAL SCORE	RATING
	EIAs/SEAs	Combined Effects	Applying EBM	Cooperation		
Canada	3/3	1/2	2/6	1/1	7/12	C
Kingdom of Denmark	2/3	1/2	06	0/1	3/12	D
Finland	3/3	0/2	N/A	1/1	4/6	B
Iceland	2/3	0/2	0/6	0/1	2/12	D
Norway	2/3	1/2	4/6	1/1	8/12	B
Russia	1/3	0/2	0/6	1/1	2/12	D
Sweden	2/3	0//2	N/A	1/1	3/6	C
United States	2/3	0/2	06	1/1	3/12	D

A

More than 80% of the maximum score

Full or substantive implementation of the direction.

B

60-80% of the maximum score

Encouraging progress on implementation of the direction.

C

40-60% of the maximum score

Some progress on implementation of the direction.

D

Less than 40% of the maximum score

Little progress on implementation of the direction.

Ecosystem-based Management: National Implementation Progress

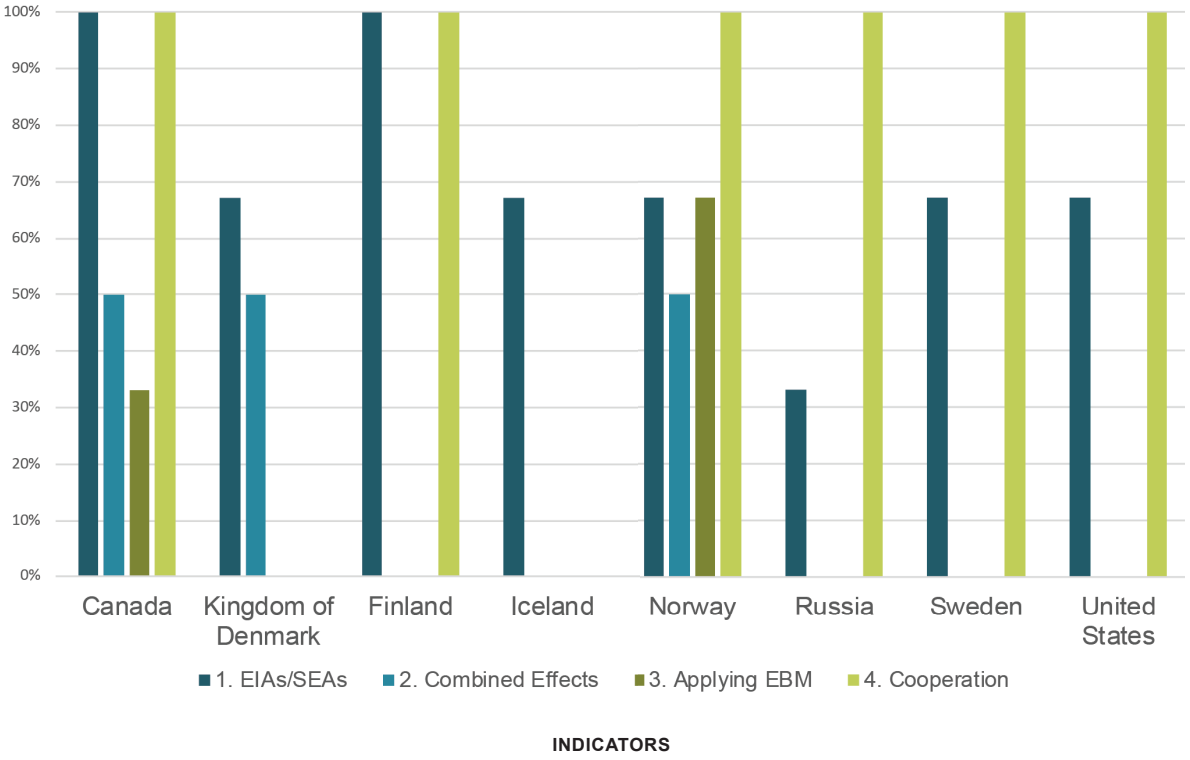

Table 14 - Total Score - Ecosystem-based Management: Arctic Council implementation progress

