Deepening Voices

- eXchanging Knowledge of Monitoring Practices between Finland and Greenland

Lead Author: *Tero Mustonen*
Contributing Authors: *Vladimir Feodoroff, Pauliina Feodoroff, Aqqalu Olsen, Per Ole Fredriksen, Kaisu Mustonen, Finn Danielsen, Nette Levermann, Augusta Jeremiassen, Helle T. Christensen, Bjarne Lyberth, Paviarak Jakobsen, Simone Gress Hansen and Johanna Roto*

Contents

.

Cover photo: Glacier east of Kangerlussuaq, Greenland.
All report photos: Snowchange, 2018, unless otherwise stated.
Layout: Eero Murtomäki and Rita Lukkarinen, 2018

www.lumi.fi
www.snowchange.org

1. *eXchanging Knowledge*

Aqqalu arriving in Aasiaat harbour.

eXchanging Knowledge is a two-year project running in 2017 and 2018 with the aim of providing a platform for cross-cultural exchanges of Indigenous and local knowledge between Finland, Finnish Sámi areas and Greenland.

It is a partnership between local Greenlandic, Sámi and Finnish communities, Greenlandic Ministry of Fisheries and Institute of Biological Resources, Danish NGO NORDECO and Finnish NGO Snowchange Cooperative[1]. Thanks to Nordic Council of Ministers Arctic Programme, a new style of cultural exchange project was established. The authors, organisers and participants are very thankful to NCM and all people who supported this project.

In December 2017 a group of Skolt Sámi and Finnish fishermen travelled to Greenland for an exchange visit with local hunters and fishermen in Aasiaat, Northwestern Greenland. Here the Sámi and Finns learnt more about the Kalaallit/ Greenlandic ways and methods of conducting community-based monitoring[2] and management.

The aim of the exchange is to learn from each other in order to discuss best practices, lessons learned and possibly develop new methods for doing community-based monitoring. The Greenlandic hunters and fishermen are together with the municipality and the government running a promising locally-driven observation and management project that is generating knowledge and proposing management actions about the living resources in NW Greenland, while the Skolt Sámis and the Finnish fishermen of Selkie have led the first-ever fully locally-led restoration and management projects in Finnish history on a catchment-wide scales.

Thus all groups are experts within community-based monitoring and management[3] and have already succeeded in developing practical procedures and have gotten plenty experiences with what works and what does not. The results from all projects have been recognized in media, international scientific literature and national and international policy documents, and they can be considered pilot studies for successful community based monitoring projects in the European and North Atlantic Arctic and boreal.

The plan is to repeat the exchange in Finland in 2018, where the fishers and hunters from Greenland will visit Selkie in North Karelia and Sevettijärvi in Lapland to gain first-hand experience with the Finnish and Skolt Sámi management and river restoration projects - projects that have actually adapted some of the methods from the Greenlandic project.

Two research and cultural organisations, Snowchange Cooperative from Finland, and NORDECO[4] from Denmark together with the Ministry of Fisheries and Hunting, Government of Greenland (APN), are facilitating the exchange of knowledge between local partners in respectively Finland, Lapland and Greenland. The approach taken is that the local communities decide, steer and guide the project activities, whereas Snowchange, NORDECO and APN provide a bridge from the world of conventional science and the authorities to the knowledge held by the Indigenous peoples and locals.

Involvement of Indigenous and local knowledge in science and decision-making can enable European Arctic and boreal communities to promote concrete and realistic solutions to environmental and development challenges. The exchange of knowledge amongst different CBM projects contributes to capacity building for all parties involved, and it is envisaged eventually to lead to more innovative and successful government and community initiatives in the future.

Nuunuq ready to depart out to the sea.

[1] Non-profit organisation
[2] in Greenland called documentation or observing, not monitoring
[3] CBM- observation and data collection undertaken by locals, used for subsequent management actions
[4] Nordic Foundation for Development and Ecology

eXchanging Knowledge provides a unique opportunity for the stakeholders such as hunters, fishermen, scientists and the authorities to be involved first-hand in the exchange of knowledge and practice.

1.1. Monitoring traditional ecological knowledge in the European Arctic Communities

Community-based monitoring is the process of monitoring and communicating local and traditional ecological knowledge[5]. It is undertaken by local stakeholders using their own resources and in relation to aims and objectives that make sense to them[6]. This method is nothing new. Local fishermen, hunters and gathers undertake on-the-job observations of the environment all year round[7].

The local and Indigenous communities are often the first to spot the sometimes subtle changes in the environment. Governments have begun to view local and indigenous people and their knowledge of the land as an 'early warning' system for environmental change. In this perspective, local and indigenous people can be considered global warmings' canaries in the mine[8].

[5] TEK
[6] Danielsen et al. 2014
[7] Huntington et al. 2017; Berkes et al. 1993; Danielsen et al. 2014
[8] Berkes et al. 1993

Traditional knowledge - TEK can be defined in many ways. Here we use the definition that TEK is the cumulative body of knowledge held by community members due to long affiliations to specific landscapes and generational transmission[9]. The term "knowledge" refers to the myriad of intertwined components such as experiences, rituals, worldview, social and family institution, language, traditional land and natural resource use to name a few examples. All of the above make TEK, or Indigenous knowledge[10] a holistic approach.

TEK and its holders now are increasingly seen as a valuable partners and co-researchers in improving the understanding of the changing ecosystems[11]. Thus the use of TEK can play a vital role in climate change assessment and adaptation efforts[12]. At its best it also addresses past equity issues and colonial legacies of science. By positioning Indigenous and local community people as co-researchers a symmetrical dialogue is possible on knowledge production. TEK in this case is not seen only as a resource, but a vibrant, dynamic way of knowing as relevant as science.

Professional scientists have been monitoring the environment for decades[13]. Conventional scientific monitoring in the Arctic is however logistically difficult and relatively costly. Much is still unknown about the mechanisms controlling the changing ecosystems, and how communities and the society should respond[14]. Community based monitoring surpasses these challengers and is even bringing new knowledge to research, and potentially to resource management and if needed, community-led ecological restoration practices.

[9] Mustonen 2015
[10] A vast literature exists on the varied definitions of TEK, Indigenous knowledge and so on. In this report they are used interchangeably. In local contexts, such as in Greenland varying terms are used, including 'user knowledge'.
[11] Pecl et al. 2017; Tengö et al. 2016
[12] Huntington et al. 2004; Whyte 2013; EPA 2011
[13] Arctic Council 2013

Earlier there has been limited interest in using TEK for informing government resource management decisions in the Arctic[15]. However, during recent years, in the search for ways to adapt to environmental perturbations, more researchers and government agencies have begun to see TEK as an important tool, and some have started systematizing and analysing this knowledge in order to incorporate TEK into natural resource management and policy-making decisions.

The use of TEK enables local people knowing the landscapes and having first-hand knowledge of the resources to be listened to and to propose management interventions and thereby to contribute to practical natural resource management. Local people emerge from targets of research into active agents of monitoring and research in a symmetrical partnership with science institutions.

