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EUA-BCA

Stakeholder Analysis Report

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Preface

This report presents a stakeholder analysis made within the project European Union-funded Action on Black Carbon in the Arctic (EUA-BCA). The project aim is to contribute to the development of collective responses to reduce black carbon emissions in the Arctic and to reinforce international cooperation to protect the Arctic environment. It provides and communicates knowledge about sources and emissions of black carbon and supports relevant international policy processes.

The EUA-BCA provides inputs to processes aimed at reducing black carbon emissions from major sources (gas flaring, domestic heating, transport, open burning and maritime shipping), and also strives to enhance international cooperation on black carbon policy in the Arctic region – with a special focus on supporting the work of the Arctic Council and the Convention on Long-range Transboundary Air Pollution and other national, regional and international initiatives, and building strong collaboration with EU strategic partners.

This report identifies key stakeholders of relevance for the priorities under the EUA-BCA, which are also priorities of importance for the general problem with black carbon in the Arctic.

This report is a part of the EUA-BCA final deliverable series including several reports and digital products in support of policy actions and increasing regional/national/international cooperation with the ultimate target of reducing negative impacts from black carbon emissions in the Arctic. The policy landscape report is informed by this stakeholder analysis, making certain conclusions about stakeholder importance in further effort coordination, and by a report exploring and analysing in detail possible policy actions to reduce black carbon emissions across prioritised areas. The policy landscape report further explains the ways to implement the most relevant actions in practice and clarifies how enhanced cooperation would contribute to actions in certain key areas. The EUA-BCA Policy landscape report summary is a brief for policymakers on the most important conclusions of the policy landscape report. There is also a digital version of the policy landscape available on a EUA-BCA project webpage and aimed at visualisation of policy actions, potential involvement of relevant stakeholders in their practical implementation, and the timeline with specific milestones on the way to reduce black carbon emissions in the next decade.

Technical reports published under the auspices of the EUA-BCA project are:

EUABCA Technical report #1: Review of Observation Capacities and Data Availability for Black Carbon in the Arctic Region,
EUABCA Technical report #2: Review of Reporting Systems for National Black Carbon Emissions Inventories,
EUABCA Technical report #3: Best Available Techniques Economically Achievable to Address Black Carbon from Gas Flaring

EUA-BCA Technical report #4: Guidance on Reducing Black Carbon Emissions from Residential Heating in the Arctic (in press)

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Summary

This report presents the results of a stakeholder analysis made within the project EU Action on Black Carbon in the Arctic, funded by the European Union. A stakeholder analysis is basically a structured way to identify and assess the importance of individuals, groups or organisations that may significantly influence, or be affected by, a given decision or process.

The stakeholder analysis was done to identify which stakeholders would be important in the process to *Increase coordination of Arctic black carbon policies* and to some extent to *Facilitate early emission reductions of black carbon affecting the Arctic*. The analysis included 95 Arctic-relevant stakeholders, categorised in six groups: Intergovernmental organisations, National authorities, Indigenous people's organisations, Expert and working groups, Non-governmental organisations, and Industry.

Overall, the stakeholder analysis indicates that there are some stakeholders that appear more important to include in the process to increase coordination of Arctic black carbon policies and to facilitate early emission reduction of black carbon affecting the Arctic:

Stakeholder category	**Stakeholders**
Intergovernmental	IMO, CLRTAP, followed by the Arctic Council, the West Nordic Council, and the Nordic Council of Ministers
National authorities	United States, Canada, Russia, Iceland, the European Union and the Nordic countries
Indigenous groups	Aleut international Association, the Arctic Athabaskan council, the Saami council and the Inuit Circumpolar Council
Expert groups	The Arctic Councils' Expert Group on Black Carbon and Methane (EGBCM), the Arctic Contaminants Action Programme (ACAP), and the Arctic Monitoring and Assessment Programme (AMAP)
NGOs	The Association of World Reindeer Herders (AWRH), ICCT, ICCI, and the International Working group for Indigenous Affairs (IWGA)
Industry	Oil & gas industries in Russia and in Norway (Nordic), shipping industry in Russia

The identification of the most important stakeholders was made in separate categories since there are vast differences in character between them. Since personal interviews with all stakeholders were unfeasible, and as equal consideration of all stakeholders as possible is important, we chose to only use web-analysis of homepages and other official information for the ranking.

The analysis supporting the results above was made by quantitatively ranking each stakeholder over three dimensions: Power, Interest, and Network capacity. In the literature there are no firm qualifiers as to what constitutes Power and Interest. So here, based on pre-determined scoring criteria and a possible rank between 1-5 for each indicator, Power was indicated by the stakeholders' quantity of black carbon emissions affecting the Arctic (when applicable), their judicial power over black carbon emissions, and their economic power. Interest was indicated by whether the stakeholder is relevant for black carbon in Arctic policy or activities, has economic interest in the issue and/or the Arctic and whether the stakeholder lives and/or acts in the region. A stakeholders' Network capacity was indicated by the number of self-stated co-operations, number of members in the stakeholder body, as well as the share of "Arctic relevant" members. For some of the indicators, the ranking was made independently of other stakeholders in the category, but for others the ranking was made in relative terms. With three indicators for each dimension, each scored between 1-5, the total maximum score for Power, Interest or Network capacity is 15. Since

scoring was done internally within each stakeholder category, and a ranking scale is absolute or relative depending on the indicator within a category, it is not possible to compare ranks between the categories.

To achieve the goal of the analysis, i.e. to identify important stakeholders, we considered mainly the Interest and the Power ranking and used the Network capacity as a decisive indicator when necessary. Naturally the important stakeholders vary with respect to whether they have high power or are highly interested in the issue. Illustrated by displaying the stakeholders on an interest/power matrix, the result of the analysis shows for each category which stakeholders that are potentially the most important to include in the process of increased coordination of Arctic black carbon policies.

The results of the stakeholder analysis should be treated with some caution. The initial framing of the analysis might have large influence over the results. There are multiple and situation-specific meanings of the terms 'importance', 'power' and 'interest'. There is also an associated, but unavoidable, subjectivity when choosing which qualifiers to include as indicators of Power and Interest, as well as how to quantify, rank and weight these terms. The results from a stakeholder analysis are applicable to a limited range of perspectives on what constitutes 'important', 'power' and 'interest', namely the perspective represented by the specific indicators used for the analysis. It should also be noted that this analysis is based on current information and thus represents the present situation. The ranking does not provide information on the potential future role of these stakeholders in increased coordination of Arctic BC actions and policies. Due to these limitations of the method, the results should be considered indicative and as a basis for further work and actions.

Introduction

Black carbon (BC) is recognised as an important short-lived climate forcer (SLCF) contributing to global warming (Myhre et al. 2013, Baker et al. 2015, Myhre and Samset 2015, Wang et al. 2016). Further, the Arctic region is experiencing a disproportionally high rate of global warming-related effects (Dai et al. 2019, Meredith et al. 2019) with wide-spreading effects on the rest of the world (IPCC 2019), and black carbon has been identified as one of the most important SLCFs for Arctic warming (Sand et al. 2016). If global efforts to reduce emissions of carbon dioxide (CO_2) would be effective, additional efforts to reduce emissions of black carbon could slow down the rate of global warming with 0-0.4° Celsius by 2050 (Klimont et al. 2018), and technically available emission reductions of the SLCFs black carbon, methane and nitrogen oxides could reduce Arctic Warming with some 0.3-0.6 Celsius by 2050 (AMAP 2015). In contrast to emissions of CO_2, the regional origin of black carbon emissions matter, and emissions from northern countries have a larger per unit effect on Arctic warming than emissions from other regions (AMAP 2015). At the same time, black carbon is recognised as an air pollutant with effects on human health, potentially even larger than effects of other types of particulate matter with aero-dynamic diameter less than 2.5µm ($PM_{2.5}$) (WHO 2012, Grahame et al. 2014).

There is thus a rationale to reduce emissions of black carbon affecting the Arctic, and there are technological solutions available. Given the transboundary nature of the problem and that many countries and sectors contribute to the problem, international agreements are most likely needed. One such agreement is the Arctic Council goal of collectively reducing black carbon emissions by at least 25-33% of 2013 levels by 2025. There are also several international agreements in place indirectly regulating emissions of black carbon, such as the EU environmental legislation, the UNECE Air Convention Gothenburg protocol, and the IMO environmental ambitions. It is not certain that these agreements will move in the same direction with respect to the black carbon problem in the Arctic, in addition some countries also have their own domestic black carbon emission policies. All this motivates efforts to further coordinate Arctic black carbon policies.

If coordination of black carbon policy will be at all feasible, it is important to get a better knowledge about the various organisations and stakeholders that would affect or be affected by a coordinated policy. With the work reported here we have started this build-up of knowledge by making a stakeholder analysis of the organisations that already have clearly stated interest in the challenges with black carbon effects on the Arctic. We have identified stakeholders and ranked them according to their power over the issue, their interest in the issue and the size of their network. We have then identified the stakeholders that could be considered of highest importance to contribute to a future coordinated black carbon policy for the Arctic.

In this report, an overview of the method used when conducting the stakeholder analysis is given, complemented with detailed step-by-step descriptions. This is followed by a short overview of the results and a presentation of the conclusions from the analysis.

Stakeholder analysis

Stakeholder analysis is a general description of methods used to identify and assess the importance of individuals, groups or organisations that may significantly influence, or are affected by, a given decision. It is by now commonly used as support to policies and decisions related to natural resource management, but can also be used for environmental pollution policies, as in this case. Formally, it can be described as:

> *"… a process that i) defines aspects of a social and natural phenomenon affected by a decision or action; ii) identifies individuals, groups and organisations who are affected by or can affect those parts of the phenomenon; iii) prioritises these individuals and groups for involvement in the decision-making process."* (Reed et al. 2009).

