CAPARDUS - Capacity-building in Arctic standardization development

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PU	Public, fully open	X
CO	Confidential, restricted under conditions set out in Model Grant Agreement	
CI	Classified, information as referred to in Commission Decision 2001/844/EC	

EXECUTIVE SUMMARY

CAPARDUS aims to explore ongoing processes of developing standards in a selected topic of relevance for the Arctic. The project will develop a Comprehensive Framework Model for Arctic Standard and Best Practices as a collaborative effort between scientists, local communities and other stakeholder groups, including economic actors who are interested in business development in the Arctic. In this document the scope of the project is described more specifically. Focus areas include scientific activities including managing data from observing systems and modelling systems in order to supporting natural resource management, safety, community planning and decision making and tourism. Also, technology development, infrastructures and other services for Arctic communities will be addressed. The project is based on regional case studies in Greenland, Svalbard, Alaska and Yakutia in Russia, where local community members are involved after signing an informed consent agreement

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1. Introduction

Clarification of the "Arctic Best Practice System"

During CAPARDUS we will coordinate with participants and stakeholders engaged through WPs 1-5 to co-create a roadmap for what we originally dubbed the "Arctic Best Practices System". Consultation with project partners has encouraged us to rename the system at the centre of this effort as the "Arctic Common Practice System" (ACPS) to promote inclusivity. Importantly, we will not launch a fully fledged system in this project (as noted in the original proposal), but we will leverage existing resources to gather documents provided from WP1-WP5 as a starting point for the co-design process. When approaching local communities and other user groups, we will present the ACPS as a repository of documents (or other communication media) that is searchable on titles, keywords and content. From that basis, we will begin the co-design process to produce the roadmap for full implementation. In specific objective no 3. ("Enhance coordination of Arctic Best Practices as method to advance standardization") "Best Practices" should be replaced by "Common Practices"

Link to the UN Sustainable Development Goals

Climate change, which is amplified in the Arctic, is having acute impacts on local communities. The northward migration of pollution and non-native species, resource extraction, and increased shipping threaten the ecosystems and sustenance economies of the region. In 2015, the UN has adopted 17 Sustainable Development Goals (SDGs, see https://sustainabledevelopment.un.org) which are defined globally and therefore include the Arctic.

The links to the Sustainable Development Goals and the Community-based monitoring programs will be important in all the work packages of the project. Until now the SDGs are described at high-level UN language, from the perspective of academia, industry and governance. In the Arctic most of the 17 SDGs are relevant and important, but which of them are more critical for the different communities and what should be done? In CAPARDUS we will explore what some of the SDGs mean for the communities in the case studies for example, SGD no. 11: Sustainable cities and communities, is directly addressing the future existence of the Arctic communities. Will it have any practical value for the communities, or is it only a high-level policy goal?

Link to Arctic programmes supporting sustainable development

The Arctic Council is the leading intergovernmental forum dealing with issues on sustainable development and environmental protection in the Arctic. In addition, the European Union has established an Arctic policy with focus on advancing international cooperation, responding to the impacts of climate change in the Arctic, and on promoting and contributing to sustainable development. On this background the documentation of common practices and development of standardization must build on results of major international programmes and projects dealing with Arctic issues.

The Arctic Council is the leading intergovernmental forum dealing with issues on sustainable development and environmental protection in the Arctic. In particular, the Council's Working Group on Sustainable Development (SDWG), established in 1998, has focus on the human dimension of the Arctic. The SDWG addresses protection of favorable environmental, economic and social conditions, as well as the health of Indigenous communities and Arctic inhabitants (https://arctic-council.org/en/about/working-groups/sdwg/).

The relevance of the Sustainable Development Goals in the Arctic is also described in articles and reports by Arctic WWF, see

- https://arcticwwf.org/site/assets/files/2050/report_arctic_blue_economy_web.pdf
- https://arcticwwf.org/new sroom/the-circle/sustainable-development-goals/
- https://arcticwwf.org/newsroom/the-circle/sustainable-development-goals/why-the-arctic-needs-the-un-sustainable-development-goals/

Sustaining Arctic Observing Networks (SAON) has published the *International Arctic Observations Assessment Framework*[1], where 12 Social Benefit Areas (SBAs) are identified that require Arctic observations. These SBAs are connected to the SDGs, but they specifically address issues of importance in the Arctic. A follow-up study was conducted by the European Commission: *Impact assessment study on societal benefits of Arctic observing systems*[2]. The study attempted to estimate the cost of observing systems and compare with societal benefits of the services that depend on the observing systems.

In the three 'pillars of sustainable development', which is now an established definition, the fourth 'cultural pillar', which was part of the original definition, is now rarely included (Søndergaard, 2018, https://arcticyearbook.com/arctic-yearbook/2018). In CAPARDUS we will ensure that the 'cultural pillar' is considered when we develop the Arctic Common Practice System.