Today, there is an increasing number of organisations working on promoting the collaboration

[14] AHDR II
[15] Sejersen 2003; Huntington 2004

between locals and scientists[16]. Many of the different programs have their own platform for distributing their data. However there are now more public atlases making it possible to get an overview of the TEK monitoring projects around the Arctic.

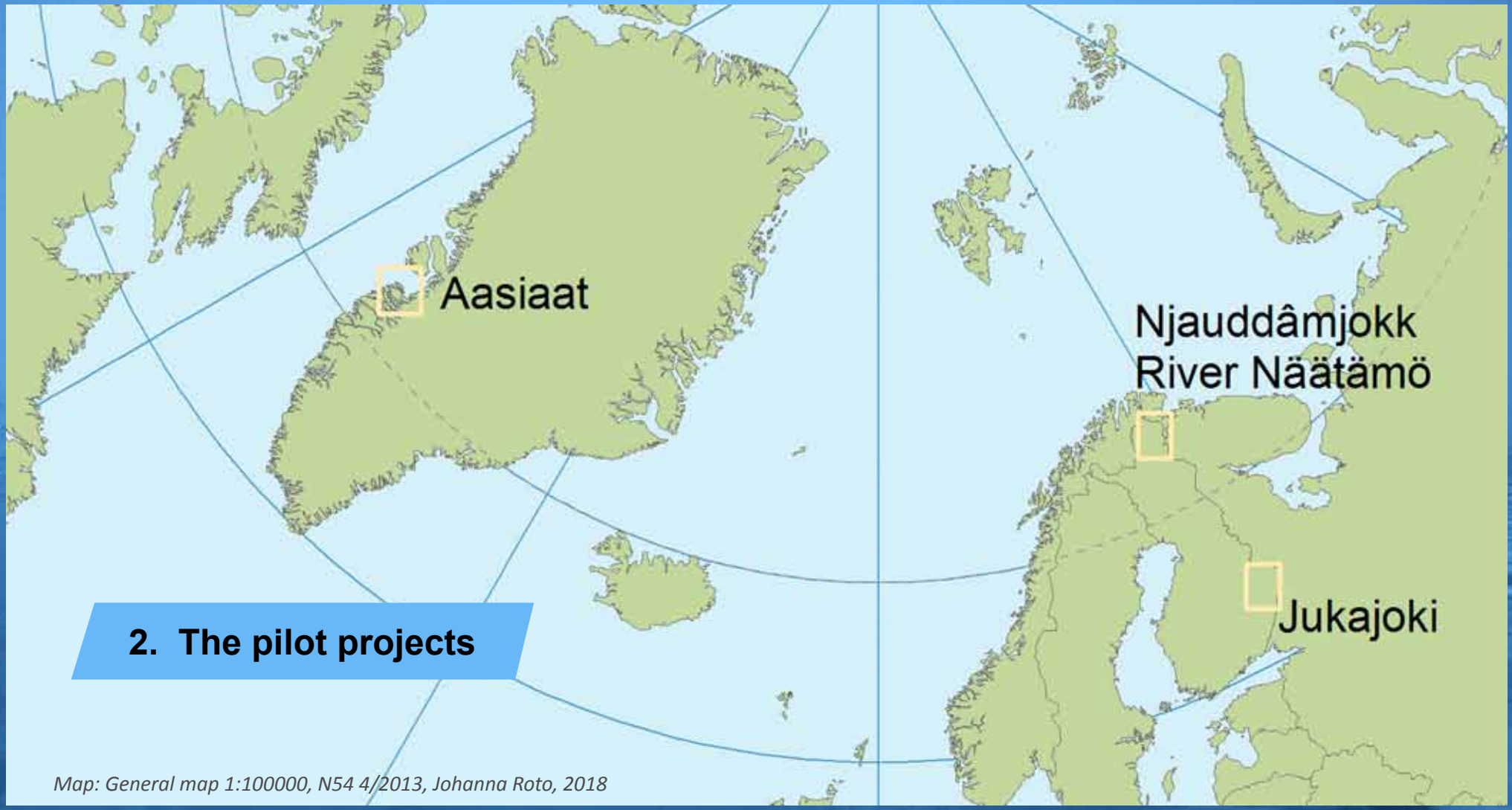
One of the first ones was developed in 2012, showing information of 81 different TEK monitoring programmes in the Arctic[17]. In 2018 the big interdisciplinary project INTAROS[18] created an updated database. It is clear that numerous TEK monitoring programmes are now being undertaken in the Arctic.

[16] For example organisations and institutions such as Snowchange Cooperative, ELOKA, NORDECO, WWF, and the Pikialasorsuaq Commission

[17] http://www.arcticcbm.org/index.html

[18] Integrated Arctic Observation System

Trawlers in the Aasiaat harbour, December 2017.



2. The pilot projects

Map: General map 1:100000, N54 4/2013, Johanna Roto, 2018

The application of CBM in management in the Arctic and North Fennoscandia is emerging slowly. In this report we describe three promising pilot CBM programmes, one Finnish, one Skolt Sámi, and one Greenlandic, all presented in workshop in Aasiaat.

The following are examples of how local community observations were and are central to effecting changes to management regimes. In each of the examples, local and/or Indigenous peoples were involved in all stages of the monitoring programme, from designing the programmes and undertaking observations to the interpretation and use of the data.

We believe that one of the keys to a successful scaling up and institutionalization of future CBM work, is to support and enhance knowledge exchanges between promising pilot regions, to learn from and support each other and to inspire both decision makers and community members.

2.1 PISUNA in Greenland

In 2009, the Greenlandic Ministry of Fisheries, Hunting and Agriculture[19] in collaboration with Greenland Association of Fishermen and Hunters[20], Greenland Association of Municipalities[21] and selected municipal offices initiated the CBM programme called *Piniakkanik sumiiffinni nalunaarsuineq*[22]*. In 2015 the CBM programme was expanded with Nunani avannarlerni isumalluutinik ingerlatsineq suliniut*[23] project.

The aim of PISUNA/NUNAVIS is to enable Greenlandic fishermen and hunters to document trends in living resources, to propose management decisions themselves and to take an active role in the local management of the living resources and environment.

Through PISUNA/NUNAVIS, experienced community members have obtained a tool for collecting and interpreting observations on living resources and for proposing management decisions based on these to the municipal and central authorities on resource management.

The communities that take part in the monitoring and management activities are spread out over the inhabited coastal area of Central West Greenland. Initially, PISUNA was established in four communities in the area around Disko Bay and Uummannaq Fjord[24]. Later in 2012, Qaarsut and Ilulissat terminated their involvement, and the programme expanded to the North, as the communities of Kangersuatsiaq and Qaanaaq had heard about the programme and strongly wished to participate. Likewise, more communities in Disko Bay joined or used the approach[25]. NUNAVIS is focused on communities in the Southern parts of Greenland.

In each community, a Natural Resource Committee[26] has been established, selected through village meetings, consisting of six to ten of the experienced and interested local hunters, fishermen and other people with knowledge of the environment and resources. The NRC decides which natural resources will be observed based on the relevance for the community.