One of the benefits with a stakeholder analysis is that it complements the importance of expert opinions of which stakeholders that are important for a given issue. Through the structured format it enables identification of unexpected important stakeholders that can be missed if relying only on expert opinions. There are several different versions of stakeholder analysis, and the interested reader can have a look in Grimble and Wellard (1997) as well as Reed et al. (2009) for clarity. In this report we have used the most commonplace version of stakeholder analysis, i.e. ranking stakeholders in accordance with their position in an interest/power matrix (Figure 1).

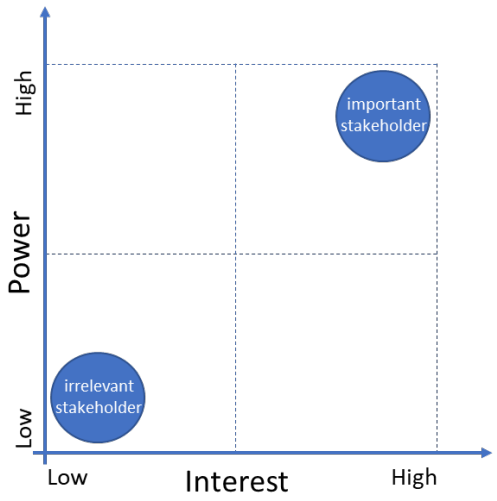

Figure 1 A schematic power/interest matrix, adapted from Reed et al., 2009

To ensure relevance of the power/interest matrix one follows a stepwise method. The first step is to define the decision/action/policy under consideration. The second step is to identify the stakeholders. The third step involves categorisation of stakeholders, followed by ranking the stakeholders according to their Power and Interest. For this analysis we have also added a third dimension, the Network range of the stakeholder, as this is expected to play a role in the action at hand, which is *Increase coordination of Arctic black carbon policies* and to some extent *Facilitate early emission reductions of black carbon affecting the Arctic*.

Being a useful tool to increase the probability that most important stakeholders are engaged in environmental policy development, the results from a stakeholder analysis of environmental policy are sensitive to the initial framing of the analysis. There are multiple and situation-specific meanings of the term's 'importance', 'power' and 'interest'. There is also an associated unavoidable

subjectivity when choosing which categories to include as indicators of Power and Interest, as well as how to quantify, rank and weight these terms. So, it is naturally the case that the results from a stakeholder analysis are applicable to a limited range of perspectives on what constitutes 'important', 'power' and 'interest', namely the perspective represented by the specific indicators used for the analysis.

Step 1: Definition of action

For this project it is considered that the main action (issue) under consideration is *Increase coordination of Arctic black carbon policies* and to some extent *Facilitate early emission reductions of black carbon affecting the Arctic*. The stakeholders included in the forthcoming analysis are either affected by, or affect, these actions. As in Zhakenova (2017) we consider the term stakeholder to include governments/countries, organisations (international, regional, national), interest groups, industries, Arctic Indigenous Organisations, Arctic communities, and individuals.

Step 2: Identification of stakeholders

The second step is to identify the stakeholders. In this project, thanks to already ongoing policy processes, we start with one of the self-evident high-priority stakeholders – the Arctic Council – and go from there. More than 90% of the stakeholders associated with the Arctic Council science and policy processes are either member states, observers, ad-hoc observers, permanent participants, working groups or expert groups/task forces. Other stakeholders include industries that would be affected by implementation of the key measures already identified to reduce black carbon effects in the Arctic: the oil and gas industry and the shipping industry (EGBCM 2017, Saunier et al. 2019).

As mentioned above, the identification of stakeholders started with an overview of the stakeholders associated with the Arctic Council. This list and categories of Arctic Council stakeholders is then reviewed by the project group by surveying international organisations, and by discussions within the project group to check for omittances. Accordingly, the Arctic Council stakeholder list is for this stakeholder analysis complemented with the United Nations Economic Commission for Europe (UNECE) bodies, as well as bodies under the auspices of the United Nations Framework Convention on Climate Change and the Organisation for economic development (OECD). In addition, there are several institutes, expert groups and business sectors added to the stakeholder list based on their proximity (either regionally or sectorial) to the action of interest. All in all, there are 95 stakeholders of interest for the stakeholder analysis (see Annex 1 and Table 2 -Table 7).

In order not to omit any potentially relevant stakeholder, all countries and organisations associated with the Arctic Council, either as members or observers, were included in the analysis, even though we suspected that some would be less relevant for the main action (issue) under consideration: *Increase coordination of Arctic black carbon policies* and to some extent *Facilitate early emission reductions of black carbon affecting the Arctic*. In a stakeholder analysis, the power and the interest of the stakeholders are always related to the issues under consideration, not the stakeholders' power on the global arena. To clarify, even if the United States has the world's largest military capacity, it is not necessarily the stakeholder with largest power over the issue *Increase coordination of Arctic black carbon policies*.

Step 3: Categorisation and ranking of stakeholders

The third step involves categorisation of stakeholders, and here it is possible to use already established main categories from the Arctic Council, with the addition of the category *Industry*. All in all, there are six main stakeholder categories considered: Intergovernmental, National authorities, Indigenous groups, Expert groups, NGOs, and Industry.

For each of the main categories we rank the stakeholders according to their Power, Interest, and Network capacity. Given the action in question it is relevant to include an estimate of Network capacity separately from the Power or Interest relationships.

There does not seem to be any firm qualifier as to what constitutes Power and Interest (Reed et al. 2009). Based on available data, in this report we use the following indicators of Power, Interest and Network for the stakeholders:

- Power indicators:
  - To what extent does the stakeholder have BC emissions affecting the Arctic,
  - To what extent does the stakeholder have judicial power over BC emissions,
  - How high is the stakeholders' economic power (as GDP or revenue),

- Interest indicators:
  - Does the stakeholder have a BC Arctic policy?
  - Does the stakeholder have economic interest in the issue and/or the Arctic?
  - Does the stakeholder live and/or act in the Arctic region (North of the Arctic Circle) and/or is impacted by BC emissions?

- Network capacity indicators:
  - The stakeholders' number of co-operations,
  - The stakeholders' number of members,
  - The stakeholders' share of "Arctic-relevant" members in organisation (North of the Arctic Circle).

Within each category we ranked the stakeholders from 1-5 according to their position on an absolute or relative scale (dependent on indicator) for each indicator. The ranking was done internally for each stakeholder category, and it is not possible to compare ranking numbers between the categories. The ranking was done through assessments of the stakeholders' Power and Interest in the issue as well as through assessment of their Network range. The score per indicator is then summed together to give an estimate of the stakeholders' Power and Interest in the action, as well as their Network capacity.

In contrast to some other stakeholder analyses we have not estimated relationships between the stakeholders, i.e. whether one stakeholders' gain is another stakeholders' loss or if particular stakeholders are adversaries or have different interests. There are two main reasons for omitting this: it is not likely that we would get appropriate information from the information publicly available about the stakeholders, and, including such an element in the stakeholder analysis would introduce an unwanted dimension of a political position into the analysis.

There are many stakeholders of potential importance for the action. It is important for the analysis to strive for some sort of equal consideration of all stakeholders. Correspondingly we chose to use web-analysis of homepages and other official information for the ranking. As mentioned, the issue at stake was *Increase coordination of Arctic black carbon policies* and to some extent *Facilitate early emission reductions of black carbon affecting the Arctic*.

Ranking criteria for Power

Power is an interesting and hard-to-catch concept. The literature on stakeholder analysis gives little guidance, so based on data availability we chose to stick to the easily available indicators: total emissions, legislative power, and economic power (as GDP or revenue). Below we present the indicators in detail and the rank of the stakeholders.

Large BC emissions affecting the Arctic

The Power indicator *Large BC emissions affecting the Arctic* was estimated only for countries, to avoid double counting between countries and industrial stakeholders. The ranking was based on the presentation of direct and snow/ice radiative forcing of black carbon in the Arctic as presented in table S4 in the supplementary material to Sand et al. (2016). 20-, 40-, 60- and 80% percentiles of all the sources were then calculated, and countries with forcing lower than the 20% percentile or higher than the 80% percentile were ranked 1 and 5, respectively (Table 1).

Table 1 Sum of mean BC direct and snow/ice radiative forcing (mW/m²) in the Arctic, in Sand et al. (2016) and rank

Region	Mean BC forcing	Rank BC emissions
Rest of the world	474	5
Russia	225	5
China	188	5
India	181	4
East and South Asia (excl. China & India)	155	4
Rest of Europe (proxy for EU)	56.8	3
Canada	47.4	3
United States	28.3	3
Denmark	2.18	2
Finland	2.11	2
Norway	1.71	1
Sweden	1.49	1
Iceland	0.112	1

Some adjustments of the results in Sand et al. (2016) were necessary. We used the 'Rest of Europe' as a proxy for EU. If considering $PM_{2.5}$ emissions as an indicator of the relative mass of black carbon emissions, CEIP (2020) show that the 2018 $PM_{2.5}$ emissions were 1225 kton in EU27 and 1574 kton in the European countries other than Russia and the Nordic countries, but the rest of Europe is located further south and thereby black carbon emissions have smaller effect on the Arctic. We therefore retained the 'Rest of Europe' as a proxy for EU emissions of black carbon. The disaggregation between the Nordic countries was made by using officially reported black carbon emission data for the year 2015 (CEIP 2020). The disaggregation of 'East and South Asia' in Sand et al. (2016) into 'East and South Asia', China, and India in this report, was made according to

population size relative to the total population of East and South Asia as defined in Sand et al. (2016) (3.9 billion people).