	POINTS FOR INDICATORS			TOTAL SCORE	RATING
	1	2	3		
Arctic Council Action	1/1	0/2	0/1	1/4	D

THE WAY FORWARD

During the last two decades, global recognition of the uniquely sensitive nature of the Arctic has grown considerably. Governments in the region have come together at the Arctic Council to study the rapid socio-economic and environmental changes underway in the region, and to advance the protection and sustainable use of Arctic ecosystems in the future through the Arctic Council direction. But commitments alone will not ensure a biodiverse and resilient Arctic. Arctic states must demonstrate their leadership through specific implementation actions.

WWF hopes that future Scorecards will demonstrate increased levels of implementation. In the section below, we provide overall recommendations related to monitoring and reporting and then specific conservation recommendations for each of the six assessment areas of the Scorecard: conservation areas; biodiversity; shipping; cooperation on oil spill prevention, preparedness, and response; black carbon and adaptation; and ecosystem-based management.

Since the AC itself does not have executive powers, it depends on its individual member states to implement direction, direction that is agreed to by representatives of those states. It is a task for each state to integrate the knowledge and advice of AC direction into their national, subnational, and local policies, plans and operationalise them on the ground.

OVERALL RECOMMENDATIONS

Better measurable Arctic Council direction

The implementation of many Council recommendations is not readily monitored because they fail to identify or to specify responsible parties, indicators of progress, clear and specific actions, and deadlines.

WWF expects that Arctic Council direction will evolve towards more specificity to provide effective guidance to implementing authorities, including the results that should be achieved. All elements of the direction should be specific and measurable, and stipulate deadlines. WWF believes future AC direction should establish accountability for reporting on results of implementation.

WWF recommends that the AC also provide effective guidance to member states and their implementing authorities on implementation of its direction.

WWF also invites Arctic states to raise the level of ambition when formulating AC direction. The Scorecard in particular highlights areas such as climate change and oil spill preparedness and response where stronger decisions and recommendations are needed.

Strong national action

Governments should upgrade national processes to bolster the implementation of AC direction both domestically and across borders. WWF strongly believes that effective implementation of AC direction will significantly benefit from national governments more actively engaging their counterparts at sub-national levels into operationalization of the AC direction.

WWF recommends that states establish an appropriate national process/body to coordinate actions, including across sectors, agencies and regional governments, for implementation of the direction agreed upon at the AC. Each national process should include the development of a national implementation plan specifying the actions that will fulfill the state's commitments to the AC.

Implementation plans should include cross-sector and agency coordination, as well as what will be delivered, and expected results.

Effective national actions, as well as further work within the AC, require resources. WWF urges Arctic states to rigorously analyze current funding for Arctic work and ensure adequate allocations of capacity, funds and other necessary resources for the implementation of agreed commitments for the benefit of the Arctic environment and its peoples. This should include longer-term financial commitments to the work of the AC, especially in view of its long-term strategy, and support the capacity of working groups to complete their work plans.

Better reporting

Arctic Council direction should establish accountability with a robust reporting mechanism focused on the results and outcomes of implementation actions.

For the AC to function as an effective, transparent, accountable and thus credible regional policymaking-forum, member states must develop the capacity to regularly assess and report on Council delivery of agreed-upon commitments. Each state must incorporate Council direction into national, subnational and local policies and plans, and operationalise them on the ground.

The lack of national reporting requirements with adequate, comparable information made it challenging to rate the implementation efforts of Arctic states. Among states that report their progress toward implementation of AC direction, there is no standardised format, so assessing relative progress is difficult. The Scorecard demonstrates a need for Arctic states to adopt a common approach to data collection and analysis; this would support comprehensive progress reports on national implementation. Developing such a reporting structure and process would improve information-sharing, transparency and accountability within the AC and its credibility for external partners and audiences.

WWF urges Arctic states to develop a consolidated reporting template and schedule that would enable comparisons of national implementation actions. Ministers should review and endorse the template at the next ministerial meeting.

