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Background

European and global society are affected by the current challenges driven by climate change and globalization. These challenges affect all sectors in society and it is inevitable that societies cannot tackle the problems by themselves, but science, research and innovations are needed for finding sustainable solutions.

Key societal challenges for which science should bring new knowledge for finding the solutions have been identified by the European Commission[1]. Its framework program Horizon 2020 reflects Europe's commitment for finding answers to these key societal challenges. To achieve that a close partnership between science and society is needed with both sides working together towards common goals. Broader engagement of the stakeholders with science and innovation will lead to greater public confidence e.g. to invest in ground-breaking research. Furthermore, if Europe is to maintain its place in a global knowledge economy, science education and scientific careers must be promoted, and gender barriers addressed, so that we can recruit and maintain new talents. Equally, scientists must invest in society, pairing scientific excellence with social awareness and creating social impact.

Polar stakeholders include both Arctic and Antarctic stakeholders. However, while including both, the White Paper focuses more on the Arctic, as it is inhabited, and hence higher on the European agenda. People, both Indigenous peoples and non-indigenous local people, have lived in the Arctic for thousands of years as nomads or in the permanent settlements, developed their cultures, languages, livelihoods and societies. Both Arctic policy makers and the research community have highlighted inclusion of Indigenous Knowledge and Peoples in the research conducted on or affecting their lands as vital. Arctic Science Ministers have recognized the importance of the multilateral scientific cooperation between Arctic and non-Arctic States, Indigenous Peoples, local communities, and societal and economic stakeholders in their Joint statements in 2016[2] and 2018[3], as well as Arctic Council in several statements. The Third International Conference on Arctic Research Planning (ICARP III)[4] gathered scientists together into a joint statement highlighting the need for more effective use of traditional and local knowledge by engaging northern and indigenous communities and involving local, regional and global stakeholders in the co-design of sustained observation systems and models to help define mitigation and adaptation strategies. ICARP III further states that Arctic science should promote collaboration across disciplines and must be communicated beyond the Arctic research community and related institutions in order to reach key stakeholders, decision-makers, and the general public.

Where the Antarctic has a protected status and economic activity is limited to tourism and fishing, the Arctic regions are becoming more and more a player in the global economy. As stated in the new EU Arctic strategy[5]: 'With three EU Member States – Denmark, Finland and Sweden – and some half a million EU citizens situated in the Arctic, the EU has a natural and important role to play in the region. In addition, as the Arctic becomes a focal point of economic and geopolitical competition, and is increasingly recognised as being central to human and planetary survival, the **EU must step up its engagement with Arctic states and other stakeholders'**.

This white paper is targeted to support researchers and aims to serve as both as an eye-opener and as a tool for planning the next research projects and funding calls for funders. Therefore, as a primary beneficiary,

[1] *https://ec.europa.eu/programmes/horizon2020/en/h2020-section/societal-challenges*

[2] *Joint statement of Ministers On the occasion of the first White House, 28 September 2016, Washington DC. Arctic Science Ministerial https://obamawhitehouse.archives.gov/the-press-office/2016/09/28/joint-statement-ministers*

[3] *Joint statement on the occasion of the second Arctic Science Ministerial 26 October 2018 Berlin https://www.arcticscienceministerial.org/files/ASM2_Joint_Statement.pdf*

[4] *Integrating Arctic Research -a Roadmap for the Future 3rd International Conference on Arctic Research Planning ICARP III http://icarp.iasc.info/images/articles/downloads/ICARPIII_Final_Report.pdf*

[5] EPSC Strategic Notes (2019). *Walking on Thin Ice: A Balanced Arctic Strategy for the EU*. Issue 31, July 2019

researchers are not included in this White Paper within stakeholders. Researchers have been one of the main stakeholder of EU-PolarNet and the results from those consultations have been produced elsewhere.

The stakeholders are those who are potentially affected by or concerned about, interested in, important to, or having any power over the polar research agenda or will be end-users of polar research outcomes. Stakeholders form a wide variety of public and private sectors including policy, business, governmental and non-governmental organizations (NGOs) and a wider society, including local and Indigenous peoples.