As of December 2017, most observations from PISUNA have focused on terrestrial and marine mammals, fish and birds, but the observations also occasionally include various biophysical information such as sea ice cover, sea-currents and weather patterns.

[19] APN
[20] KNAPK
[21] KANUKOKA
[22] PISUNA, *"Opening Doors to Native Knowledge"*
[23] NUNAVIS, *"Nordic Ressource Management"*

[24] Akunnaaq, Kitsissuarsuit, Qaarsut, and the town of Ilulissat
[25] Attu, Niaqornaarsuk, Saattut, Saqqaq
[26] NRC

Humpback whales surfacing close to the Aasiaat in the summer. Photo: Halfdan Pedersen, 2017

Between 20-30 hunters and fishers participate on a regular basis in PISUNA.

At quarterly meetings, the local NRCs meet and summarise, discuss, validate and interpret their observations. The trend of each attribute is determined to be - stable, decreasing or increasing. Their assessment of status is based on a comparison to the same location and season in the previous year[27].

Moreover, possible explanations of the trends observed and suitable management initiatives emanating from the results are discussed. When the hunters and members of the NRC discuss management initiatives, they also discuss what should be done, when and by whom. Hereafter the management proposals with the supporting information are sent to the municipal for endorsement and national authorities for information. If a proposal is endorsed by the municipality board it is presented to the government that then decides if the management actions can be implemented in cases at national level. The NRC members occasionally also present their monitoring results at a community meeting so as to obtain inputs and feedback from the entire community.

The PISUNA programme has been designed in a way that local observations and perceptions of trends are being triangulated within the communities, between communities and over time, so as to enhance the validity of the locally obtained information. Thereby, potential local biases favouring certain information are reduced.

[27] 12 month earlier

All data and proposed management interventions are publicly available at PISUNA-net[28], so that everybody with an interest can gain insight in the changing trends of the natural resources and the locally proposed management actions.

Before searching data on PISUNA-net, the readers however have to accept certain provisions related to the local communities' ownership of the data and intellectual property rights and other specific questions.

2.2 Lessons learned in Greenland

Local participation in documenting key resources has proven an important component to strengthening local management of natural resources. However, getting the management proposals implemented locally or nationally has proven to be a long process undergoing continuously development and improvement. PISUNA have resulted in the locals proposing many management actions, of which some have been implemented or followed up by legislative changes, projects, and courses, while others were declined or are still awaiting approval.

The government has as an explicit legal requirement to listen both to scientists and community member's knowledge about biodiversity when making decisions on quotas and natural resource management. PISUNA puts a suitable mechanism in place to allow for the incorporation of community knowledge into government decision-making at scale. Despite intentions of promoting local user knowledge, this has however proven a challenge in a number of cases (internationally migrating species) when laws and regulations do not allow decentralised management actions.

[28] searchable, icon-based web-server database and PISUNA.org (the original filled-in summary forms)

Suggested management proposals include amongst others, changes to hunting and fishing seasons for certain species, changes to quotas, changes in harvesting procedures by imposing restrictions on fishing methods and allowed equipment and changes in access and means of transportation in certain areas[29].

The PISUNA database is steadily growing, the local hunters and fishers have collected a substantial amount of data over the years. The database now makes up data suitable for time series analysis and further research. Already several scientific papers have been published about the programme, and other CBM initiatives in the Arctic are being inspired by the initiative and are adopting parts of the methods.

The Greenlandic administrative level, locally, regionally and nationally as well as scientific institution has gotten practical experience working with local documentation of natural resources. Employees from several ministries, municipality offices and scientists have engaged with the locals or been directly involved in the programme on other hand, thereby increasing collaboration between decision-makers, scientists and locals. Furthermore, the project and the data have been presented in several countries,

[29] Danielsen et al. 2014

organisations, media and high-level forums. For example, in April 2017, the PISUNA project was highlighted in Greenland presentation at the 16th session of the UN Forum for Indigenous Issues in New York[30].

Why are the community members engaging in PISUNA? The locals participate because they feel it is important and because they want to promote local management through their understanding of the resources, the landscape status and the dynamics[31]. Furthermore, discussing what is going on with regard to the key resources, leads to an increased interest, feeling of ownership, responsibility and caretaking in the management of the resources and nature. Therefore, locally discussed and agreed management systems may be more efficient than top-down decisions, which are not always agreed upon or locally well-received.

Based on the experiences from the project years and the shown capability of collaboration between local communities, scientists and the local and national decision makers it was decided to continue with the approach after the project period. PISUNA has since 2017 been a procedure used for incorporation of local knowledge at the local as well as national administration system.

[30] https://papersmart.unmeetings.org/media2/14684034/greenland.pdf
[31] Danielsen et al. 2014

Sea ice close to Aasiaat, December 2017.

2.3 Jukajoki in Finland

The PISUNA methods were implemented between 2014 and 2017 in North Karelia in the Jukajoki river restoration project. This boreal catchment area is situated in the villages of Selkie and Alavi close to the Russian border.

The single biggest restoration action in the catchment area is Linnunsuo wetland, which means *Bird marsh*. It is one of the biggest rewilding/restoration sites in Finland, being a 110 ha former peat extraction area, that in 2012 was restored into a wetland. The main purpose is to act as a buffer-area to prevent the acidic compounds and heavy metals being released into the adjacent Jukajoki river. The soils in the basin are naturally iron and sulphur -rich.

Up until the 1980s, this area was a biodiversity hotspot, especially for birdlife. In the 1980s VAPO, a state-owned company, started exploiting the mire for industrial peat extraction. This caused an ecological disaster for the area and the connected Jukajoki river due to the extremely harmful discharges from the peat extraction[32]. The river catchment also suffers from forestry ditching, characteristic of many boreal river and lake systems in Finland[33].