Judicial power over BC emissions

The Power indicator *Judicial power over BC emissions* was ranked according to the following criteria:

- Rank 5 for stakeholders with ability to write / impose national or EU law with hard penalties (fines, etc), or for stakeholders with large influence on lawmakers in international agreement negotiations.
- Rank 4 for stakeholders creating conventions, protocols or framework agreements with softer penalties (shaming, etc), lawyers involved in agreement negotiations.
- Rank 3 for stakeholders stating intentions, declarations, and framework agreements or resolutions, and have lawyers involved in negotiations.
- Rank 2 for stakeholders with control over own stakeholder organization, or writing recommendations, but with no lawyers involved. If only lawyers and lobbying = 2.
- Rank 1 for stakeholders with no noticeable judicial power.

Economic power

The Power indicator *Economic power* was ranked within each stakeholder category. For each category we first identified the stakeholder with the largest economic power and then ranked the other stakeholders according to the percentile of the total amount of the stakeholder with the largest economic power. For countries we used data from the World Bank on GDP and size of the public sector as a proxy of economic power. For other stakeholders we used information from their annual or financial reports on their annual budget as a proxy for economic power. Stakeholders with no information available were given the rank 0.

Ranking criteria for Interest

In the stakeholder analysis literature, there is no guidance on how to indicate Interest, and again we used conceptually easy indicators to identify level of interest:

- high rank if the stakeholder has a BC Arctic policy and/or activity,
- high rank if the stakeholder has large economic interest in the issue and/or Arctic,
- high rank if the stakeholder lives and/or acts in the region.

BC Arctic policy

The Interest indicator *Has BC Arctic policy* was ranked according to the stakeholders' explicit mentioning of black carbon in the Arctic as an issue of consideration on their webpages or in other official documents. The following criteria were assigned for the ranks:

- Rank 5 if the stakeholder has a stated BC policy (or BC policy relevant activities) for the Arctic and has quantified BC policy targets.
- Rank 4 if the stakeholder has a stated BC policy (or BC policy relevant activities) for the Arctic, or if it has activities with high focus on BC emissions and their effects on the Arctic region.
- Rank 3 if the stakeholder recognises and mentions BC and the Arctic region. Or if it recognises and mentions BC specifically and geographically covers the Arctic region.
- Rank 2 if the stakeholder recognises climate change and the Arctic region. Or if it recognises and mentions climate change and geographically covers the Arctic region.
- Rank 1 if there is no specific mentioning of BC or climate change and the Arctic region.

Economic interest

The Power indicator *Economic interest* was ranked within each stakeholder category and framed in the following way:

For each stakeholder, how important is the Arctic and/or BC in the Arctic for their current or future economy? With "their economy" we mean the share of national GDP that originates from the Arctic, income/profit for a firm or sector, sources of income/regional income for civil society, and for an organization the members' economic interest and/or explicit aim of increasing economic activity in the Arctic. Given information scarcity we had to make some approximations for many organisations. In these cases, we considered the organisations' area of work and on how large proportion of the work done that focuses on the Arctic and/or how many members that are Arctic countries/organisations. We excluded organisations with indirect economic interests or when the economic interest is secondary to the main interest when ranking economic interest for organisations. As an example, Arctic research organisations were not considered to have economic interest. The following ranks were used:

- Rank 5. More than 80% of stakeholders' own income comes from the Arctic region,
- Rank 4. More than 60% of stakeholders' own income comes from the Arctic region,
- Rank 3. More than 40% of stakeholders' own income comes from the Arctic region,
- Rank 2. More than 20% of stakeholders' own income comes from the Arctic region,
- Rank 1. Less than 20% of stakeholders' own income comes from the Arctic region.

Lives or acts in the Arctic

The Interest indicator *Lives and/or acts in the Arctic* is a geographical indicator and was derived partly with the same data used to identify the stakeholders' Power indicator *Economic interest*. The stakeholder ranking for this indicator was as follows:

- Rank 5 if the stakeholder lives and/or has majority of economic or other activity in the region.
- Rank 4 if the stakeholder has more than 10% of economic or other activity in the Arctic.
- Rank 3 if the stakeholder has some significant (>1%) economic or other activity in the region.
- Rank 2 for poorly defined stakeholders that can be suspected to have interest corresponding to the indicator.
- Rank 1 for the Arctic Council observers, permanent participants, and other organisations/countries that are not any of the above.
- Rank 0 for stakeholders that are none of the above.

Ranking criteria for Network

The Network criteria are conceptually easier than the above but induce large variance between stakeholders given the natural differences in organisational size between e.g. an international governmental organisation and a small local community NGO. The Network criteria were therefore ranked within each stakeholder category.

The stakeholders were ranked 1-5 per Network indicator and were given:

- a high rank if the stakeholder reports to have many co-operations with other stakeholders interested in Arctic BC policy,

- a high rank if there are many members (other organisations) in the stakeholder organisation, and
- a high rank if there is a large share of "Arctic-relevant" members in the stakeholder organisation.

Co-operations

The Network indicator *Co-operations* was for each stakeholder ranked according to the following principles. First, we identified the number of other organisations that the stakeholder reports co-operation with (including other Arctic BC stakeholders). Then we checked the indicator *Has BC Arctic policy* to identify how many of the cooperating organisations that have a high rank on *Has BC Arctic policy*. For the *Co-operations* indicator, the *Has BC Arctic policy* cut-off was a rank 3 or higher for the co-operation to be considered as an Arctic/BC-relevant co-operation. The criteria for a rank four or five were as follows for national authorities:

- Rank 5 for a national authority stakeholder if its environmental authorities are members in at least five organisations identified as having a rank 3 or higher in the *Has BC Arctic policy* indicator,
- Rank 4 for a national authority stakeholder if its environmental authorities are members in at least three organisations identified as having a rank 3 or higher in the *Has BC Arctic policy* indicator.

For organisations the criteria for rank four or five were as follows:

- Rank 5 for an organization stakeholder if it has cooperation with at least five organisations identified as having a rank 3 or higher in the *Has BC Arctic policy* indicator,
- Rank 5 for an organization stakeholder if it has cooperation with at least three organisations identified as having a rank 3 or higher in the *Has BC Arctic policy* indicator.

For both national authorities and organization stakeholders the criteria for rank three, two and one were as follows:

- Rank 3 if the stakeholder mentions co-operation with any other organization identified as having a rank 3 or higher in the *Has BC Arctic policy* indicator,
- Rank 2 if the stakeholder mentions co-operation with any other organization,
- Rank 1 if the stakeholder doesn't specify any co-operations.

Member size

For the Network indicator *Member size,* the criteria for the stakeholder rank is identical for all stakeholder categories except for national authorities and NGOs: the number of organisations, groups of organisations or national authorities considered as "members" for the lack of a better word. For NGOs, the *Member size* rank is based on the number of separate organisations considered as members. Naturally, the Network indicator *Member size* is irrelevant for national authority stakeholders. All information on *Member size* was gathered from the stakeholders' own web pages, except for industry stakeholders where we used official registries of the number of industry sector lobby organisations registered in the EU and in the United States.[1]

[1] https://www.integritywatch.eu/organizations, https://www.opensecrets.org/federal-lobbying/industries/summary?id=E01; https://shipinsight.com/articles/main-shipping-organisations;

Except for the NGO category, a stakeholder was given a *Member size* rank five if the stakeholder has more than 150 members, four if 100-149, three if 25-99, two if 5-24 and 1 if less than five members. Every national authority has the rank one. For NGOs the rank was five if the organisation has more than 50 members, four if 20-50 members, three if 5-19 members, two if 2-4 members and one if less than 2 members.

Share of "Arctic relevant" members in organisation

The Network indicator *Arctic relevant members* were ranked according to whether the members of the organization are geographically associated with the Arctic region.

- Rank 5: more than 80% of the members geographically are located in the Arctic,
- Rank 4: between 60-79% of the members are located in the Arctic,
- Rank 3: between 40-59% of the members are located in the Arctic,
- Rank 2: between 20-39% of the members are located in the Arctic,
- Rank 1: less than 20% are located in the Arctic.

A special solution was used for countries (including the transnational EU), where:

- Rank 5: was given to countries which are both Arctic Council members and situated entirely north of the Arctic Circle (including Iceland even though Iceland is just south of the Arctic circle),
- Rank 4 if the country is an Arctic Council member,
- Rank 2 if the country is an Arctic Council observer,
- Rank 1 if none of the above.

Aggregating indicators

The final step in the analysis was to aggregate the scores of the Power, Interest and Network indicators. Given that there are no estimates on whether any of the indicators should be more important than others we assumed equal importance of each indicator. This means that a stakeholder that gets a score 5 on all three Power indicators would end up with an aggregated Power score of 15. The stakeholder indicator scores are presented in the tables in Annex 1.

https://ec.europa.eu/transparencyregister/public/consultation/searchControllerPager.do?declaration=gas&search=search; https://lobbyingdisclosure.house.gov/lookup.asp

Assessment of stakeholders' interest, power and network

The results from the stakeholder analysis are presented per stakeholder category. As a reminder, a stakeholders' Power is indicated by how large effect the stakeholders' black carbon emissions has on the Arctic climate, whether the stakeholder has large judicial power over black carbon emissions, and the stakeholders' economic power. The stakeholders' Interest is indicated by the degree to which the stakeholder has a policy for black carbon, to which degree the stakeholder has an economic interest in the black carbon issue or the Arctic, and whether the stakeholder lives or acts in the Arctic region. The Network is indicated by the number of stakeholder co-operators, the stakeholder member size, and the share of the members that are important for the black carbon problem in the Arctic.