This White paper includes set of recommendations and way forward for achieving successful stakeholder engagement for including the society and its challenges into the research.

The status of stakeholder engagement in polar research

The implementation of the H2020 program and the demand for stakeholder engagement has increased the stakeholder consultations and involvement tremendously, particularly engagement with businesses and policy makers, but also with society, the local people and Indigenous People. Within the 11 EU funded Polar projects (EU Polar cluster) the level of stakeholder engagement varies a lot. And even if the most important stakeholders are businesses and companies in the field of the project and policy makers in the areas involved, the format of their engagement is different. The role of businesses and policy makers is very practical in developing and piloting new solutions and practices for specific problems. These have also an easily understood economic impact and developing new technical innovations and products is beneficial for businesses and for societies at large.

What is often not seen in the research project planning is the existing knowledge of the residents in the region to be studied or how their everyday life has changed due to the problem studied. Academic research is curiosity driven where the topic is often investigated by a single-discipline approach excluding the surrounding society. A need to have societal impact from the research is not an easy task to fulfill and therefore a common way has been to invite and involve stakeholders at workshops or hearings where their views are requested on the questions set by researchers. The success rate of this procedure varies a lot and often gives insights only from one or a few points of view. Secondly, the format of the stakeholder engagement has followed the same procedure regardless of the stakeholder group, which again reduces the success and does not bring forward the needs of society.

At the European level, it is not yet common to start project planning by getting to know the problems of the people who live in the region. This participatory research method of co-designing the aims of research project can be implemented in different ways depending on the stakeholder and a project's needs. A great deal of knowledge and information exists in the literature and online sources varying from detailed guidelines for working with a specific community or for a specific research discipline to overall guidance on how the method could be implemented in the project. Finding the best way for the project to connect and work with their stakeholders is not easy if one starts from zero.

Within the Antarctic, policy makers and governments are often the main stakeholders of the project and secondly stakeholders often represent the more specific research question in hand, e.g. tourism, media, museums and heritage sites
A summary of the different approaches used by the European projects in their stakeholder engagement:

- To co-design projects and co-produce knowledge.
- To include stakeholders as equal beneficiaries in a way that they are funded for the work they do in the project.
- To invite stakeholders to workshops, covering their travel costs.

- To invite stakeholders into the project's advisory boards and cover travel costs.
- To ask for an input at workshops and hearings, no costs covered.

From these the following roles and needed time allocation can be drawn (Fig. 1)