Unifying forces for global outreach and impact

Many AC ministerial declarations direct Arctic states to work together to consolidate and coordinate input into important international processes such as climate change discussions, the International Maritime Organisation, and the Minamata Convention on mercury. WWF's view is that Arctic states are very weak in delivering on those commitments. For instance, they failed to agree on consolidated Arctic messages to several meetings of the UNFCCC.

WWF strongly urges Arctic states to follow up on their political statements and coordinate joint input into international Arctic-relevant processes and negotiations, in particular, in the areas of climate change, shipping, and biodiversity.

Conservation effectiveness of Arctic Council direction and follow-up actions

WWF assesses only whether or not action was taken to implement AC direction. The Scorecard does not analyze the state of the Arctic environment and whether AC direction and associated implementation actions resulted in conservation improvements. AC, through its work in the CAFF working group, is developing various indicators for the state of Arctic biodiversity and the environment. This work needs to be further supported and used for future assessments of AC effectiveness.

WWF recommends that Arctic states study the effectiveness of the measures they implement.

FOCUS FOR FURTHER IMPLEMENTATION

This section lists all WWF recommendations from all sections of the Scorecard. As noted previously, the Scorecard helps to identify where progress has been made and where further action is needed to fulfill existing commitments. The Scorecard is designed to assist the AC and its member states to identify areas that require further intervention and action to more effectively implement AC direction. These WWF recommendations do not represent an exhaustive list of all WWF recommendations with regards to Arctic conservation; instead, they focus on national and collective implementation of the Arctic Council direction as adopted during 2006-2013.

Conservation Areas

WWF recommends that Arctic countries:

- identify all areas in the high Arctic that can act as a refuge for unique biodiversity, including marine areas, and afford them sufficient protection to maintain that unique biodiversity;
- analyze areas that can act as refuge for unique biodiversity in the Arctic with regards to potential climate-change scenarios;
- complete the identification of culturally important areas in a rigorous, systematic way and take specific management and protection measures;
- complete a gap analysis of networks of terrestrial protected areas where appropriate;
- implement protection measures for identified ecologically and biologically important marine areas;
- develop and implement mechanisms to maintain functional connectivity within and between protected areas.

WWF recommends that the Arctic Council:

- further integrate its working groups to facilitate greater cooperation on marine, coastal and terrestrial ecosystems, as well as on culturally important areas for the entire Arctic, and to improve connectivity and representation;
- develop and agree on a common approach to, and methodology for, identification of culturally important areas.

Biodiversity

WWF recommends that Arctic countries:

- develop measures that can detect early warnings of biodiversity change and trigger conservation actions;
- develop future national biodiversity strategies, plans, and updates with the objective of implementing *Arctic Biodiversity Assessment* policy recommendations, including more explicit references to Arctic biodiversity targets in National Biodiversity Strategies and Action Plans as developed within the Convention on Biological Diversity framework;
- develop specific national implementation-plans consistent with Actions for Arctic Biodiversity 2013-2021, as initially scheduled for 2015-17;

- speed up the mainstreaming of Arctic biodiversity, and incorporate resilience and adaptation of biodiversity to climate change into plans for development in the Arctic;
- develop and implement mechanisms to reduce human disturbances outside protected areas.

WWF recommends that the Arctic Council:

- continue systematic implementation of the *Actions for Arctic Biodiversity*;
- fully integrate biodiversity considerations into all aspects of the AC work streams.

Shipping

WWF recommends that Arctic countries:

- take collective action to establish an Emission Control Area across the Arctic Ocean, as is currently the case for the Baltic Sea and North Sea;
- implement national actions to reduce air emissions from Arctic marine shipping;
- protect identified areas of heightened ecological and cultural significance from the impacts of Arctic marine shipping.

WWF recommends that the Arctic Council:

- analyze all Arctic Marine Shipping Assessment commitments and identify unfulfilled actions at the national level, and work through the International Maritime Organization (IMO) to complete implementation.