Link to community-based monitoring, management and planning

Community based monitoring (CBM) programs will contribute to better-informed decisions and better-documented processes in key economic sectors of the Arctic (e.g. hunting, herding, fisheries, forestry, tourism). Moreover, CBM programs have a strong potential to link environmental monitoring to awareness-raising, capacity building, and enhanced decision-making at all levels of resource management. If the CBM programs in the Nordic countries, Yakutia and elsewhere in the Arctic are to fulfill these potentials, there is a need for further developing and disseminating 'good practice' guidelines and standards for CBM programs. This will be done through the CAPARDUS partners, including the subcontractors, who have long experience in working with CBM programs.

When local communities are invited to participate in research projects or CBM programmes, it is important that the '*Free, prior and informed consent'* principle is followed (FPIC). For the indigenous peoples of the Arctic this principle is essential, not least because ILO Convention 169, the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and the Convention on Biodiversity (CBD), which all support and relate to the principle, are among the most important tools to safeguard their rights. In ethics document D10.1 Human requirements, the procedures and criteria to identify/recruit research participants are described, showing example of the Informed Consent Agreement to be signed with the participants.

2. Comments to the work packages

Introductory remark:
Due to the corona virus pandemic decease, the project schedule is expected to be changed. The timing workshops, dialogue meetings and research schools cannot be decided at this point. Also, the schedule for the deliverables is expected to change. It is planned to provide an updated schedule for the project later in 2020.

WP1. Establishing a comprehensive framework for Arctic Standards

CAPARDUS will explore ongoing processes for developing standards in a number of topics of relevance for the Arctic. This includes scientific work with data management from observing systems and modelling systems in order to supporting the following topics: 1) natural resource management, 2) safety of operations, 3) community planning and decision making, and 4) tourism. Other topics such as technology development, infrastructures and other services for the Arctic communities will be included as required in the case studies.

[1] https://www.arcticobserving.org/news/268-international-arctic-observations-assessment-framework-released

[2] https://publications.jrc.ec.europa.eu/repository/bitstream/JRC113327/kjna29400enn.pdf

Natural resource management

The way natural resources are managed is essential for the livelihood of communities and the Arctic, and in particular in the case studies of the project. Fisheries, hunting, reindeer herding are examples of key means of livelihood in Greenland, Alaska and in Yakutia, Russia. Oil, gas and mineral resources are explored in many regions and can change the lives of people dramatically in cases where the resources are exploited on large scale with industry plants and transport systems. In Svalbard, the community in Longyearbyen was established because of coal mining more than a century ago. At present this industry is declining the community is forced to develop other businesses e.g. facilitate research hubs and tourism.

Safety of operations

The increasing number of people travelling to the Arctic as result of shipping, industrial activities, various expeditions and other tourist traffic represent significant risks for accidents. In most areas there is lack of infrastructure for emergency preparedness, search and rescue operations, medical services and transport systems. This implies that even small accidents, which can be handled easily in populated communities, become challenging in remote Arctic areas. To build up safety of operations, both on land, sea and air, is therefore of high priority in Arctic areas. The Polar Code, which entered into force in 2017, is an example of regulations established by International Maritime Organization (IMO) to ensure that there are minimum requirements for ships operating in Polar regions.

Community planning and decision making

To develop sustainability of Arctic communities, it is essential that planning and decision-making is based on the best available data. In the Arctic there is a growing number of CBM programs, including Indigenous and Local Knowledge (ILK), which play an important role in addition to scientific systems to provide environmental, climate and resource data. CBM programs are usually driven by needs in local communities to help in resource management, planning and decision making. A key challenge is to enable data sharing between CBM systems and other Arctic observing and data systems and build services upon them. This calls for development of standardization of observing methods and data management. To go into the future it is important to engage with the youth councils in the different communities.

Tourism

Tourism is an evolving and important industry in many Arctic regions involving different the generations and genders. This industry provides several opportunities for individuals and communities, but it also introduces several challenges across the topics addressed in CAPARDUS. Conflicts between local communities and tourism can easily occur e.g. the resource management and cruise ships. It is therefore imperative to find solutions how tourism can develop side by side with the traditional activities for a sustainable development of the Arctic communities. In particular, the increased tourism increases the need for safety and preparedness. It is essential that planning and decision-making concerning development of new businesses such as tourism is based on the best available data both to avoid too restrictive regulations hampering sustaining communities in the Arctic region. CBM will be an important tool for this and the tourism can play an important role in collecting the data through citizen sciences.

Other topics

The following topics will be addressed to the extent needed to highlight the factors that are important for sustainable development in each of the regions:

- Ethics, norms, responsible research and related standards

- Legal and regulatory standards (national, international)
- Health – clean food and water including access and traditional food
- Transportation (land-based, sea ice, shipping etc.)
- Infrastructure (buildings, roads, etc,) design and engineering
- Pollution (e.g oil, plastic)

Other factors can be included based on feedback from the workshops and dialogue meetings

The comprehensive framework will require input from all the Case studies (WP2 – WP5) on questions such as:

- What practices and "standards" exist and are in use?
- How can benefits of existing standards be evaluated ?
- What practices are needed or desired based on WP member and partners?
- What outcomes of filling gaps are expected?
- Critical analysis – what harm might be done (e.g. continuation of colonial approach); what challenges to implementation (e.g. priority (motivation), capacity, cost etc.)?