Intergovernmental stakeholders

Of the intergovernmental stakeholders, the analysis indicates that CLRTAP, IMO, the Arctic Council, the West Nordic Council and the Nordic Council of Ministers are the most important stakeholders for the issue of co-ordinating black carbon policy for the Arctic (Figure 2). In this analysis we consider that "important" are those that are relatively high in both Interest and Power and are located towards the upper right-hand corner of the figure. Additional organisations ranked high in Interest but low in Power (2-1) are Barents Euro-Arctic Council (BEAC), Standing Committee of the Parliamentarians of the Arctic Region (SCPAR), Northern Dimensions (ND), and NEFCO.

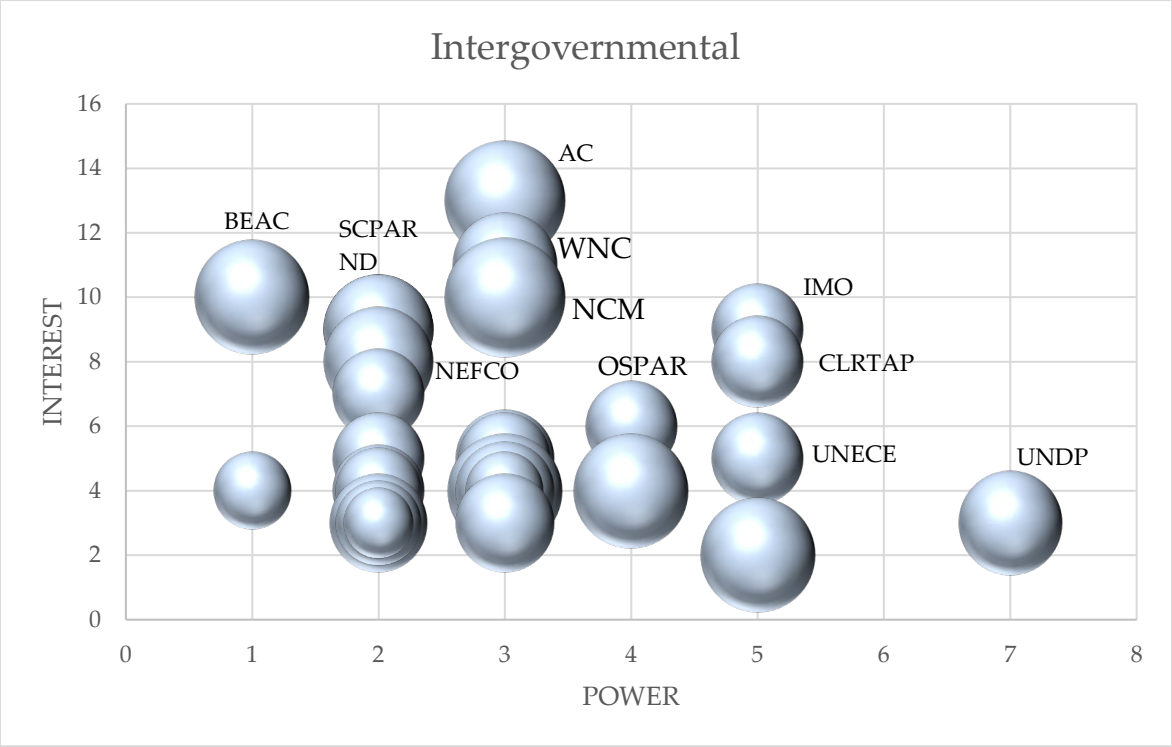

Figure 2 Interest/Power figure of the intergovernmental stakeholders, with bubble size indicating size of the stakeholders' network. Only the most important stakeholders are highlighted by abbreviation in the figure.

Perhaps surprising is that the stakeholder analysis indicates high importance of the West-Nordic Council. This importance is driven mainly by the fact that WNC aims to increase economic activity in the Arctic region and all the members are situated in the Arctic region.

All Intergovernmental stakeholders are presented with their score for Interest, Power and Network in Table 2.

Table 2 Interest, Power and Network summary for intergovernmental stakeholders (sorted by Interest, then by Power). Detailed data available in Annex 1.

Stakeholder	Interest	Power	Network
Arctic Council (AC)	13	3	12
West Nordic Council (WNC)	11	3	9
Nordic Council of Ministers (NCM)	10	3	12
Barents Euro-Arctic Council (BEAC)	10	1	11
International Maritime Organisation (IMO)	9	5	7
Standing Committee of the Parliamentarians of the Arctic Region (SCPAR)	9	2	10
Northern Dimensions (ND)	9	2	10
The Northern Dimension Institute (NDI)	9	2	10
Convention on Long Range Transboundary Air Pollution (CLRTAP)	8	5	7
Nordic Environment Finance Corporation (NEFCO)	8	2	10
World Bank Global Gas Flaring Reduction	7	2	7
OSPAR Commission	6	4	7

Stakeholder	Interest	Power	Network
United Nations Economic Commission for Europe (UN-ECE)	5	5	7
Intergovernmental Panel on Climate Change (IPCC)	5	3	8
Climate and Clean Air Coalition (CCAC)	5	3	7
North Atlantic Marine Mammal Commission (NAMMCO)	5	2	7
United Nations Environment Programme (UN Environment, UNEP)	4	4	11
World Meteorological Organization (WMO)	4	3	11
EMEP Programme (Executive body)	4	3	8
Organisation for Economic Development (OECD)	4	3	5
Centre for Emission Inventories and Projections (CEIP)	4	2	7
Working Group on Strategies and Review (WGSR)	4	2	6
The Environment Policy Committee (EPOC)	4	1	5
United Nations Development Programme (UNDP)	3	7	9
United Nations Framework Convention on Climate Change (UNFCCC)	3	3	8
International Union for the Conservation of Nature (IUCN)	3	2	8
International Council for the Exploration of the Sea (ICES)	3	2	6
International Federation of Red Cross & Red Crescent Societies (IFRC)	3	2	4
World Health Organization (WHO)	2	5	11

National authorities

The stakeholders classified as national authorities of highest importance are indicated to be the United States, Canada, Russia, Iceland, the European Union (classified as a national authority stakeholder for comparability), and the Nordic countries close by (Figure 3). Out of the important national authorities there are differences between the countries in Interest or Power strength, where Iceland is high in Interest and lower in Power, while e.g. USA is high in Power and lower in Interest. Iceland turns out high in Interest since the entire population of Iceland is around the Arctic circle. With the geographical location of Iceland, a coordination of Arctic black carbon policies will both affect the Icelandic population directly and affect the Icelandic economy.

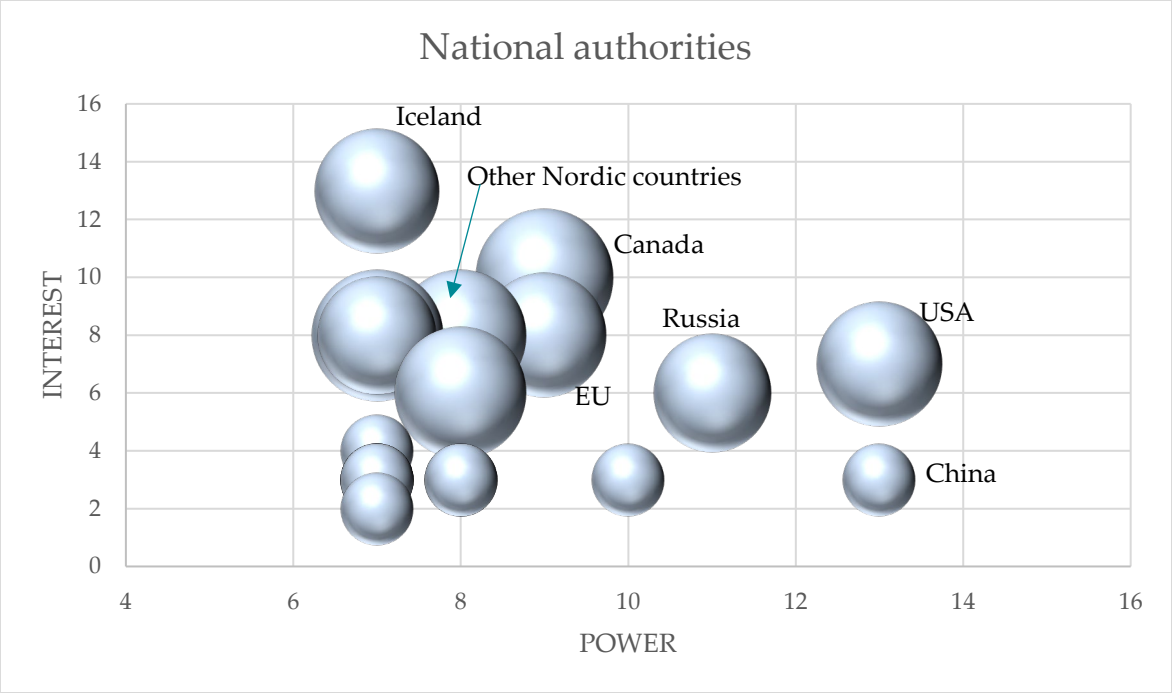

Figure 3 Interest/Power figure of the national authority stakeholders, with bubble size indicating size of the stakeholders' network. Observe that the x-axis doesn't start at zero.

Finland, Sweden, Norway and Denmark are all ranked as 7 or 8 for Power and 8 for Interest, except for Denmark ranked as 6 (Table 3). It might appear strange that Denmark, which includes Greenland, is of lower importance than other Nordic countries. This is mainly a result of the fact that Danish black carbon policy seems to be lacking. It is however appropriate to mention that we have not considered potential future Danish economic benefits from increased fossil fuel extraction around Greenland. If such an extraction would occur in the future it would increase both Denmark's Power as well as Interest in the issue. All the other national authority stakeholders included in the analysis end up with a lower rank in Interest and Network than those mentioned, although some of them are high in Power (Table 3).