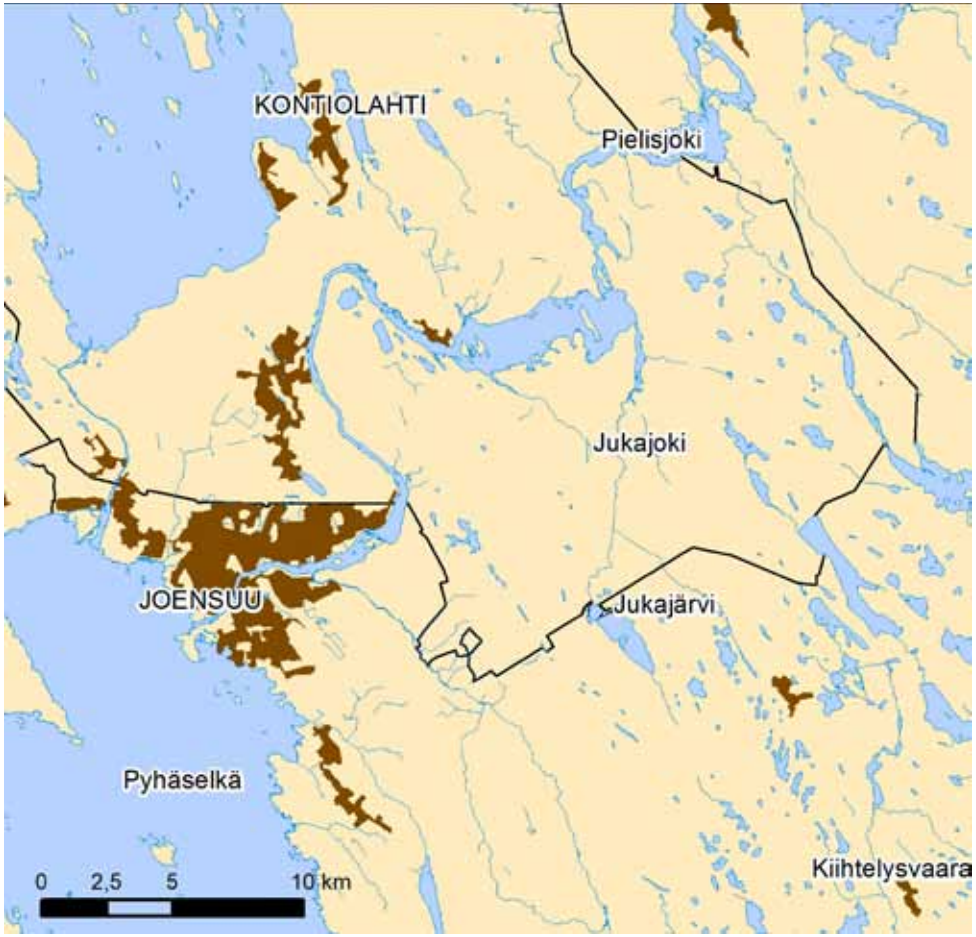
Snowchange staff members survey Jukajoki, 2013. Photo: Hilkka Heinonen

[32] pH was measured to 2,7-3,4 and iron concentrations reached 300 000 µg L^{-1}, concentrations which are lethal to all aquatic organisms.

[33] See more in English at http://casestudies.ourplaceonearth.org/Finland/

Linnunsuo is crucial to be protected since Jukajoki river is important to the local community. Fishermen had been warning for years about the deterioration of the state of the river. Local people depend on the river for recreational-, subsistence- and small-scale professional fishing and the river is deeply embedded in the forest Finnish lifestyle. Village of Selkie has the status of a national landscape and is considered a prime example of a Karelian–style community which has preserved many traditional activities and habitats.

The project has been running since 2010 and is run as collaborative-management lead by Snowchange Cooperative together with villagers and fishermen who uses CBM and local knowledge to monitor the success of the ecological restoration at the site. This is done by combining local knowledge of Finnish-Karelian peoples through catch diaries and observations, latest science and internationally recognized ways of collaborative management.



Map: Jukajoki region, North Karelia, Finland.
Johanna Roto, NLS General map 1:100000, N54 4/2013

Project listens to views from all stakeholders. To name some examples, the parties involved include: the local birding association, the local hunting association and the previous owner, the state company VAPO. The focus of the co-management is on creating constructive dialogues and agreements for the common good, between stakeholders with often contrasting interests. The PISUNA methods were implemented between 2014 and 2017 in Jukajoki. A simplified, modified form was used to document weather, fish species etc.

The way the co-management works is that three hand-picked, trusted fishermen[34] fill out monitoring forms during the fishing season. Here they register catches, the species and amount, the method used, numbers of fishing efforts such as how many nets or fish traps and how many nights they have been out.

A blank space on the form is left for other observations. After the season forms are collected by Snowchange, and the trend of the data is discussed in informal group interviews. Data is stored at the Snowchange oral history archives and is available upon request. The main activity focuses on the seasonal harvest of Common Bream[35] and Ide[36]. Furthermore, ornithologists survey the wetland and register the re-appearance of species back into the area. The wetland has become a pilot site for this kind of large-scale restoration in Finland, and several students and university courses have have studied the area.

[34] One professional fisherman in late 30s, one subsistence fisherman 60 years of age, who has been harvesting on the river since 1960s and one subsistence fisherman 50 years of age, who has been harvesting on the river since 1970s
[35] Abramis brama
[36] Leuciscus idus

2.4 Lessons learned in the boreal

The Linnunsuo wetland was initially just a step in the long-term restoring of the river watershed, but the area is showing an amazing resilience capacity. Indeed the area became as soon as in the first year an important breeding, nesting and resting area for many different bird species, including rare species at regional and even national level. Species visiting have included for example Terek Sandpiper[37] and other rare waders such as Red phalarope. Nesting species on the site include Northern Pintail[38] and Wood Sandpiper[39].

UNEP recognized Jukajoki project as a best practice in July 2014[40]. Special highlight was the engagement of the local fishermen in the restoration work and inclusion of their traditional knowledge and oral histories into the management of the restoration actions. International recognitions of the local-traditional knowledge are important because they open doors domestically to a wider dialogue of inclusion of traditional knowledge into management and restoration actions. These are important steps as the inclusion and discussion of traditional knowledge of local communities in Finland is rare and underdeveloped.