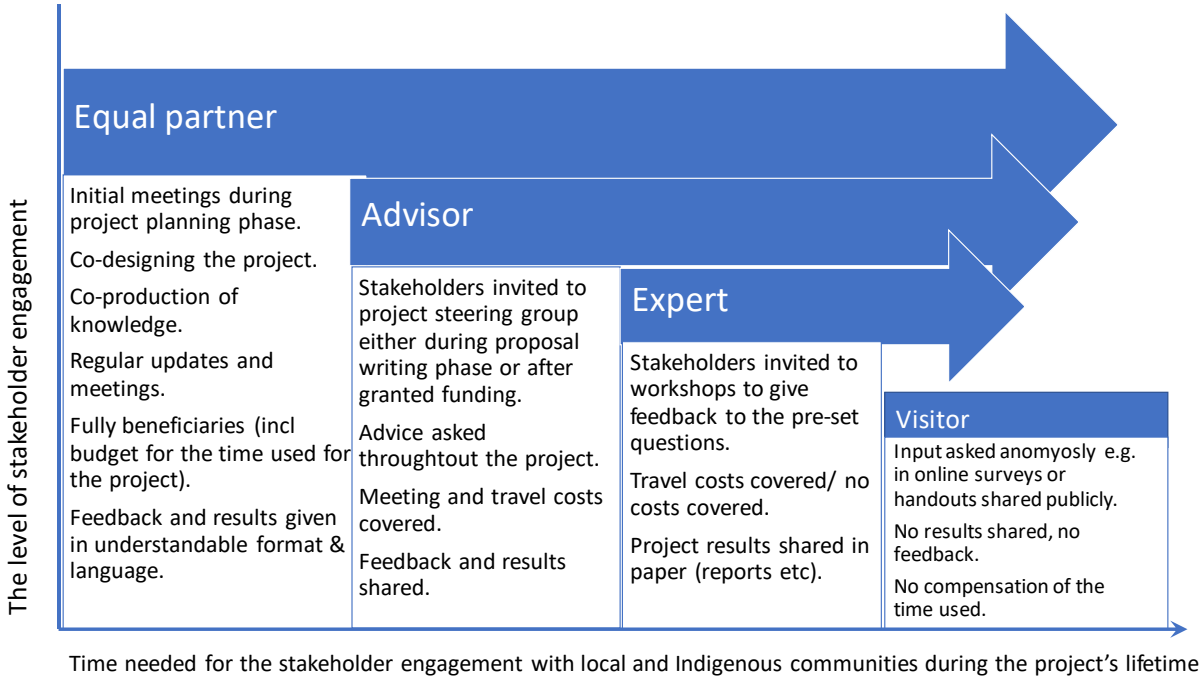

Figure 1. The different roles of stakeholders with varying need of time. High level of engagement as an equal partner needs long time investment during the whole projects' lifetime, whereas engagement as a visitor requires only a short time investment.

What is key to successful stakeholder engagement?

Commitment of the stakeholders, stated also by EU Polar Cluster projects, is one of the key issues in successful stakeholder engagement. Stakeholders need to be committed to the project in order to fully take part and fulfill their roles in the project.

<u>There are three key lessons learnt which are vital for successful stakeholder engagement</u>

First, the project has to have respect for the time stakeholders use for the project and respect for their knowledge and expertise. This also includes financial commitment from the project, which should compensate the time used by the stakeholders.
Secondly, stakeholders follow their own annual work calendars, which means that the project has to fit into their calendars. In addition, heavy administration can be a challenge especially to small communities or companies. This has to be taken into account especially when engaging, e.g., with small sized enterprises or small local and indigenous NGOs.
Thirdly, the issue to be studied needs to be relevant and of interest to the stakeholder. This calls for meetings and workshops already at the project planning phase to co-design the research questions and project.

There is no one guideline that fits for all projects and stakeholders, however some common principles and best practices can be identified. Action that have been shown to work well in EU Polar Cluster projects are listed below:

- Engaging knowledgeable and enthusiastic stakeholders who have time and ability to give feedback to the project and state their own needs for the project.
- Developing case studies together with stakeholders, co-designing the project process and including stakeholders as partners in the project with an allocated budget and roles in the project's tasks and work packages.
- Setting up a diverse expert group consisting of stakeholders from different sectors and interests. Asking input throughout the project's life time.
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Recommendations

Based on the stakeholder events organized by the EU-PolarNet eight recommendations were identified and listed[6]. Each one of these is addressed in a separate section.

1. Trust building
2. Early and on-going engagement
3. Time and funding allocated
4. Representativeness of the stakeholders engaged, diversity
5. Participation in more than collaboration
6. Identifying research questions with the stakeholders
7. Knowledge sharing
8. Engagement through intermediaries

Recommendations 1 and 2. Trust building and early and on-going engagement

Since these first two recommendations are interlinked, they are addressed under the same paragraph. They are particularly relevant when engaging with the communities, local and Indigenous Peoples, but at a certain level they also apply to other stakeholders because getting to know your stakeholders, their ambitions and needs, helps to build trust and to have committed stakeholders who will full-fill their duties in the project.

Since Indigenous and local people have lived in the Arctic long before the first western explorers investigated the Arctic, they have extensive knowledge of it. Each community is different, each region is different, its culture, history, language is unique to the region. What is often forgotten is that a landscape that looks empty is a homeland for the Arctic Indigenous People, who live off the land and the waters. People know their land and are living and facing the climate change and globalization in their everyday lives. In this respect, when looking at the optimum Arctic research site working together with and engaging the Indigenous and local people living in the area of research would be most logical and cost efficient e.g. by applying community-based monitoring. This would also be a way of conducting climate-friendly research and monitoring by reducing traveling and human foot-print as much as possible. Establishing such a mutually beneficial cooperation requires trust-building and time. It doesn't come in a day or a week, but needs several visits to the communities, as a person who would like to get to know the people, their land, culture and history.