Cooperation on oil spill prevention, preparedness and response

WWF recommends that Arctic countries:

- monitor activities in areas beyond national jurisdiction;
- invest in response capacity and infrastructure;
- evaluate the sufficiency of funding for oil spill prevention and -response measures, as well as the enforcement of these measures;
- consider liability regulations to ensure that companies have the resources needed (either on their own or through an insurer) to respond adequately to spills;
- invest in pre-positioned response assets and local capacity;
- clearly identify areas where oil and gas activities are not allowed (i.e. no-go zones).

WWF recommends that the Arctic Council:

- develop clear criteria for conservation practices in permitting processes or list the practices it considers sound;
- expand its work on oil spill prevention to include the development of low-impact shipping corridors and other spatial measures.

Black carbon and adaptation

WWF recommends that Arctic countries:

- use the Climate Change Paris Agreement to work with other countries and limit the increase in average global temperature to less than 1.5°C above pre-industrial levels, and take additional national and regional measures to help slow the pace of change in the Arctic;
- move swiftly toward a low-carbon economy and reduce GHG emissions;
- expand and finance work that will enhance understanding and prepare for climate change;
- actively enhance their systems to observe the cascading effects of cryospheric change on ecosystems and societies.

WWF recommends that the Arctic Council:

- collaborate with member states to aggregate all adaptation actions underway in their Arctic regions, regardless of scale.
- develop and implement coordinated actions to communicate Arctic changes to the world, raise global awareness and inspire a global agenda to mitigate and adapt to climate change.

Ecosystem-based Management

WWF recommends that Arctic countries:

- invest in applying the ecosystem approach as requested by Arctic ministers, and implement the practical steps developed by the AC to inform implementation of EBM;
- develop monitoring programs to identify and assess the combined effects of multiple stressors on an ongoing basis;
- establish and/or strengthen multilateral cooperation to implement ecosystem-based management in key transboundary areas such as the Bering Sea, Beaufort Sea and Baffin Bay.

WWF recommends that the Arctic Council:

- develop an overarching EBM goal, including supporting objectives;
- update and adjust *Observed Best Practices in Ecosystem-based Ocean Management in the Arctic* to make it applicable to all environments, including marine, coastal and terrestrial.

Although this Scorecard assessment is limited in scope and depth for the reasons discussed, WWF hopes that this assessment and its recommendations will increase and enhance exchange among the Arctic states, Permanent Participants, Observer states and Organizations on this key question:

How can we all work together to ensure effective implementation of Arctic Council direction to further protect the Arctic environment and support the well-being of its inhabitants?

ANNEX 1. INDICATORS AND CRITERIA

This annex provides a full list of indicators and associated criteria for all assessment areas. The indicators are drawn from Arctic Council direction. Criteria represent an action contributing to implementing the AC direction.

Conservation Areas:

NATIONAL	
Indicator 1: Identification of Conservation Areas	Criterion 1: State identified marine areas of heightened ecological significance
	Criterion 2: State identified marine areas of heightened cultural significance
	Criterion 3: State identified marine areas that are sensitive to oil spills
	Criterion 4: State completed a gap analysis for networks of terrestrial protected areas
	Criterion 5: State has identified areas that can act as a refuge for unique biodiversity in the high Arctic
Indicator 2: Protecting Areas of Ecological Importance	Criterion 1: State implemented protection measures for identified ecologically and biologically important marine areas:
	covering some identified areas
	covering all identified areas
	Criterion 2: State filled geographic gap for networks of terrestrial protected areas
	Criterion 3: State implemented conservation measures for areas that can act as a refuge for high Arctic species
	Criterion 4: State promotes the active involvement of indigenous peoples in the management and sustainable use of protected areas
Indicator 3: Mechanisms to Safeguard Connectivity	Criterion 1: State has implemented mechanisms to maintain functional connectivity within and between protected areas in order to protect ecosystem resilience and facilitate adaptation to climate change
ARCTIC COUNCIL	
Indicator 1: Cooperation on Biologically, Ecologically, and Culturally Important Areas	Criterion 1: Arctic Council established cooperative mechanism to advance conservation and management of biologically, ecologically, and culturally significant areas