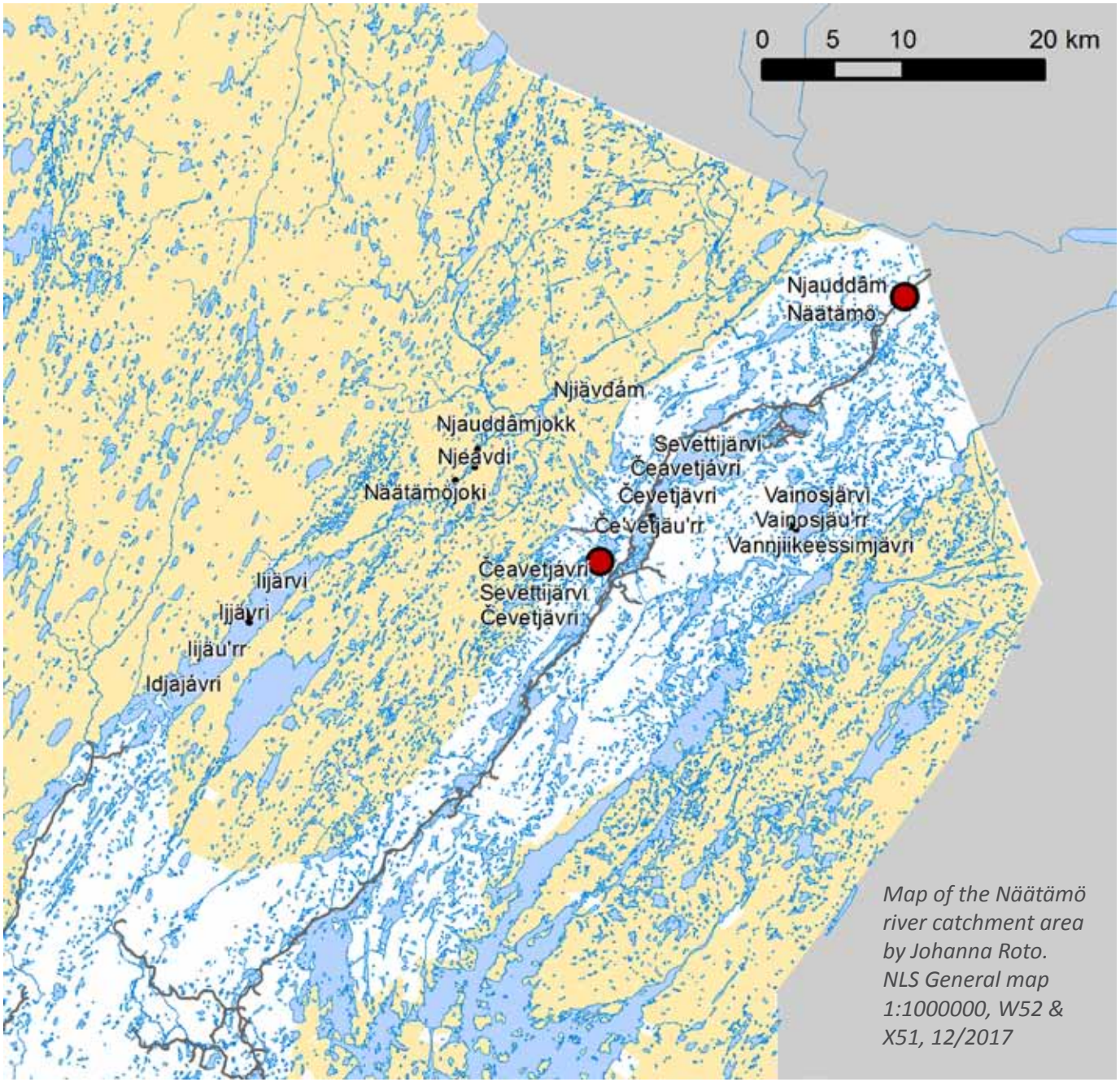
The fishermen found the modified forms useful and have reported new observations about weather, water quality and levels as well indicator species for water quality, such as brook lamprey in the Kissapuro sub-catchment area. The forms provided an added tool to document the fishery on the river. However, fishermen felt that their deeper knowledge of the river and relationship to it would need to be conveyed using oral history work, interviews and mapping.

Overall, the project has given back a local governance control to those who had been deprived from it when the State company appropriated the area.

Wood sandpiper (left) and Red phalarope (right) on Linnunsuo. Photos: Pasi Hiltunen.

Selkie villagers observing birds on Linnunsuo. Photo: Snowchange

[37] Xenus cinereus
[38] Anas acuta
[39] Tringa glareola. See more at http://www.snowchange.org/2017/10/major-new-research-report-out-on-linnunsuo-wetland/
[40] Project has also received the Energy Globe Award in 2016 and was a semifinalist for the best river project globally in India in September 2016.



Map of the Näätämö river catchment area by Johanna Roto. NLS General map 1:1000000, W52 & X51, 12/2017

2.5 Näätämö River in Skolt Sámi Area, Finland

In the area of Sevettijärvi, Finnish Lapland, the Skolt Sámi in collaboration with Snowchange Cooperative have managed a CBM program since 2011. The aim of the project is to advance the Skolt Sámi participation in issues of nature management and to reform the dialogue with the state authorities.

During these years, the project has further developed into a community-led ecological restoration project. The Skolt Sámi adapted the first collaborative management plan for Finland in 2013. It has has led to the first-ever Sámi -led restoration project in Finnish history in 2017.

The Skolt Sámi have decided to maintain and improve the conditions for the spawning of the Atlantic salmon in the Näätämö river, which is a cross-border river between Finland and Norway. The river is the cornerstone and home of the rich cultures of the Indigenous Skolt Sámi. It is the second-most important Atlantic Salmon[41] spawning river in Finland. Severe climate fluctuations which affect habitats and water levels, salmon farming along the coast of Norway, fish parasites, man-made alterations and tourism development are now threatening the Näätämö River salmon population, and as a result, the Skolt Sámi way of life[42].

[41] Salmo salar

[42] Additional threats include discharges from the close-by mining activities in Kirkenes, Norway which is on the way of the migrating salmon from the Barents Sea to the Näätämö river.

The restoration measures are something the local people have hoped for many years. In the 1960s, the Finnish Forestry Agency[43] widened part of the river channels in the catchment area using explosives. One of these areas was the Vainosjoki sub-catchment area. The alterations of the river flow had a drastic impact which resulted in lost spawning grounds. This had effects on the culture of the Skolt Sámi, who through millennia have fished as part of their culture and subsistence.

Jäniskoski rapids.

All activities are designed and decided by the Skolt Sámi themselves and the initiative is then co-managed by Snowchange and the stakeholders. The collaboration, depending on the issues[44], includes several stakeholders such as Metsähallitus, the Finnish Natural Resources Institute, the Ministries for salmon management, the municipality of Inari, the Sevettijärvi Skolt Sámi village Council, the local Skolt Sámi as well as local Finns. Thus the project demonstrates the capability of successful collaboration between Indigenous peoples, scientists and regional authorities.

Two groups of local fishermen[45] document observations of fish resources, harvest, uses of the basin, and other cultural indicators during the season by using a simplified form adapted from the Greenlandic PISUNA project[46] like in Jukajoki. Local fishermen and women have added to the data through interviews conducted in Skolt language about the salmon, place names and past environmental change, helping the community recording of traditional knowledge[47].

After the season the forms are collected and data and observations are discussed in informal group interviews. These, like Jukajoki results, are stored at the Snowchange archives with copies amongst the community coordinators. Furthermore, an added blank space in the form, allows for observations considered important by the Skolt Sámi. Here unusual observations about weather, water quality, new species and so on are recorded.

In summer 2017 began[48] the Vainosjoki river restoration project. A team of around ten Skolt Sámi together with a restoration consultant and Snowchange staff manually restored the flow of the river by relocating rocks and boulders in the river.

Afterwards spawning gravel was distributed at suited locations. The restoration work will continue the next year. Already the restoration project has showed the first indicators of success, when in early October an approximately three-kilogram lake trout[49] was seen potentially spawning and residing in the ”new” area.

[43] Metsähallitus

[44] Whether monitoring or restoration, the stakeholder partners shift accordingly.

[45] the first team led by a male elder in mid-60s, the Second team led by a reindeer herder-fisherman in mid-40s

[46] The forms have been modified to be suitable for the Jukajoki and Näätämö work which focus on fish and aquatic ecosystems as opposed to oceans containing several more species.

[47] Feodoroff and Mustonen 2013

[48] https://thebarentsobserver.com/en/life-and-public/2017/09/sami-traditional-knowledge-used-waterways-restoration-inari

[49] Salmo trutta

2.6 Lessons learned amongst the Skolts

The CBM project has led to the detection of new species, expansion of the range of caught fish and documentation of sites of erosion on lake and river banks, a sign of potential climate change impact.