[6] *https://www.eu-polarnet.eu/project-themes/*
https://www.eu-polarnet.eu/fileadmin/user_upload/www.eu-polarnet.eu/Members_documents/Deliverables/WP4/D4_9_Minutes_of_stakeholder_dialogue_at_Arctic_Conference.pdf

Needless to say that it takes more time than researchers often have, and thus it is not wise to try to build that trust using several persons in the research group, but better, if possible, is to use a person who already has built that trust and knows the community. A person who can act as a liaison between the researchers and the community can explain what the scientists mean and help to co-design the project or e.g. start the community-based monitoring program (see also recommendation 8). It is notable that this is also relevant to natural sciences projects the results of which can give important knowledge to the communities on whose lands the research is conducted. In many cases this kind of capacity building is highly appreciated by the locals who want to know what is going on in their lands and who can share their knowledge further with the community.

Early and on-going engagement is trust building. On-going engagement has to continue all the way to the end of the project and follow-up. It doesn't mean that the project sends reports in the mail to the community, but that the project liaison person and researchers have to go the community and explain what their results mean and what happens next, and how the community can benefit from the results (see also recommendation 7).

Recommendation 3. Time and Funding allocated

Funding is needed for two purposes, firstly for travel for meetings with the stakeholders during the different stages of the project. This also takes time, as already mentioned in the previous recommendation. Secondly, it has been noted that stakeholder engagement that is done on a voluntary basis is not as successful as when stakeholders receive compensation for the time they use for the project and for their travels to the meetings. This also means that if a stakeholder uses either the company's time or their own time, that is keeping them away from their normal economic activity and therefore one cannot assume that stakeholders will commit and use their time while enduring economic loss at the same time. Therefore, the project has to cover the costs of the stakeholders' time used for the project, whether it is a local fisherman or a big company; the only way to make sure that the commitment for the project continues is to treat stakeholders equally and pay for their services.

In order for projects to be able to manage this, part of their project funding should be allocated for the stakeholders who, in the best scenario, would be full project partners with a budget. Secondly, a funding scheme for preparatory project funding, so called seed money, should be allocated by the funding agencies for the preparatory work and meetings with the stakeholders (this would include travel and meeting costs).

Recommendation 4. Representativeness of the stakeholder engaged, diversity

Stakeholders are a diverse group and there is diversity also within an individual stakeholder group. Thus what works well for one type of stakeholder, might not work at all with the others. As an example, the EU-PolarNet online survey was able to gather over 500 responses, most of which came from researchers. Researchers are used to answering online surveys, whereas only very few Indigenous persons answered indicating that this was not a helpful way to engage local and Indigenous people. It would have been more effective to go in to the communities in person with a trusted person and talk to the people. Different stakeholders have different needs for research and their preferred way to be involved. It was determined that business and industry representatives are keen in taking part to the project planning, whereas policy makers and NGOs would rather use the research results for their own agendas or for policy decisions (Tell us how to engage you! Asking polar stakeholders about their engagement preferences, Kristina C. Baer, Kirsi Latola, Annette J. M. Scheepstra, accepted for publication in Polar Record).

Recommendation 5. Participation more than collaboration

Active participation by including stakeholders as project partners ensures stronger stakeholder commitment to the project. What is important to note though, is that not all stakeholders are keen on participating in a project as full partners. However, it has been a good practice in the EU- Polar Cluster projects to find out

from stakeholders themselves if they would like to be full partners with a budget and full commitment to the work or whether they would rather collaborate more loosely as members of an advisory body or experts to be contacted for feedback. This fulfills also the demand for mutual benefit and fair procedure and would give the decision of their role in a project to the stakeholder, not to the academic researcher.