Table 3 Interest, Power and Network summary for national authority stakeholders (sorted by Interest, then by Power). Detailed data available in Annex 1.

Stakeholder	Interest	Power	Network
Iceland	13	7	9
Canada	10	9	11
European Union*	8	9	9
Finland	8	8	10
Sweden	8	7	10
Norway	8	7	8
USA	7	13	9
Russian Federation	6	11	8
Denmark	6	8	10
United Kingdom	4	7	3
China	3	13	3
India	3	10	3
France, Germany, Japan	3	8	3
Italy, Netherlands, Poland, South Korea, Spain, Switzerland	3	7	3
Singapore	2	7	3

*The European Union is in this stakeholder analysis categorised as National authority due to more similarities with governments and parliaments than with the stakeholders categorised as Intergovernmental.

Indigenous groups

For the indigenous groups included as stakeholders in this analysis, the results indicate that the Aleut international Association, the Arctic Athabaskan council, the Saami council and the Inuit Circumpolar Council are of highest importance and inseparable in our analysis (Figure 4, Table 4). All Indigenous Peoples Organisations have the same rank on the Power dimension, and practically the same for Interest. None of the Indigenous stakeholders can be considered as not important.

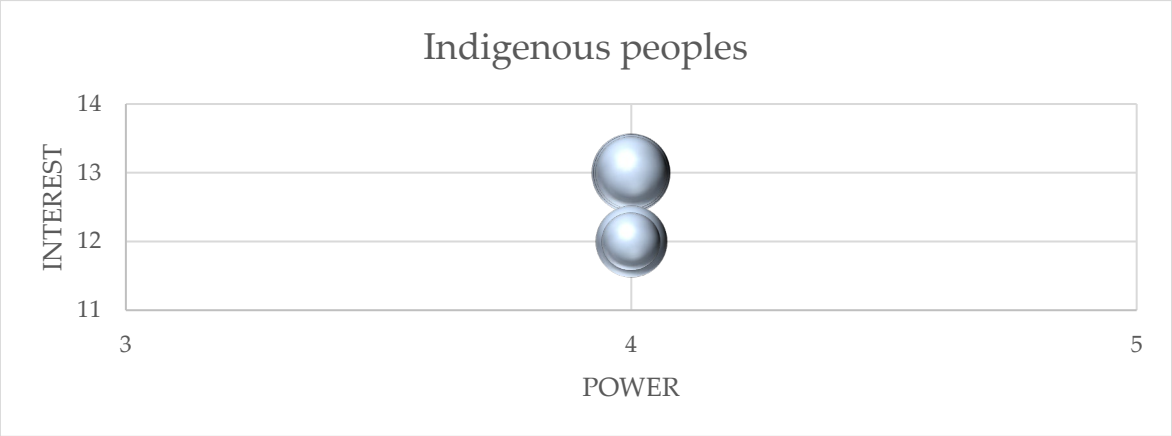

Figure 4 Interest/Power figure of the Indigenous Peoples stakeholders, with bubble size indicating size of the stakeholders' network. Observe that the axes don't start at zero.

Table 4 Interest, Power and Network summary for Indigenous Peoples stakeholders (sorted by Interest, then by Power). Detailed data available in Annex 1.

Stakeholder	Interest	Power	Network
Aleut International Association (AIA)	13	4	11
Arctic Athabaskan Council (AAC)	13	4	10
Saami Council	13	4	10
Inuit Circumpolar Council (ICC)	13	4	9
Gwich'in Council International (GCI)	12	4	9
Russian Association of Indigenous Peoples of the North (RAIPON)	12	4	6

Expert and working groups

For the Arctic Council Working Groups and Expert Groups category it is unsurprising to see the that EGBCM and ACAP have the highest importance according to our analysis, closely followed by AMAP and PAME (Figure 5, Table 5).

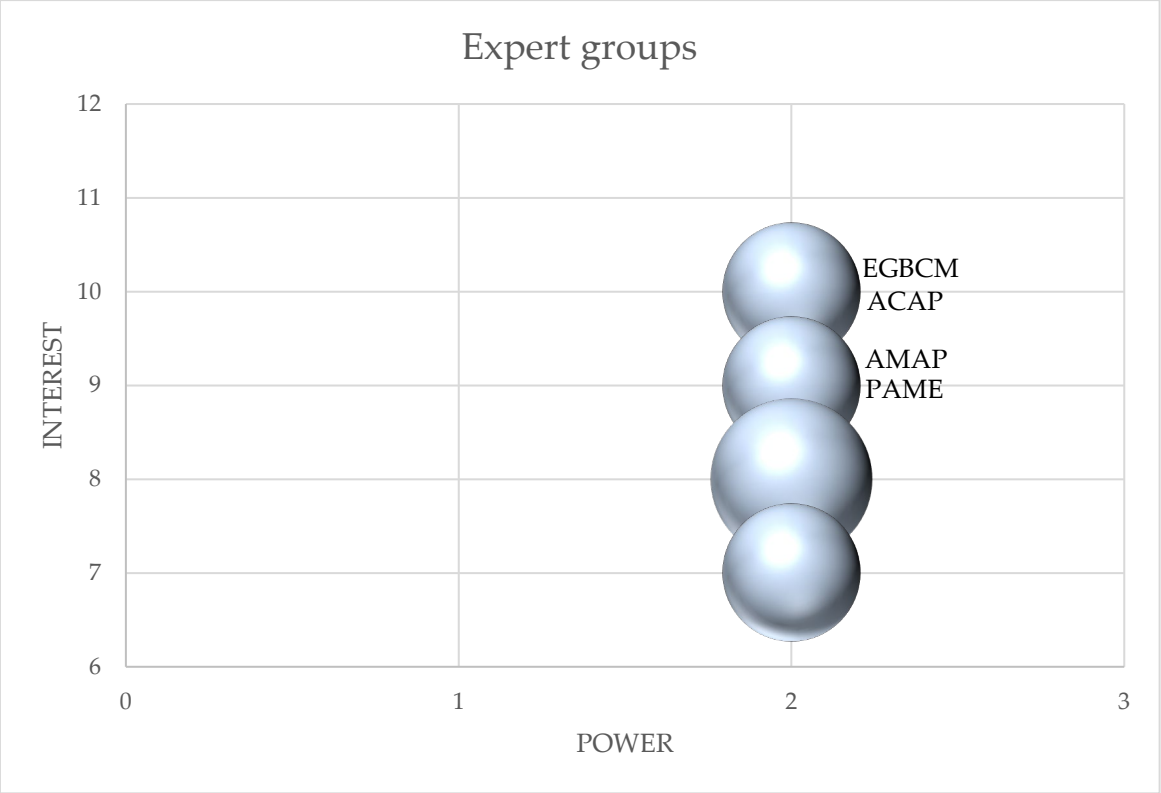

Figure 5 Interest/Power figure of Expert group stakeholders, with bubble size indicating size of the stakeholders' network. Observe that the y-axis doesn't start at zero.

It seems surprising that ACAP has slightly higher importance than AMAP, given the role of AMAP as leading several Arctic Council working groups related to black carbon and the regular publication of the AMAP assessment reports on black carbon and methane. However, the analysis revealed that ACAP since 2016 has a clear SLCP strategy[2], which AMAP has not. Thereby ACAP scores higher than AMAP on the '*Has Arctic BC policy*'.

[2] https://arctic-council.org/en/about/working-groups/acap/home/expert-groups/short-lived-climate-pollutants/

Table 5 Interest, Power and Network summary for Expert groups stakeholders (sorted by Interest, then by Power). Detailed data available in Annex 1.

Stakeholder	Interest	Power	Network
Expert Group in support of implementation of the framework for action on Black Carbon and Methane (EGBCM)	10	2	8
Arctic Contaminants Action Programme (ACAP)	10	2	8
Arctic Monitoring and Assessment Programme (AMAP)	9	2	8
Protection of the Arctic marine environment (PAME)	9	2	8
Conservation of Arctic Flora and Fauna (CAFF)	8	2	11
Emergency Prevention, Preparedness and Response (EPPR)	7	2	8
Sustainable Development Working Group (SDWG)	7	2	8

Non-governmental stakeholders

In the analysis of non-governmental stakeholders, the Association of World Reindeer Herders (AWRH), ICCT, ICCI and the International Working group for Indigenous Affairs (IWGA) are indicated to be the most important (Figure 6). Oceana is ranked high in Power, due to economic power.

Several of the non-governmental stakeholders are high in rank for Interest and Network, but less so for Power (rank 1) (Table 6).