WP2: Case studies in Greenland

In Task 2.1.2 approach for incorporating local ecological knowledge into natural resource management decision making in Greenland will be conceptualised using Bayesian Belief Network (BBN) models. BBN models are increasingly used to guide decision-making in complex social-ecological systems and where formal scientific data is deficient. A contemporary natural resource management problem of wide societal consequence, such as the halibut fisheries, will be selected as a case to develop a BBN model as an illustration for teaching purposes. A workshop will be held in Nuuk, hosted by Ilisimatusarfik, with participants involved as users (incl. private sector industry and local users), mangers or advisers in the specific selected case. The workshop will focus on understanding the selected natural resource management problem and the socio-ecological system in which it occurs to conceptualise and build a working model. The model will be further specified by presenting and discussing it with local users. Finally, the model will be used as an educational tool to illustrate the usefulness of BBN models to incorporate local ecological knowledge for informed natural resource management decisions in connection with the research school and the dialogue meetings.

WP3: Case studies in Svalbard

The case study in Svalbard will focus on dialogue with the local community in Longyearbyen on standardisation and common practices related to the dominant activities in the region, including the societal challenges that the community is facing. The challenges are connected to the changes from being a mining town to a research, education and tourism-based community. At the same time, the climate change in the region is dramatic, with severe impact on infrastructure and people's living conditions because of thawing permafrost, flooding, snow avalanches and other climate-induced effects. Furthermore, the strong growth in tourism and

ship traffic poses challenges regarding safety, search and rescue and other services needed to support a large number of visitors coming to Svalbard. The case study will also include a workshop, a research school, and meetings with the municipality, the community services (e.g. harbor-, airport-, logistical- services) and the business sectors (e.g. tourism). Meetings will be organized to discuss community needs for more research-based and operational knowledge to support preparedness and adaptation to the effects of the dramatic climate change and resource base transitions in the region.

WP4 Case studies in Russia

The Russian case study will focus on community-based monitoring of living resources and resource use in Yakutia. We will document and map indigenous knowledge and observations of development and living resources in Yakutia (e.g. hunted animals, attacks by predators, fishing activities, quality of pastureland, use of resources by people from within and outside the community, and changes in climate and the environment), and we will convene a workshop in Moscow on capacity-building and development of standards with 12 Indigenous representatives from across Arctic Russia. The deliverables include a report on the interviews in Yakutia, a report from the Moscow workshop. The work on impact of Yamal industry project on local communities is put on hold, because of conflicts between indigenous groups and the industry developers.

WP5: Case studies in North America

The USA case study will focus on community-based monitoring of coastal hazards in northern Alaska related to coastal erosion, sea ice change and permafrost thaw. The approach will include interviews and a workshop with stakeholders and information-users to understand data collection and information gaps and identify the technology needed to support information sharing. Key deliverables include a workshop report and concept map of the current information system being used, and how information flows between user-groups.

WP6: Arctic Common Practice System

The scope of WP6 will include the co-design of a repository for documents and other material describing common Arctic practices, based on results from WP1-WP5 and will be aligned to with the FAIR and CARE principles. Based on these results, the concept for a fit for purpose Arctic Common Practices System documented in a roadmap. Additionally, the ACPS' basic functions will be piloted through contributions of Arctic common practices to the existing Ocean Best Practice System (OBPS; www.oceanbestpractices.org). This implies that a number of identified documents addressing common practices from WP1-WP5 are uploaded to the Ocean Best Practice System through an Arctic-focused portal during the project period. The lessons learned in this process will be used to develop the roadmap.

WP7. Synthesis, requirement and recommendations

The scope of this WP will be discussed later.

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Project partners:

No	Acronym	Participant Legal Name	Country
1	NERSC	STIFTELSEN NANSEN SENTER FOR MILJO OG FJERNMALING	NO
2	NORDECO	NORDISK FOND FOR MILJØ OG UDVIKLING	DK
3	Ilisimatusarfik	Ilisimatusarfik, Grønlands Universitet, University of Greenland	GL
4	AWI	Alfred-Wegener-Institut Helmholtz-Zentrum fur Polar- und Meeresforschung	DE
5	IEEE	IEEE France Section	FR
6	NINA	STIFTELSEN NORSK INSTITUTT FOR NATURFORSKNING NINA	NO
7	UCPH	KOBENHAVNS UNIVERSITET	DK
8	NIERSC	Scientific foundation Nansen International Environmental and Remote Sensing Centre	RU
9	ARC-HU	Arctic Research Centre, Hokkaido University	JP

Subcontractors

	ELOKA	Exchange for Local Observations and Knowledge of the Arctic	USA
	UAF/IARC	University of Alaska Fairbanks/ International Arctic Research Center	USA
	CSIPN	Center for Support of Indigenous Peoples of the North	Russia
	E84	Element 84	USA