Recommendation 6. Identifying research questions with the stakeholders

To ensure that the project's outcomes will have societal benefits, the research questions need to be relevant to and identified with society. Science often looks for answers to direct questions and without considering indirect questions on how, for example, microplastics or ocean acidification in addition to their direct effects on marine life and ecosystems, indirectly affects society: the fishing industry, people's food source, health, culture, economy, politics and so on. Engaging stakeholders who are directly and indirectly affected by the problem to be studied would, in addition to better ensuring societal benefit and increasing the scientific value of the research, add to the success of the project by increasing the knowledge base. This could be achieved, e.g., in finding relevant research sites and companies capable of developing innovations for sustainable solutions. In the case of business and research needs, the cooperation should start already in the project planning phase in order to be able to co-design and co-produce prototypes of the products and services which would also meet the requirements of the policy makers and be a user-relevant product.

Recommendation 7. Knowledge sharing

Knowledge sharing is part of the communication and dissemination strategies that every research project should develop and implement. It expands from the onset of the project to the end results and possible piloting of the innovations and/or facilitation and training of the stakeholders. Depending on the stakeholder, a different method should be identified by the project for each stakeholder. Different methods and tools to be used include, e.g., policy briefings targeted to policy makers and NGOs, workshops and events held at local and Indigenous communities or at industrial facilities, newsletters and press releases for media. In all communication, the language has to be set to the level of the receiver; avoiding scientific terms and using simple language is advised for all communication with stakeholders. Notable is that there are also other forms of communication than written text: films, cartoons, drawings and other types of visualization could be also used. Short, concise forms of information are particularly important for media, business and policy makers who have limited time to read long reports.

Recommendation 8. Engagement through intermediaries

When engaging with a stakeholder for the first time, it is always advisable to work via an intermediary, an organization representing them or a person who can act as a liaison to the project. A liaison person is someone who knows personally the stakeholders that the project would like to engage with. This applies to all stakeholders; however, it is particularly important when engaging with local or Indigenous people as it takes time to build trust and common understanding, in other words to speak the same "language". This calls for transdisciplinary project groups and, by having a one liaison person to connect with stakeholders, this would give other researchers time to focus on their research as not every researcher has to be trained as a liaison person or stakeholder expert; one person in a project would be enough.

The second way is to connect via organizations which could be international, national or regional depending on the project's focus. As an example of the Indigenous People and Sámi, who are represented in addition to the Sámi council[7] that represent all of Sápmi and Sámi in all countries Norway, Sweden, Finland and Russia,

[7] *http://www.saamicouncil.net/en/*

with the national Sámi parliaments in Norway[8], Sweden[9] and Finland[10]. Thirdly there is the Sámi Parliamentary Council (SPC[11]), the co-operational body for the Sámi parliaments in Finland, Norway and Sweden. The Russian Sámi organizations are permanent participants in the SPC, since there is no elected body for the Sámi in Russia. In case of Indigenous Peoples, a term often mentioned is stakeholder fatigue, which is not only an outcome of research but also consultations and hearings needed for, e.g., environmental impact analyses and licenses for operations in the region. In the worst case, the same community member is invited to hearings and workshops on almost a weekly basis. Therefore working via intermediaries would leave the decision on who and how to best engage with the project to the representatives and remain in the hands of one person.

The list of stakeholders on different scales and intermediaries presented in table 1. is by no means complete, but a starting point and a tool for the stakeholder mapping as well for finding the initial contact points for working via intermediaries.

Table 1. List of polar stakeholders (relevant for both Arctic and Antarctic), Arctic and Antarctic stakeholders.

Polar stakeholders	specific Arctic stakeholders	specific Antarctic stakeholder
Permanent residents, people		
	• Resident associations and communities	• personnel working at the research stations (overwintering or not)
	• National and Local Indigenous Peoples councils and organisations • National Sámi Parliaments • Permanent Participants of the Arctic Council: Aleut International Association, Arctic Athabaskan Council, Gwich'in International Council, Inuit Circumpolar Council, Russian Association of Indigenous Peoples of the North, and the Saami Council • Arctic Council Indigenous Peoples Secretariat (IPS) • United Nations Permanent Forum on Indigenous Issues	
Governments and governmental organisations		
• Members of European Parliament • National Governments • World Economic Forum	• Arctic Council and its working groups AMAP, CAFF, EPPR, SDWG, PAME • Arctic Parliamentary • Arctic Economic Council • Barents Council	• Antarctic Treaty System (ATCM, CEP, etc) • Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)