Biodiversity

NATIONAL IMPLEMENTATION	
Indicator 1: Mainstreaming Biodiversity	Criterion 1: State incorporates biodiversity objectives and provisions into plan(s) specific to development in the Arctic for either terrestrial areas or marine areas State incorporates biodiversity objectives and provisions into plan(s) specific to development in the Arctic for both terrestrial and marine areas Criterion 2: State has a plan (or plans) for Arctic development that incorporate resilience and adaptation of biodiversity to climate change for either terrestrial areas or marine areas State has plans for Arctic development that incorporate resilience and adaptation of biodiversity to climate change for both terrestrial and marine areas Criterion 3: State has completed national evaluation of the ecosystem services provided by Arctic biodiversity Criterion 4: State has developed regional development plan(s) that account for ecosystem services provided by Arctic biodiversity
Indicator 2: Reducing Human Disturbance outside Protected Areas	Criterion 1: State developed guidelines to reduce human disturbance to areas critical for sensitive life stages of Arctic species that are outside protected areas Criterion 2: State has identified areas critical for sensitive life stages of Arctic species that are outside of protected areas State has implemented appropriate spatial and temporal measures: in some important areas critical for sensitive life stages of Arctic species that are outside of protected areas for all important areas critical for sensitive life stages of Arctic species that are outside of protected areas
Indicator 3: Sustainable Management of Living Resources and Habitat	Criterion 1: State developed fishing practices to reduce by-catch of marine mammals, seabirds and non-target fish State developed fishing practices to avoid significant adverse impact to the seabed Criterion 2: These practices are mandatory pursuant to specific legislation and or similar act
Indicator 4: Biodiversity Research and Monitoring	Criterion 1: State identified measures for detecting early warnings of sea-ice associated biodiversity change and triggering conservation actions Criterion 2: State researches stressors and drivers of relevance to Arctic biodiversity, with a focus on stressors that are expected to have rapid and significant impacts and issues where knowledge is lacking Criterion 3: State monitors stressors and drivers of relevance to Arctic biodiversity, with a focus on stressors that are expected to have rapid and significant impacts and issues where knowledge is lacking Criterion 4: State provided data for increased knowledge and improved management of biodiversity in the Arctic through the CBMP

ARCTIC COUNCIL	
Indicator 1: *Arctic Biodiversity Assessment*	Criterion 1: Arctic Council completed the Arctic Biodiversity Assessment
Indicator 2: *Arctic Biodiversity Assessment* Implementation Plan	Criterion 1: Arctic Council developed a plan for further work under the Arctic Council to support and implement the Arctic Biodiversity Assessment policy recommendations
Indicator 3: Mainstreaming Biodiversity	Criterion 1: Arctic Council incorporated biodiversity objectives and provisions into all Arctic Council work
Indicator 4: Common Measures for Reducing Threat of Invasive Species	Criterion 1: Arctic Council developed common measures for early detection and reporting, identifying and blocking pathways of introduction, and sharing best practices and techniques for monitoring, eradication and control of invasive alien/non-native species
Indicator 5: Pan-Arctic Conservation and Management Plans for Shared Species	Criterion 1: Arctic Council developed conservation and management plans for shared species that are, or will potentially be, harvested or commercially exploited
Indicator 6: Researching and Monitoring Biodiversity Stressors and Drivers	Criterion 1: Arctic Council developed robust quantitative indicators for biodiversity stressors through the CBMP