The project has resulted in capacity-building both in the Skolt Sámi community who now are responding to the negative impacts of climate change and past ecological damages, and the authorities who have seen the value and mutual advantages through collaboration.

National institutions such as Metsähallitus, the local Centre for Economic Development, Transport and the Environment, and municipalities are interested in learning about new management options through site visits and these pilot actions.

For the Skolt Sámi, seeing their language and culture valued has led to an increase in self-esteem and sense of power over their resources. The process has resulted in Sámi knowledge revitalisation through establishing a community-based traditional knowledge archive to serve both the community and future research.

The Skolt Sámi found the forms useful and welcomed the cooperation to further document their observations and catches. However, like in the Linnunsuo wetland and Jukajoki project, the Skolt Sámi fishermen stressed that the forms alone cannot convey their deeper relationships and interaction with the river. Additionally, they suggest that the local governance of resources also include uses of workshops, interviews and mapping.

Salmon caught on nets. Rapids of Pikkuköngäs. Photo: Skolt Sámi Optic History Archives

3. Results from the Aasiaat Workshop by Knowledge Holders, Scientists and Managers

In this part of the report we capture the main messages from the Workshop itself. These summaries are based on the oral history and spoken statements and are below for the benefit of capturing the main discussions from Aasiaat.

Workshop in full swing.

3.1. Main messages from the Workshop, 5th to 8th December, 2017

Mayor Ani Hansen

The four-day *eXchanging Knowledge* Workshop in Aasiat began with a warm welcome of the **Mayor Ani Hansen** who welcomed participants to Aasiaat in her opening speech. She is familiar with the PISUNA project and had supported the project idea in her previous role as the minister. She felt that the Greenlandic fishermen/ hunters have been very interested in gathering observations from their home regions as the

Ababsi, Nuunoq and Aqqalu

project is not just about registering changes in animals, stocks and migration moves – it is also about how to preserve local knowledge and give credit for it.

According to Hansen, Aasiaat was established 275 years ago as a whaling post. This was a great whaling period in Europe and Danes wanted to get additional whaling station and more geopolitical power over the surrounding waters. The remains of the old site are still located by the harbour. To honour this history a film about winter whale hunting of narwhales in Aasiaat was made. Big changes will happen 1.1.2018 when the present Qaasuitsup municipality will be divided into Avannaata municipality[50] and Qeqertalik municipality[51].

[50] Ilulissat and north from it

[51] island municipality, includes former districts of Assiaat, Qeqertarsuaq and Kangaatsiaq

Tero Mustonen, the chair of the meeting, outlined at the beginning that the most important question to discuss during this workshop is: *What is a success, how can we proceed in making successful progress between locals and governmental level, in and across different scales ?*

All participants agreed to this theme for the week.

Tero proceeded to reflect on the Jukajoki case in Selkie, Finland. The fish deaths along the river were detected by a local fisherman seven years ago. This was a start for a local community led restoration process. It was the first time in Finnish history that a small village succeeded to stop peat mining and start this type of restoration project building on traditional knowledge and science.

Augusta (left) and Helle

The main differences between the Greenlandic and Finnish monitoring/observation forms used by the teams are that the Finnish ones were not just simplified, some elements were added. In the Finnish version the main focus is on climate change and therefore a column of observations on weather conditions is added.

Secondly as the monitoring areas are river catchments, not sea based, the main focus is on fish. Thirdly a blank space was added for comments. The idea was that a fisherman/observer can add any comment he feels important to report.

The observers in Finland were also equipped with digital cameras. Pictures were added to observation to tell in picture format how do the changes look like. For example, in the Skolt Sámi case, thanks to the pictures, an observer had managed to document a new scarabaeid beetle in the area that normally does not live that high up north. Pictures challenge us in how we think that locals see the changes in their environment. Fishermen are not just focusing on iconic species but on overall changes, even in the level of insects on land. This brings a new scale of detail to the work.

The Jukajoki forms are complemented with so far forty oral history interviews from local people that add qualitative components to the material like place names, long term observations and new baselines. The data from the forms is put on a Snowchange database. Part of the information is sent further; i.e. information on fish stocks was then put forward to a team who was responsible for restoration. Key messages are edited and circulated to all locals and to politicians on higher level.

Pauliina Feodoroff rowing on lake Sevettijärvi.

Vladimir Feodoroff has caught a grayling on river Näätämö.

Pauliina Feodoroff and Vladimir Feodoroff presented the Skolt Sámi work from Näätämö river, Finland. The Skolts have a small working group but they have organised village hearings so people know what is going on. As the village is small with a lot of elders, not that many knowledge holders are still able to work. In the meetings, the participants have been able to exchange knowledge, discuss about the changes and how to adapt to those changes.

According to **Pauliina**, Finland has a long history of colonising the Sámi. The Sámi ways of being, knowing and living with the land are still actively challenged and hindered due to inherent racism, lack of understanding and the Sámi forced into living invisible lives. The State of Finland still often ignores what has happened in history. Skolt Sámi are a nation and a people that kept their traditional system of self-governance[52] until the Second World War, and in a modified way after that.

She feels there is a paradox of documenting Indigenous knowledge while at the same time allowing it to be destroyed. Vladimir, according to her, is a first in the generation of the post-War Skolts who had to learn everything in new lands where the Skolt Sámi ended after the forced relocations[53]. Sámi are still not often heard and the government decisions about the lands and waters ignore their wishes and knowledge.

[52] The siida village council

[53] Skolt Sámi were forcefully removed from the their homelands, which are today in NW part of Murmansk region, Russia during the Second World War.

According to Pauliina, the Skolts have no options to wait any longer, due to the multiple pressures under way ranging from climate change to cultural loss. The Näätämö river work is a collaboration across generations and genders.

Simultaneously they have to adapt to the new conditions, new lands and the Näätämö river project is making the work more visible also in larger society: *"We have to document and to show that we had a sustainable system of using lands. But we can ask a critical question – what is the origin of these damages we are addressing?"*

She reported the spread of new algae, perhaps due to warmer waters along Näätämö river and the basin and expansion of ranges of fish such as northern pike[54] which benefits from the new conditions, the "*new normal*". Then **Vladimir Feodoroff**, an Elder from the Skolt Sámi, explained about the restoration actions on Vainosjoki sub-catchment area resulting from the monitoring project. He said that the state actions in 1970s altered this part of the river. Reasons for the man-made alterations range from boat access to timber floating to helping salmon get upstream. Definite reasoning has remained unclear. However as the teams in the project had detected the negatively affected stream parts, a restoration project was launched in 2017.

Vladimir recounted how **Risto Semenoff**, a Skolt Sámi specialist, had been making these observations since 1970s. After six years of negotiations for permits the spawning beds and habitats for trout and grayling[55] were restored in Kirakkakoski and Vainosjoki in 2017. These actions have been very successful. Vladimir stressed also how much the work has contributed to the positive self-esteem and pride of Risto and other team members when they can see their knowledge valued, actions taken together and situation improving in real terms in the catchment area.