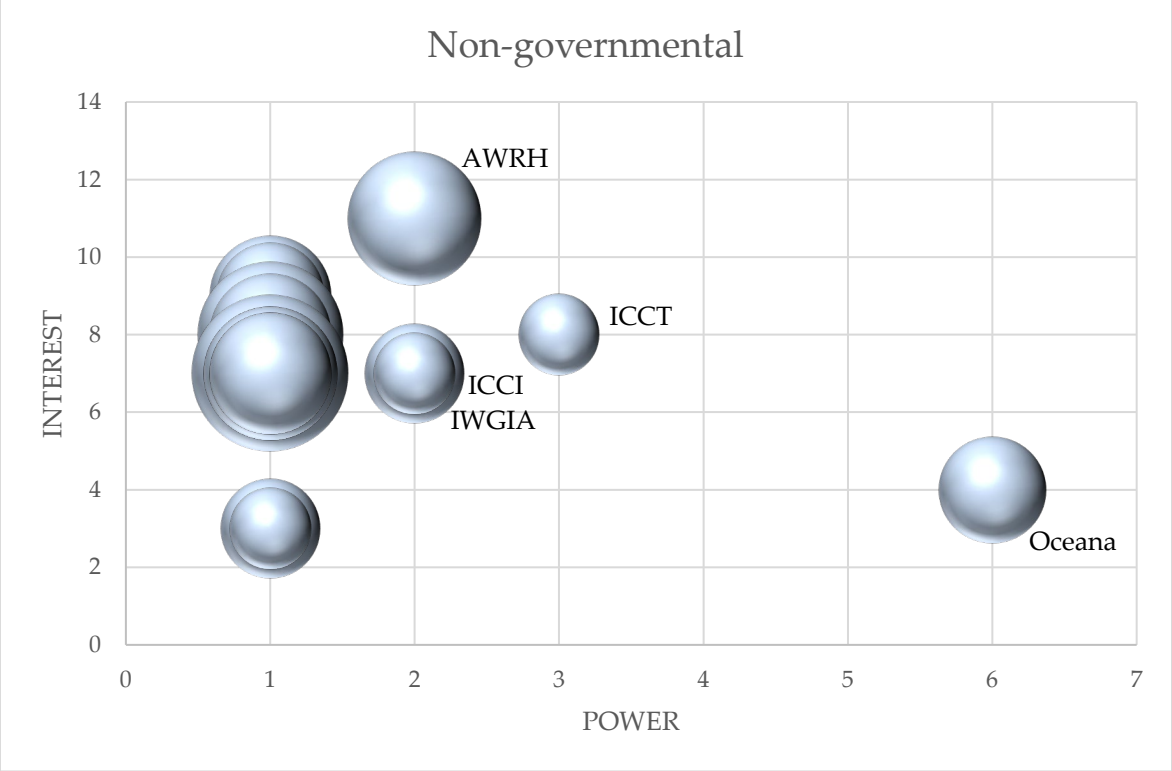

Figure 6 Interest/Power figure of Non-governmental stakeholders, with bubble size indicating size of the stakeholders' network.

The NGO that stands out is the Association of World Reindeer Herders. This is explained by the high degree of economic dependence in activities in the Arctic and that reindeer herders are much more economically affected than any other NGO by Arctic black carbon policies. AWRH also has a large network and all members are geographically belonging to the Arctic region.

Table 6 Interest, Power and Network summary for Non-governmental stakeholders (sorted by Interest, then by Power). Detailed data available in Annex 1.

Stakeholder	Interest	Power	Network
Association of World Reindeer Herders (AWRH)	11	2	11
Northern Forum (NF)	9	1	9
World Wildlife Fund for Nature-Global Arctic Program (WWF)	9	1	7
International Council on Clean Transportation (ICCT)	8	3	4
International Arctic Science Committee (IASC)*	8	1	13
HFO-free arctic/Clean Arctic Alliance	8	1	9
International Cryospheric Climate Initiative (ICCI)	7	2	6
International Work Group for Indigenous Affairs (IWGIA)	7	2	4
University of the Arctic (UArctic)	7	1	15
Arctic Institute of North America (AINA)	7	1	11
International Union for Circumpolar Health (IUCH)	7	1	11
Circumpolar Conservation Union (CCU)	7	1	9
International Arctic Social Sciences Association (IASSA)	7	1	9
Oceana	4	6	7
Advisory Committee on Protection of the Sea (ACOPS)	3	1	6
National Geographic Society (NGS)	3	1	4

*Under IASC there is an Atmospheric Working Group where the three pillars are: MOSAiC (Multidisciplinary drifting Observatory for the Study of Arctic Climate), PACES (Air Pollution in the Arctic: Climate, Environment and Societies), and YOPP/PPP (Year of Polar Predictions / Polar Prediction Project).

Industry

The final stakeholder category, Industry, includes the Arctic Economic Council (AEC) as well as the oil & gas and marine shipping industries. According to the analysis, the oil & gas industries in Russia and in Norway (Nordic), as well as the shipping industry in Russia appears to be the most important stakeholders in this category (Figure 7).

The oil & gas industries in the rest of Europe, in USA, and in East and South Asia all rank high in Power, but with lower ranking in the Interest indicators, mainly due to geographical distance to the Arctic. No useful information on the Interest indicator 'BC Arctic policy' was found for the oil & gas industries in rest of Europe or for East and South Asia. The Arctic Economic Council on the other hand rank high in Interest and Network, but with less Power (Table 7).

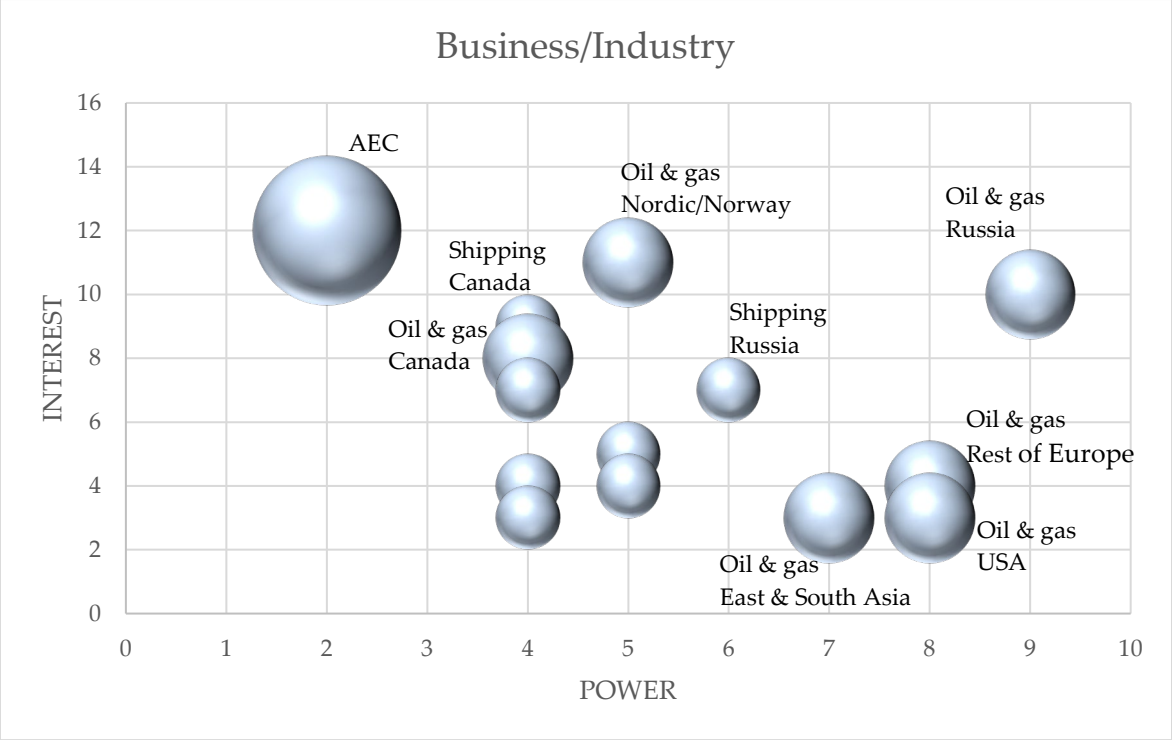

Figure 7 Interest/Power figure of industry stakeholders, with bubble size indicating size of the stakeholders' network

Table 7 Interest, Power and Network summary for Industry stakeholders (sorted by Interest, then by Power). Detailed data available in Annex 1.

Stakeholder		Interest	Power	Network
Arctic Economic Council (AEC)*		12	2	11
Norway	Oil & gas	11	5	4
Russia	Oil & gas	10	9	4
Canada	Marine shipping	9	4	2
Canada	Oil & gas	8	4	4
Russia	Marine shipping	7	6	2
Norway	Marine shipping	7	4	2
Denmark	Marine shipping	5	5	2
Rest of Europe	Oil & gas	4	8	4
France, Germany	Marine shipping	4	5	2
USA	Marine shipping	4	4	2
USA	Oil & gas	3	8	4
East and South Asia (incl. China and India)	Oil & gas	3	7	4
China	Marine shipping	3	4	2

* The Arctic Economic Council states at its webpage (https://arcticeconomiccouncil.com/) that "The AEC Legacy Members represent the pan-Arctic business community from across the wide scope of Arctic commerce. With representation from businesses from all eight Arctic states and from Permanent Participants, the AEC represents the width of the Arctic business community. The AEC Legacy membership ranges from small and medium-sized businesses and traditional livelihoods to larger shipping and extractive industries."

Discussion and conclusions

Overall, the stakeholder analysis indicates that there are some stakeholders that appear more important than the others for the issues of *Increase coordination of Arctic black carbon policies* and to some extent *Facilitate early emission reductions of black carbon affecting the Arctic* (Table 8). In identifying important stakeholders, we have considered both the Interest and the Power ranking (and to some extent the Network indicator). Naturally the important stakeholder varies with respect to if they are powerful or highly interested in the issue.

It is important to recognise all categories of stakeholders even though the stakeholders vary significantly on an absolute scale (e.g., the US government compared to the Inuit Circumpolar Council), therefore the stakeholders in Table 8 contain the most important from each category.