[8] *https://www.sametinget.no*
[9] *https://www.sametinget.se/english*
[10] *https://www.samediggi.fi/?lang=en*
[11] *https://www.samediggi.fi/sami-parliamentary-council/?lang=en*

Polar stakeholders	specific Arctic stakeholders	specific Antarctic stakeholder
		• Antarctic Parliamentarians •
• Governments and communities outside Polar Regions	• National, regional and local governments	
Science organisations		
	• Forum of Arctic Research Operators (FARO)	• Council of Managers of National Antarctic Programs (COMNAP)
• Intergovernmental Panel on Climate Change (IPCC) • European Polar Board (EPB) • World Meteorological Organization (WMO) • European Space Agency (ESA)	• International Arctic Science Committee (IASC) • International Arctic Social Sciences Association (IASSA)	• The Scientific Committee on Antarctic Research (SCAR)
• Convention on Biological Diversity (CBD) • Intergovernmental Platform on Biodiversity and Ecosystem • Services (IPBES)		
Non-Governmental Organizations		
• International and national NGOs World Wildlife Fund (WWF) • Greenpeace • World Conservation Union (IUCN)	• Locally organized campaign and pressure groups • National associations of nature conversation • European Environmental Bureau (EEB) •	• Antarctic and Southern Ocean Coalition (ASOC)
Business and Industry sectors		
• Insurance and reinsurance companies		
• Fisheries, shipping and logistics • International Maritime Organization (IMO) • Polar Code	•	
• Tourism	• Association of Arctic Expedition Cruise Operators (AECO)	• International Association of Antarctica Tour Operators (IAATO)
• development of new technology	• oil and gas industry, mining • renewable resources • insurance solutions	

Polar stakeholders	specific Arctic stakeholders	specific Antarctic stakeholder
	• biological materials (bioprospecting)	
• Ports, harbours		
European and global public interest		
• News media • Cultural groups • heritage, museums	• Local cultural groups	
Education networks and organisations		
• Association of Polar Early Career Researchers (APECS) • Polar Educators International (PEI)	• University of the Arctic (UArctic)	International Antarctic Institute (IAI)

Way forward

Globally, the Polar Regions are at the front line on local, national and international political agendas. Within Europe, the Arctic is a region of particularly high interest for states within and outside of the Arctic region. New economic activities, transportation routes and use of natural resources, among other things, are constantly being planned which increase the demand for science-based research and knowledge gathered jointly with the stakeholders. There is a need to find sustainable solutions on the one hand for the new economic activities and on the other hand for the people who live in the region and face the problems caused by climate and global change in their lives. This calls for an effective stakeholder engagement and co-production of knowledge. To successfully achieve this, the following actions need to be taken:

- National and international funding agencies need to develop and implement funding schemes allocating seed money and preparatory funding for workshops and planning meetings with stakeholders taking place during the project planning phase well before the research funding calls are opened.
- Part of project funding has to be allocated to the stakeholders for paying for their work in the project, for the stakeholder workshops and for other expenses. Funding mechanisms should include a separate budget line for the stakeholder engagement in case stakeholders are not able to participate as full project partners (as legal beneficiaries).
- Each project proposal should include in the communication plan also a strategy for the stakeholder communication, dissemination, engagement and exploitation.
- An extensive and more thorough handbook with guidelines on stakeholder engagement in European context should be compiled.
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Who are we?

EU-PolarNet is an EC-funded coordination action, a network of 22 European research institutions and organisations that jointly are developing an Integrated European Research Programme with clear strategic European science priorities and a distinct direction for the management and development of the polar infrastructure required to support them. The process and approach of involving stakeholders from the outset to co-design research proposals will ensure that scientific research outcomes are directly relevant and beneficial to society and business. EU-PolarNet has published five White Papers of high interest to European

society with research needs that will have economic, social or cultural benefits. The five key areas of the White Papers are People, Climate and Cryosphere, Sustainable Management of Resources and Human Impacts, Polar Biology, Ecology and Biodiversity, and New Technology. All White Papers list their key stakeholders, both Arctic and Antarctic and highlight the importance of including them into the research in an inclusive way.