Some of the strategic choices Skolt Sámi have made have included working within the Finnish system, while it does not guarantee or recognize (yet) the Sámi-specific ways of being with rivers. Pauliina stressed that the work to observe, monitor and restore the river in those cases were it makes sense is not against anyone, it is for the river and for the Atlantic salmon.

Both the modified PISUNA forms and other ongoing projects in the regions can be positioned into a larger context in the Sámi and Finnish cases. Involving the local people in the activities that happen in their lands and based on their monitoring opens new possibilities. It is not enough to monitor – meaningful actions are needed! Sámi and Snowchange work actively in order to include elders and children in the projects.

The local and Indigenous knowledge of the elders is important to include to get longer time observations and in order to know how the ecosystem in the regions used to be. Knowledge transfer to children is equally important. Snowchange has a tradition to include schools in to projects as partners by i.e. taking kids to the rivers to make their own observations or give them simple task to work in the project.

Tero presented a question: *"How to get further towards co-management, eventually even to Indigenous governance?"*

It is very important to recall, remember and revitalise Indigenous governance, such as the Sámi siida system as the basis of discussions on natural resources. These systems, often building on customary law, have existed for centuries, in some cases for thousands of years.

According to Tero in the established co-management regimes such as the Inuvialuit Settlement Region[56] a question of a *baseline* is of essence. Baseline refers here to a situation against which change is observed. In conventional ecological studies the baseline is a set of data that can be used as yardstick with which to analyse a trend. Inclusion of oral histories and TEK can deliver different and more vast baselines of and why change happens.

A gap between a single observation for monitoring and a long-term history of knowledge of the local people may exist. Then the shortcoming comes in interpretation of the observation; people in administration do not know the baseline, long term situation. An observation is considered 'new' compared to a "normal situation".

[54] Esox lucius

[55] *Thymallus thymallus*

[56] In Northwest Territories, Canada

Local people can assess whether this is something that happens every once in the while, perhaps even over decades. The people in Helsinki or Nuuk may think that this is totally a new event and see it as unexpected as they do not know the background or the history to a cyclic re-occurance. The observations from TEK and science do not need to converge – there can be divergence and disagreements on specific observations, but they should both be documented and addressed.

When natural resources are discussed, there is a need to include a balanced view both from traditional knowledge and science. Neither dominates. These two ways of knowing contribute to a stream of information that will then feed into joint decision-making, either by consensus or by 50-50 principle. This often means nobody gets everything but everybody gets something in a power-sharing arrangement.

Then the dialogue transferred to Greenland.

In responses and highlighting the situation in Greenland, Nuunoq[57] recognised many of the issues raised by Pauliina and Vladimir. He conveyed a similar feeling for example in relations with the authorities: *"We are seldom heard and low on priority list. When we interpret the situation, when fisherman or a hunter comes with an idea it is heard against those who have education. We are feeling that we are lacking something and our information is not on the same level as their knowledge."*

[57] Per Ole Frederiksen

All through the week **Nuunoq and Aqqalu Olsen** discussed the observations of the hunters in the Disko Bay area and beyond that had been documented and monitored. Some of the main issues included

- Some species are with increasing stocks, there is also a need for a better presence of wildlife officers leading to improved resources to count stocks, especially for muskox[58].
- Hunters have recommended new counts of animals but have not heard anything back. They made this recommendation as muskox was introduced in the region in 1994 and is expanding in range. It is replacing wild, endemic reindeer in many areas according to the hunters[59]. Muskox and reindeer do not like to be on same 'pastures'. Muskox may also expand in range when glaciers shrink. Should humans decide what areas are suitable for muskox and for reindeer? No overall quotas or recommendations have been made on how many animals can be hunted per year[60].
- In the ocean, cod is now expanding in range and catches are very good.
- Now there are strong flocks of Eiders[61] and a lot of birds nearby Disko Bay. Especially a lot of Eiders have been observed in Attu. This includes both coastal and offshore population. Taking Eider eggs has been forbidden in recent years. Numbers of Eiders have increased a lot in a short period of time. Local people have no possibility to harvest these birds in great numbers. Costs of sending birds to other settlements is too expensive so local markets are preferred.
- Disko Bay has important islands for Arctic tern[62]. Challenge is that Arctic fox[63] comes to islands using the sea ice and eat tern eggs. Local people wonder for the possibilities to control the Arctic foxes not to eat eggs. They came with an initiative to protect birds from foxes. Administrative challenge was that the issues were relegated between two ministries which takes timeto take this initiative into consideration.
- In relation to Canada goose[64], the stocks have increased a lot in recent years. They have at first not been allowed to be hunted. The birds come to Greenland to get fat accumulation. These geese have great impact to some islands rich in biodiversity. This affects especially the Arctic tern stocks[65]. Increased catches would be needed in the summertime. Greenland White-fronted[66] goose have gone low in number due to this 'invasion' of Canada goose.

[58] Ovibos moschatus

[59] Now Muskox is in Disko Bay area even a bit South of Ilulissat.

[60] In Kanqaatsiaq they catch 100 muskox per year. Annual quota 26 now in Aasiaat area.

[61] Somateria mollissima

[62] Sterna paradisaea

[63] Vulpes lagopus

[64] Branta canadensis

[65] Arctic tern can abandon islands with a lot of geese.

[66] Anser albifrons

Nuunoq demonstrates whale harpooning.

Arctic Tern. Photo: Eero Murtomäki

Razorbill. Photo: Eero Murtomäki

Flipper of a humpback whale. Photo: Halfdan Pedersen.

- Brünnich's guillemot [67] used to be numerous in Disko Bay. In recent years the sea ice is not formed before January and February[68]. These new ice conditions affect the birds so that they keep themselves offshore and follow the ice line. Therefore it is hard to catch these birds and they are barely seen. This is because during the hunting season as they keep themselves far away offshore at that time of the year. Brünnich's guillemot come to coastal areas much later than they used to. Decrease in bird catches has increased how much the town stores are selling chicken.
- Black guillemots[69] are rather common in Attu, but not hunted in remarkable numbers.
- Currents of the sea and ice conditions are also observed. Maybe these observations could be of interest for Snowchange.
- Based on the observed vessel lights the hunters can see the number of large-scale shrimp trawlers is increasing. This affects not only shrimps but also wolf fish[70]. Vessels do not break law and therefore the government cannot act directly. This leads to a situation where the locals feel that they are not heard.
- We notice with interest a similar observation from the Finnish Sámi regarding the change of color from red to white in Arctic char[71]. These kind of similar and converging Indigenous observations are very relevant and should be explored more.