Table 8 Indications on the stakeholders of highest importance for coordination of Arctic BC policy

Stakeholder category	Stakeholders
Intergovernmental	IMO, CLRTAP, followed by the Arctic Council, the West Nordic Council, and the Nordic Council of Ministers
National authorities	United States, Canada, Russia, Iceland, the European Union and the Nordic countries
Indigenous groups	Aleut international Association, the Arctic Athabaskan council, the Saami council and the Inuit Circumpolar Council
Expert groups	The Arctic Councils' Expert Group on Black Carbon and Methane (EGBCM), the Arctic Contaminants Action Programme (ACAP), and the Arctic Monitoring and Assessment Programme (AMAP)
NGOs	The Association of World Reindeer Herders (AWRH), ICCT, ICCI, and the International Working group for Indigenous Affairs (IWGA)
Industry	Oil & gas industries in Russia and in Norway (Nordic), shipping industry in Russia

Given the method used to rank the stakeholder indicators our analysis doesn't allow absolute comparison between stakeholders. However, given the wide variation of stakeholders considered, an absolute comparison would not have relevance and probably even be misleading. There is earlier experience of how 'small' stakeholders can have a large impact via means that are not possible to quantify (remember how Greenpeace in 1991 printed their own issue of the German Der Spiegel on chlorine-free paper as a proof of concept, sparking abandonment of chlorine-bleached paper in journals and newspapers) (Dryzek et al. 2003).

In contrast to some other stakeholder analysis we didn't focus our attention on whether the stakeholders had conflicting interests or not. This omission makes this report less of a 'policy strategy' document and more of a 'who-is-who' type of document.

Another important limitation to our results relates to the impossibility of objectively weighing different indicators within the same dimension. Does a rank 5 on the power indicator 'large BC emissions' contribute with as much power as a rank 5 on the power indicator 'Economic power'? If not, what is the exchange rate? Is the exchange rate specific to each stakeholder? The stakeholder analysis does seem to ignore this issue, and due to lack of reasonable alternatives we have therefore assumed a 1:1 exchange rate between all indicators within each Power, Interest, and Network dimension, respectively. Finally, it is important to note that the ranking presented in this report reflects the current situation of the stakeholders as represented by information available on their web sites and not their future potential role as drivers of change in the Arctic. Future (or

presently uncommunicated) strategies and action plans to reduce emissions of BC in the Arctic may change the ranking significantly.

On the plus-side, our decision to only use web-based sources renders the analysis to be relatively unbiased. It was not feasible to arrange structured interviews with all stakeholders, and to arrange interviews with only a selected few would most likely have biased the results. Another positive feature of our results is that our stakeholder analysis, in contrast to most other versions, is three-dimensional, with a clear representation of Networks. Adding this dimension makes it possible to identify stakeholders that might not at this point be important for the issue at stake, but nevertheless have a large network that could motivate their engagement. As examples of this, many of the stakeholders in the Intergovernmental and Industry categories had large networks although low interest and power in the issue.

Given the limitations with the method used, caution is needed when drawing conclusions. The results should therefore be understood as merely indications. Given this caveat, the following conclusions can be drawn:

- The method of stakeholder analysis allows indicative identification of which stakeholders within a given category that should be more relevant for the EUA-BCA issues than others.

- There are stakeholders that should be of higher importance for the EUA-BCA issues, and these should be involved at an early stage when drafting ideas for policy development regarding increased cooperation on Arctic black carbon policy.

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Annex 1 Stakeholder scores

Intergovernmental organisations

Category: Intergovernmental	Power			Interest			Network		
	Large BC-effect on the Arctic	Judicial power over emissions	Economic power	Has BC Arctic policy	Economic interest in the issue and/or the Arctic	Acts in the region	Number of co-operations	Members	Share "Arctic relevant" members
Possible scores (5 highest, 0 = no info)	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Organisation name									
Arctic Council	0	3	0	5	3	5	5	2	5
Barents Euro-Arctic Council	0	1	0	4	2	4	4	2	5
International Council for the Exploration of the Sea	0	1	1	1	1	1	2	2	2
International Federation of Red Cross & Red Crescent Societies	0	1	1	1	1	1	2	1	1
International Union for the Conservation of Nature	0	1	1	1	1	1	2	5	1
Nordic Council of Ministers	0	3	0	4	2	4	5	2	5
Nordic Environment Finance Corporation	0	1	1	2	2	4	4	1	5
North Atlantic Marine Mammal Commission	0	1	1	1	1	3	1	1	5
OSPAR Commission	0	3	1	1	2	3	3	2	2
Standing Committee of the Parliamentarians of the Arctic Region	0	2	0	2	2	5	3	2	5
United Nations Economic Commission for Europé	0	4	1	1	1	3	2	4	1
United Nations Development Programme	0	2	5	1	1	1	3	5	1
United Nations Environment Programme	0	3	1	2	1	1	5	5	1
World Meteorological Organization	0	2	1	2	1	1	5	5	1
World Health Organization	0	2	3	1	1	0	5	5	1
West Nordic Council	0	3	0	2	4	5	3	1	5
Convention on Long Range Transboundary Air Pollution	0	4	1	3	2	3	2	3	2
Working Group on Strategies and Review	0	2	0	3	1	0	1	3	2
EMEP Programme (Executive body)	0	2	1	3	1	0	3	3	2
Centre for Emission Inventories and Projections	0	2	0	3	1	0	2	3	2
United Nations Framework Convention on Climate Change	0	2	1	2	1	0	2	5	1
Intergovernmental Panel on Climate Change	0	2	1	4	1	0	2	5	1
Climate and Clean Air Coalition	0	2	1	3	1	1	2	4	1
International Maritime Organisation	0	4	1	4	2	3	1	5	1
Organisation for Economic Development	0	2	1	2	1	1	1	3	1
The Environment Policy Committee	0	1	0	2	1	1	1	3	1
World Bank Global Gas Flaring Reduction	0	2	0	3	3	1	4	2	1
Northern Dimensions	0	2	0	2	3	4	4	1	5
The Northern Dimension Institute	0	2	0	4	1	4	2	3	5

National authorities

Category: National authorities	Power			Interest			Network		
	Large BC-effect on the Arctic	Judicial power over emissions	Economic power	Has BC Arctic policy	Economic interest in the issue and/or the Arctic	Acts in the region	Number of co-operations	Members	Share "Arctic relevant" members
Possible scores (5 highest, 0 = no info)	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
European Union	3	5	1	4	1	3	5	3	1
Canada	3	5	1	5	1	4	5	1	5
Denmark	2	5	1	2	1	3	5	1	4
Finland	2	5	1	4	1	3	5	1	4
Iceland	1	5	1	4	5	4	3	1	5
Norway	1	5	1	4	1	3	3	1	4
Russian Federation	5	5	1	2	1	3	3	1	4
USA	3	5	5	3	1	3	4	1	4
Sweden	1	5	1	4	1	3	5	1	4
France	1	5	2	2	0	1	0	1	2
Germany	1	5	2	2	0	1	0	1	2
Italy	1	5	1	2	0	1	0	1	2
Japan	1	5	2	2	0	1	0	1	2
Netherlands	1	5	1	2	0	1	0	1	2
China	5	5	3	2	0	1	0	1	2
Poland	1	5	1	2	0	1	0	1	2
India	4	5	1	2	0	1	0	1	2
South Korea	1	5	1	2	0	1	0	1	2
Singapore	1	5	1	1	0	1	0	1	2
Spain	1	5	1	2	0	1	0	1	2
Switzerland	1	5	1	2	0	1	0	1	2
United Kingdom	1	5	1	3	0	1	0	1	2

Indigenous groups organisations

Category: Indigenous groups	Power			Interest			Network		
	Large BC-effect on the Arctic	Judicial power over emissions	Economic power	Has BC Arctic policy	Economic interest in the issue and/or the Arctic	Acts in the region	Number of co-operations	Members	Share "Arctic relevant" members
Possible scores (5 highest, 0 = no info)	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Organisation									
Aleut International Association	2	2	0	3	5	5	5	1	5
Arctic Athabaskan Council	2	2	0	3	5	5	3	2	5
Gwich'in Council International	2	2	0	2	5	5	3	1	5
Inuit Circumpolar Council	2	2	0	3	5	5	3	1	5
Russian Association of Indigenous Peoples of the North	2	2	0	2	5	5	1	0	5
Saami Council	2	2	0	3	5	5	3	2	5

Expert and working groups

Category: Expert groups	Power			Interest			Network		
	Large BC-effect on the Arctic	Judicial power over emissions	Economic power	Has BC Arctic policy	Economic interest in the issue and/or the Arctic	Acts in the region	Number of co-operations	Members	Share "Arctic relevant" members
Possible scores (5 highest, 0 = no info)	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Organisation									
Expert Group in support of implementation of the framework for action on Black Carbon and Methane	0	2	0	4	1	5	1	2	5
Arctic Contaminants Action Programme	0	2	0	4	1	5	1	2	5
Arctic Monitoring and Assessment Programme	0	2	0	3	1	5	1	2	5
Protection of the Arctic marine environment	0	2	0	3	1	5	1	2	5
Conservation of Arctic Flora and Fauna	0	2	0	2	1	5	4	2	5
Emergency Prevention, Preparedness and Response	0	2	0	1	1	5	1	2	5
Sustainable Development Working Group	0	2	0	1	1	5	1	2	5

Non-governmental organisations

Category: NGO	Power			Interest			Network		
Organisation	Large BC-effect on the Arctic	Judicial power over emissions	Economic power	Has BC Arctic policy	Economic interest in the issue and/or the Arctic	Acts in the region	Number of co-operations	Members	Share "Arctic relevant" members
Possible scores (5 highest, 0 = no info)	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Organisation									
Advisory Committee on Protection of the Sea	0	1	0	1	1	1	3	1	2
Arctic Institute of North America	0	1	0	1	1	5	5	1	5
Association of World Reindeer Herders	0	1	1	1	5	5	5	1	5
Circumpolar Conservation Union	0	1	0	1	1	5	3	1	5
International Arctic Science Committee	0	1	0	2	1	5	5	3	5
International Arctic Social Sciences Association	0	1	0	1	1	5	3	1	5
International Council on Clean Transportation	0	2	1	4	1	3	2	1	1
International Union for Circumpolar Health	0	1	0	1	1	5	3	3	5
International Work Group for Indigenous Affairs	0	1	1	1	1	5	1	1	2
National Geographic Society (NGS)	0	1	0	1	1	1	1	1	2
Northern Forum	0	1	0	1	3	5	1	3	5
Oceana	0	1	5	2	1	1	2	3	2
University of the Arctic	0	1	0	1	1	5	5	5	5
World Wide Fund for Nature-Global Arctic Program	0	1	0	3	1	5	1	1	5
International Cryospheric Climate Initiative	0	1	1	3	1	3	3	1	2
HFO-free arctic/Clean Arctic Alliance	0	1	0	3	0	5	1	3	5