Shipping

NATIONAL	
Indicator 1: Areas of Heightened Ecological and Cultural Significance	Criterion 1: State implemented protection measures from the impacts of Arctic marine shipping for some areas of heightened ecological significance State implemented protection measures from the impacts of Arctic marine shipping for all areas of heightened ecological significance Criterion 2: State implemented protection measures from the impacts of Arctic marine shipping for some areas of heightened cultural significance State implemented protection measures from the impacts of Arctic marine shipping for all areas of heightened cultural significance
Indicator 2: Protection from Invasive Species	Criterion 1: State ratified the Ballast Water Management Convention (BWMC) Criterion 2: State established legislation or regulations for invasive species prevention and management for Arctic waters
Indicator 3: Reducing Air Emissions from Shipping	Criterion 1: State has national regulations aiming to reduce Arctic shipping air emissions Criterion 2: State has regulatory requirements, including economic incentives (e.g. tax breaks) to switch technologies or adopt practices (e.g. scrubbers, Liquefied Natural Gas, slow steaming, etc.) Criterion 3: State has sulfur and nitrogen emission control areas and/or emissions restrictions for all Arctic waters Criterion 4: State ban Heavy Fuel Oil use for all Arctic waters

Indicator 4: Arctic Marine Traffic System	Criterion 1: State has national marine monitoring traffic systems which cover Arctic waters
ARCTIC COUNCIL	
Indicator 1: Completion of the Arctic Marine Shipping Assessment	Criterion 1: Arctic Council completed the AMSA report for the Sixth Ministerial Meeting. Criterion 2: AMSA report included necessary information on traditional uses of the offshore by Arctic Indigenous peoples
Indicator 2: Implementing AMSA Policy Recommendations	Criterion 1: Identified and approved follow-up action I(C) Uniformity of Arctic Shipping Governance I(D) Strengthening Passenger Ship Safety in Arctic Waters I(E) Arctic Search and Rescue (SAR) Instrument II(A) Survey of Arctic Indigenous Marine Use II(B) Engagement with Arctic Communities II(H) Reducing Air Emissions III(A) Addressing the Infrastructure Deficit III(B) Arctic Marine Traffic System III(C) Circumpolar Environmental Response Capacity Criterion 2: Monitoring the progress of the implementation of the AMSA recommendations

Cooperation on Oil Spill Prevention, Preparedness and Response

NATIONAL	
Indicator 1: National Contingency Plans for Preparedness and Response	Criterion 1: State developed a contingency plan (or plans) that accounts for preparedness and response to oil pollution incidents in Arctic waters Criterion 2: The contingency plan (or plans) account for both a) particular activities and locales most likely to give rise to or suffer from an oil pollution incident and b) anticipated risks to areas of special ecological significance Criterion 3: The contingency plan (or plans) include the organizational relationship of the various public or private bodies involved, taking into account guidelines developed pursuant to MOSPA and other relevant international agreements Criterion 4: State has clear reference(s) to the application of the precautionary approach in the national regulations of Arctic oil and gas activities Criterion 5: State has clear reference(s) to the application of the polluter pays principle in the national regulations of Arctic oil and gas activities

Indicator 2: Authorities and Capacity for Oil Pollution Response	Criterion 1: State's national system for responding promptly and effectively to oil pollution incidents includes
	the competent national authority or authorities with responsibility for oil pollution preparedness and response,
	the national 24-hour operational contact point or points, which shall be responsible for the receipt and transmission of oil pollution reports, and
	an authority or authorities entitled to act on behalf of the state to request assistance or to decide to render the assistance requested
	Criterion 2: State has established a minimum level of pre-positioned oil spill combating equipment, commensurate with the risk involved, and programs for its use
	Criterion 3: State has established a program of exercises for oil pollution response organizations and training of relevant personnel
	Criterion 4: State has established plans and communications capabilities for responding to an oil pollution incident
	Criterion 5: State has established a mechanism or arrangement to coordinate the response to an oil pollution incident with, if appropriate, the capabilities to mobilise the necessary resources
Indicator 3: Oil Spill Monitoring and Compliance	Criterion 1: State has a system to monitor oil pollution incidents under its jurisdiction
	Criterion 2: State undertakes appropriate monitoring activities – to the extent feasible – in adjacent areas beyond national jurisdiction
	Criterion 3: State cooperates with other Arctic Council state or states to improve hazardous ice detection through
	satellite services
	production and dissemination of ice maps in real time
	Criterion 4: State has a legal base that allows for regulatory agency personnel to access the installations and to see all relevant documentation and equipment at any time
	Criterion 5: State has a legal base to take appropriate action in case:
	of violations and noncompliance;
	if the operator fails to react adequately to dangerous situations
Indicator 4: Funding for Prevention and Response Measures	Criterion 1: State evaluated funding levels to ensure full support for oil spill prevention and response measures, including enforcement of these measures
Indicator 5: Measures to Control Oil and Gas Activities in Sensitive Areas	Criterion 1: State implemented stringent control measures for areas that are sensitive to spills
Indicator 6: Oil Extraction and Conservation Areas	Criterion 1: State, in its permitting process, implements sound conservation practices as a mean to minimise environmental impacts
	Criterion 2: State did not permit oil and gas activities in any conservation areas

ARCTIC COUNCIL	
Indicator 1: Completion of the Oil and Gas Assessment	Criterion 1: Arctic Council released and approved a completed oil and gas assessment by the Tromso Ministerial meeting
Indicator 2: Completion of the Revised Arctic Offshore Oil and Gas Guidelines 2009	Criterion 1: Arctic Council released and approved a revision of the Arctic Offshore Oil and Gas Guidelines
Indicator 3: Completion of Behaviour of oil and other Hazardous Substances in Arctic waters (BoHaSA)	Criterion 1: Arctic Council has released a report on the behavior of oil and other hazardous substances [BoHaSa Report]
Indicator 4: Major Preparedness and Response Deliverables	Criterion 1: Arctic Council developed and announced an instrument on Arctic marine oil pollution preparedness and response Criterion 2: Arctic Council encouraged contingency plans, training and exercises
Indicator 5: Oil Spill Prevention Cooperation	Criterion 1: Arctic Council developed recommendations and/or best practices in the prevention of marine oil pollution Criterion 2: Arctic Council enhanced mutual cooperation in the field of oil spill prevention Criterion 3: Arctic Council established a mechanism supporting research to prevent release of oil into Arctic waters Arctic Council established a mechanism supporting technology transfer to prevent release of oil into Arctic waters

Black Carbon and Adaptation

NATIONAL	
Indicator 1: Black Carbon Emissions Inventories	Criterion 1: State has developed and submitted to the Arctic Council an inventory of BC emissions
Indicator 2: Black Carbon Early Actions	Criterion 1: State has implemented early actions to reduce black carbon
Indicator 3: Emissions from Flaring	Criterion 1: State requires licenses or permits for any flaring of gas
Indicator 4: Climate Change Adaptation	Criterion 1: State has developed and implemented Arctic adaptation strategies appropriate to the scale and character of anticipated changes

Indicator 5: Climate Change Observation	Criterion 1: State has developed regional-scale assessments of cryospheric change and the associated risks
	Criterion 2: State has systematic, comprehensive surface-based monitoring of the cryosphere
	Criterion 3: State has supported development of remote sensing methods for observing the cryosphere
	Criterion 4: State has systems to observe the cascading effects of cryospheric change on ecosystems and human society
Arctic Council	
Indicator 1: Climate Monitoring and Observation	Criterion 1: Arctic Council (AMAP) has reviewed needs and gaps in climate monitoring since 2006
	Criterion 2: Arctic Council established an Arctic observing network
Indicator 2: Coordination on Black Carbon and Methane Emissions Reduction	Criterion 1: Arctic Council established a process for submission of periodic national reports and action plans
	Criterion 2: Arctic Council created an expert group synthesizing policy relevant information from national inventories
	Criterion 3: Arctic Council established a Task Force to develop arrangements on actions to achieve Black Carbon and methane emission reductions, which provides a report in 2015