Industry

Category: Industry	Power			Interest			Network		
	Large BC-effect on the Arctic	Judicial power over emissions	Economic power	Has BC Arctic policy	Economic interest in the issue and/or the Arctic	Acts in the region	Number of co-operations	Members	Share "Arctic relevant" members
Possible scores (5 highest, 0 = no info)	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Stakeholder home-region									
Arctic Economic Council (AEC)	0	2	0	2	5	5	4	2	5
Russia	3	2	1	0	4	3	0	2	0
China	1	2	1	0	2	1	0	2	0
Norway	1	2	1	1	3	3	0	2	0
Canada	2	2	0	3	3	3	0	2	0
USA	2	2	0	1	2	1	0	2	0
Denmark	1	2	2	0	2	3	0	2	0
France, Germany	2	2	1	2	1	1	0	2	0
Russia	5	2	2	2	5	3	0	4	0
Canada	1	2	1	2	5	1	0	4	0
USA	1	2	5	0	2	1	0	4	0
Nordic countries (Norway)	1	2	2	5	4	2	0	4	0
Rest of Europe	1	2	5	1	2	1	0	4	0
East and South Asia (incl China and India)	2	2	3	1	1	1	0	4	0

Annex 2 Web sources

Organisation	Abbreviation	Web page
Intergovernmental/Inter-parliamentary category		
Arctic Council	AC	https://arctic-council.org/index.php/en/
Barents Euro-Arctic Council	BEAC	https://www.barentscooperation.org/en/Barents-Euro-Arctic-Council
Centre for Emission Inventories and Projections	CLRTAP-CEIP	https://www.ceip.at/
Climate and Clean Air Coalition	CCAC	http://ccacoalition.org/en
Convention on Long Range Transboundary Air Pollution	CLRTAP	http://www.unece.org/env/lrtap/welcome.html.html
EMEP Programme (Executive body)	CLRTAP- EMEP	http://www.unece.org/environmental-policy/conventions/envlrtapwelcome/convention-bodies/emep-steering-body.html
Intergovernmental Panel on Climate Change	IPCC	https://www.ipcc.ch/
International Council for the Exploration of the Sea	ICES	http://www.ices.dk/Pages/default.aspx
International Federation of Red Cross & Red Crescent Societies	IFRC	https://media.ifrc.org/ifrc
International Maritime Organisation	IMO	http://www.imo.org/en/Pages/Default.aspx
International Union for the Conservation of Nature	IUNC	https://www.iucn.org/
Nordic Council of Ministers	NCM	https://www.norden.org/en/information/about-nordic-council-ministers
Nordic Environment Finance Corporation	NEFCO	http://www.nefco.org/
North Atlantic Marine Mammal Commission	NAMMACO	https://nammco.no/about-us/

Organisation	Abbreviation	Web page
Northern Dimensions	ND	http://www.northerndimension.info/
Organisation for Economic Development	OECD	http://www.oecd.org/
OSPAR Commission	OSPAR	https://www.ospar.org/about
Standing Committee of the Parliamentarians of the Arctic Region	SCPAR	http://www.arcticparl.org/
The Environment Policy Committee	OECD-EPOC	http://www.oecd.org/env/epoc.htm
The Northern Dimension Institute	ND-NDI	http://www.northerndimension.info/news/news/822-cutting-black-carbon-emissions-is-an-acute-challenge-for-all-in-the-european-arctic
United Nations Development Programme	UNDP	https://www.undp.org/content/undp/en/home.html
United Nations Economic Commission for Europe	UN-ECE	http://www.unece.org/info/ece-homepage.html
United Nations Environment Programme	UN Env.	https://www.unenvironment.org/
United Nations Framework Convention on Climate Change	UNFCCC	https://unfccc.int/
West Nordic Council	WNC	https://www.vestnordisk.is/english/
Working Group on Strategies and Review	CLRTAP-WGSR	http://www.unece.org/environmental-policy/conventions/envlrtapwelcome/convention-bodies/working-group-on-strategies-and-review.html
World Bank Global Gas Flaring Reduction	WB	http://www.worldbank.org/en/programs/gasflaringreduction
World Health Organization	WHO	https://www.who.int/
World Meteorological Organization	WMO	https://public.wmo.int/en
National category		
Canada		http://ec.gc.ca/GES-GHG/default.asp?lang=En&n=FF677357-1

Organisation	Abbreviation	Web page
China		http://english.gov.cn/archive/white_paper/2018/01/26/content_281476026660336.htm
Denmark		https://um.dk/en/foreign-policy/the-arctic/
European Union	EU	https://ec.europa.eu
Finland		https://www.ym.fi/en-US/The_environment/Climate_and_air
France		http://www.ccacoalition.org/fr/partners/france
Germany		https://www.bmel.de/SharedDocs/Downloads/EN/International/Leitlinien-Arktispolitik.pdf?__blob=publicationFile
Iceland		https://www.ust.is/library/Skrar/Atvinnulif/Loftslagsbreytingar/2017_Iceland_National%20Report%20black%20carbon%20and%20Methane%20Emissions%20Reductions_Final.pdf
India		https://www.thearcticinstitute.org/countries/india/
Italy		http://library.arcticportal.org/1906/1/towards_an_italian_strategy_for_the_arctic.pdf
Japan		https://www.highnorthnews.com/nb/japan-entering-arctic-energy-sector
Netherlands		https://www.nwo.nl/en/research-and-results/programmes/Netherlands+Polar+Programme
Norway		https://www.miljodirektoratet.no/globalassets/publikasjoner/M135/M135.pdf
Poland		https://www.msz.gov.pl/en/foreign_policy/other_continents/arctic_antarctic/
Russian Federation		http://government.ru/en/news/34115/
Singapore		https://www.thearcticinstitute.org/countries/singapore/
South Korea		https://www.thearcticinstitute.org/countries/south-korea/
Spain		https://www.thearcticinstitute.org/countries/spain/
Sweden		https://www.government.se/49b75d/contentassets/739f02a16a0045a1a79dfcea101dc3c1/swedish-efforts-to-reduce-slcp-m2012.12
Switzerland		http://ccacoalition.org/en/partners/switzerland
United Kingdom		https://www.gov.uk/government/publications/beyond-the-ice-uk-policy-towards-the-arctic
USA		https://search.usa.gov/search?affiliate=usagov&page=2&query=%22black+carbon%22%2Bpolicy&utf8=%E2%9C%9

Organisation	Abbreviation	Web page
Indigenous people's organisation category		
Aleut International Association	AIA	https://aleut-international.org/
Arctic Athabaskan Council	AAC	https://arcticathabaskancouncil.com/wp/
Gwich'in Council International	GCI	https://gwichincouncil.com/
The Inuit Circumpolar Council	ICC	https://www.inuitcircumpolar.com/
Russian Association of Indigenous Peoples of the North	RAIPON	https://www.uarctic.org/member-profiles/russia/8638/raipon
Saami Council		http://www.saamicouncil.net/en/
Expert working group category		
Arctic Contaminants Action Programme	ACAP	https://oaarchive.arctic-council.org/handle/11374/358
Arctic Monitoring and Assessment Programme	AMAP	https://arctic-council.org/index.php/en/about-us/working-groups/amap
Conservation of Arctic Flora and Fauna	CAFF	https://www.caff.is/
Emergency Prevention, Preparedness and Response	EPPR	https://eppr.org/
Expert Group on Black Carbon and Methane	EGBCM	https://arctic-council.org/index.php/en/expert-groups/339-egbcm
Protection of the Arctic marine environment	PAME	https://arctic-council.org/index.php/en/about-us/working-groups/pame
Sustainable Development Working Group	SDWG	https://www.sdwg.org/
Non-governmental organisation category		
Advisory Committee on Protection of the Sea	ACOPS	http://www.acops.org.uk/
Arctic Institute of North America	AINA	https://arctic.ucalgary.ca/

Organisation	Abbreviation	Web page
Association of World Reindeer Herders	AWRH	http://reindeerherding.org/about-us/
Circumpolar Conservation Union	CCU	https://circumpolar.org/
HFO-free arctic/Clean Arctic Alliance		https://www.hfofreearctic.org/en/front-page/
International Arctic Science Committee	IASC	https://iasc.info/
International Arctic Social Sciences Association	IASSA	https://iassa.org/
International Council on Clean Transportation	ICCT	https://www.theicct.org/
International Cryospheric Climate Initiative	ICCI	http://iccinet.org/
International Union for Circumpolar Health	IUCH	http://iuch.net/about/
International Work Group for Indigenous Affairs	IWGIA	https://www.iwgia.org/en/
National Geographic Society	NGS	https://www.nationalgeographic.org/
Northern Forum	NF	https://www.northernforum.org/en/the-northern-forum/about-us
Oceana	Oceana	https://oceana.org/about-oceana/about-us
University of the Arctic	UArctic	https://www.uarctic.org/
World Wide Fund for Nature-Global Arctic Program	WWF	https://arcticwwf.org/
Industry category		
Arctic Economic Council	AEC	https://arcticeconomiccouncil.com/

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