Ecosystem-based Management

NATIONAL	
Indicator 1: Environmental Impact Assessments (EIAs), Strategic Environmental Assessments (SEAs), and Risk Assessments	Criterion 1: State has regulations requiring environmental impact assessments to be completed prior to approval of new exploration and/or exploitation activities
	Criterion 2: State has regulations requiring strategic environmental assessments to be completed prior to the approval of new exploration and/or exploitation activities
	Criterion 3: State has regulations requiring risk assessments to be completed prior to the approval of new exploration and/or exploitation activities
Indicator 2: Assessments of Combined Effects of Multiple Stressor	Criterion 1: State studied and identified combined effects of multiple stressors on marine species and ecosystems
	Criterion 2: State monitors on an ongoing basis the combined effects of multiple stressors on marine species and ecosystems

Indicator 3: Applying the Ecosystem Approach	Criterion 1: State completed the identification of marine geographical areas based on biogeographical criteria including identification of responsible agencies and jurisdictional aspects, and the legitimate stakeholders for each area
	Criterion 2: State published descriptions of all their Arctic marine ecosystems
	Criterion 3: State developed a holistic and comprehensive set of ecological objectives including management action for all their Large marine Ecosystems (LMEs)
	Criterion 4: State released ecosystem status reports for all their respective LMEs
	Criterion 5: State completed and recurrently updates the Arctic Ecosystem Services Inventory for all their LMEs
	Criterion 6: State has policies that are integrated for all their respective LMEs including ecosystems straddling national boundaries
Indicator 4: Cooperation in Advancing Implementation of EBM	Criterion 1: State has at least one shared EBM initiative with neighboring state(s)
ARCTIC COUNCIL	
Indicator 1: Completion of AC EBM Expert Group Report	Criterion 1: Arctic Council completed EBM report
Indicator 2: Developing an Arctic EBM goal	Criterion 1: Development of an overarching EBM goal in progress, including objectives supporting this goal
	Criterion 2: Arctic Council EBM goal developed and endorsed, including objectives supporting this goal
Indicator 3: Updating Observed Best Practices in Ecosystem-based Ocean Management in the Arctic	Criterion 1: Arctic Council updated and adjusted “Observed Best Practices in Ecosystem-based Ocean Management in the Arctic” to be applicable to all environments, including marine, coastal and terrestrial.

ANNEX 2. ACRONYMS

AAB	Actions for Arctic Biodiversity
ABA	Arctic Biodiversity Assessment
AC	Arctic Council
AACA	Adaptation Actions for a Changing Arctic
AMAP	Arctic Monitoring and Assessment Programme
AMSA	Arctic Marine Shipping Assessment
AOOGG	Arctic Offshore Oil and Gas Guidelines
AOR	Arctic Ocean Review
BWMC	Ballast Water Management Convention
BoHaSa	Behaviour of Oil and Other Hazardous Substances in Arctic Waters
CAFF	Conservation of Arctic Fauna and Flora
CBD	Convention on Biological Diversity
CBMP	Circumpolar Biodiversity Monitoring Program
DFO	Department of Fisheries and Oceans (Canada)
EBM	Ecosystem-Based Management
ECA	Emission Control Area
EPPR	Emergency Prevention, Preparedness and Response
GEM	Greenland Ecosystem Monitoring
GHG	Greenhouse gases
IMO	International Maritime Organization
LME	Large Marine Ecosystem
LOMA	Large Ocean Management Area
MOSPA	Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic
MPA	Marine Protected Area
NASA	National Aeronautics and Space Administration (US)
NOx	Nitrogen Oxides
OGA	Arctic Oil and Gas Assessment
PAME	Protection of the Arctic Marine Environment
PM	Particulate Matter
PP	Permanent Participants
SAO	Senior Arctic Official
SEA	Strategic Environmental Assessments
SOx	Sulfur Oxides
SAON	Sustaining Arctic Observing Networks
SWIPA	Assessment of Changes in Snow, Water, Ice and Permafrost in the Arctic
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
VTS	Vessel Traffic Service (Norway)
WWF	World Wide Fund for Nature / World Wildlife Fund

+100

WWF is in over 100 countries, on 5 continents

+5 M

WWF has over 5 million supporters globally

1961

WWF was founded in 1961

+5,000

WWF has over 5,000 staff worldwide

Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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