[67] Uria lomvia
[68] On the Canadian side.
[69] Cepphus grylle
[70] Degradation of the seafloor might affect wolf fish.
[71] Salvelinus alpinus

- Humpback whales[72] have increased in significant numbers in Disko Bay. They eat a lot of cod. Fishermen do not like the increase of whales. Annual catch is 10 humpback whales for whole Greenland per year – but hunters do not take that many because it is too much meat[73]
- In terms of other marine mammals: Seal hunting in Attu area has almost stopped, partly because of increase in numbers of cods. People tend to fish cod instead of hunting seals. Minke whales[74] are harvested using whale harpoon cannons. Catch is smaller than quotas due to lack of vessels with harpoon cannons and too much meat. Beluga whale[75] stocks have increased during the latest years and they go further north. Narwhales[76] are increasing. It is forbidden to sell their teeth for export outside Greenland. They eat Greenland halibut[77] and this affects why the catches of these fish are decreasing. Fishermen would like to diminish narwhal stocks in order to get better Greenland halibut catches. Walruses[78] have been forming only small catches in these villages north from Disko Bay. Hunting season takes place in the spring.
- Reindeer hunting season has been in summer but is decided when the reindeer skin looks best. In the latest years the stocks have been good and hunting season longer. One hunter can usually get a quota of twenty reindeers. A winter hunt has existed too. In recent years the winter hunt has difficulties due to changing ice conditions. The west-ice from Canada can close the fjords at the beginning of February even if the fjords themselves can still be open. Perhaps as a new adaptation hydro copters could be used for reindeer hunting in iceberg fjords in summers.
- In terms of the biggest alterations, climate change is all-encompassing change. For example winds are harder now in Disko Bay. At the beginning of 2017 the sea ice was very far from the coast. In Akunnaaq there was ice whole winter in 2016–2017. A major fire burning south of the Disko Bay are affected reindeer and muskox populations and forced them into new areas.
- There is a need to get the PISUNA-net database (https://eloka-arctic.org/pisuna-net/) translated so it becomes searchable for community members and decisionmakers in Greenlandic. It is good but not sufficient that the original data are available in Greenlandic at www.pisuna.org.
- Compensation for the time spent on reporting and observing as well as the meetings is essential. Also, a strong coordination by the municipality is important for the work.
- The small fish factory in Attu[79] can process up to 2000 kilograms fish per day. The factory concentrates on salted fish, previously also drying fish. These small fishing factories are challenged as Royal Greenland will modernize and invest in larger factories.

[72] Megaptera novaeangliae
[73] Hunters say they do not want to waste any meat.
[74] Balaenoptera acutorostrata
[75] Delphinapterus leucas
[76] Monodon monoceros
[77] Reinhardtius hippoglossoides
[78] Odobenus rosmarus

[79] under Royal Greenland

Attu is allowed to produce only ten boxes of fish per day but they could do more. Royal Greenland checks the factory every year but nothing happens. There are challenges to get more power[80] to fabric – 300 meters more cable to power plant is needed but we can ask - who pays that? New fishing factory would not only be for fish it could also develop the settlement and its infrastructure.

- Quotas or their increases are not too important in themselves. More equitable would be to develop the markets for local products. Prices are important. When the stock of some species gets smaller, you get better price as a hunter.
- Maintaining PISUNA data ownership with the community is of essence.
- In Greenland youngsters are bad listeners at the moment and the Elders are not heard. This is a rapid transition because of the fast modernisation process. Hunters and fisherman are still listened to but not the pensioners who may have the best knowledge.
- Most importantly, the local decision-making regarding natural resources, such as reindeer and muskoxen should be implemented without delay. Hunting seasons should not only be decided for many species after the conditions in Nuuk as the times or conditions do not match[81]. Distances are big, whether political, social or geographic. Often the government does not listen. It would be great to get at least an "autoreply" as an answer – something in the lines of "We have received your comments". Then we would feel more included. We should also train the people at the Ministries and institutions on communications and TEK issues to improve the situation.
- At this meeting, we, the hunters have come closer to each other with the Ministries. Results will also go to municipal and governmental levels. Now we understand the PISUNA process better and we feel that we can do more efforts now when we really understand the scope of this formula.

A governmental poster outlines the necessecity of sustainable use of 'living' resources, also for the future.

[80] for freezers
[81] 1200 km in between coast lines.

Seasonal Harvests in Akunnaaq[82]

The following captures the 2016–2017 yearly cycle of local economy and hunting in Akunnaaq:

In January sometimes the sea ice arrives. In 2016–2017 there was ice whole winter.

Between January and February there was no fishing as there are no fish that time of the year.

From March to Mid-April the fish return. We go ice-fishing cod and Greenland halibut. Last year with good ice we could go to the fishing sites with snowmobiles. We sold Greenland halibut to the big factory in Aasiaat. We sold the cod catches to a small local factory (to be dried).

In May we did fishing by boat: We caught cod, Greenland halibut and lumpfish[83]. Lumpfish catch was not good this spring as this spring was cold and ice went back and forth all the time. Also hooded seal[84] hunting and ringed seal[85] harvests took place.

June was the time to harvest capelin[86].

In July and August we used nets to catch cod[87]. This year there was not that much cod as cod did not come that close to shore. Greenland halibut harvests are the best for our economy. Seal hunting happens mainly because this is main food source for the whole family. On Minke whale hunt, this year we had a license for two minke whales and we caught both of them in Akunnaaq.

Aqqalu at the Aasiaat harbour.

Reindeer hunting season is in September in areas close to Nasurtoq, bit south from Aasiaat. Muskox is harvested south-east of Aasiaat. "Permit" lottery for quota was held and those hunters who got the ticket went hunting in August.

On August 15th all the way to November we fish for salmon.

In November and beginning of December we harvest cod and a range of birds, mainly eider but also other species.

During fall close, near to the former settlement of Nuvak we go fishing with nets, 25 kilometers from Akunnaaq. After that we hunt for belugas and narwhales. Weather can always be challenging, especially in winter time when there is only limited hours of daylight.

---

[82] As described by Aqqalu Olsen
[83] Cyclopterus lumpus
[84] Cystophora cristata
[85] Phocidae
[86] Mallotus villosus
[87] Gadus morhua

PâviâraK Jakobsen, the long-term coordinator in the municipality for PISUNA work reviewed much of the progress so far[88]. He felt the incoming municipal reform in 2018 will be a vehicle to improve the PISUNA work in Greenland. He proceeded to compare the PISUNA project future to umiaq, a whaling boat: *"Qeqertalik 2018 – We should not just to build an umiaq, we also need to cover it with skins that it floats!"*

Nette Levermann explained about the role and mandate of the Government and the establishment of the local Nature Resource Councils[89]. She volunteered to tell about the work done with muskox and reindeer local management under NUNAVIS in South Greenland. There the Greenlandic Institute of Natural Resources work with the hunters. Hunters participate in minimum counts of the stocks and have observed how the numbers have developed during a decade. The quota setting recommendations comes from the locals in Arsuk. She felt this might be worth adapting to Disko Bay area.

Nette also reflected on a PISUNA –specific observation and a challenge. Those whales which are caught as bycatch in entanglement in nets remain an issue. Hunters do not get economic profit as the meat is distributed free of charge to municipality. When a hunter of couple of days later kills a whale with his/her license to kill, noone wants to buy the meat as the local market is saturated from the by-catch whale. How to solve this paradox?

Paviarak Jakobsen has coordinated PISUNA work in the region for a long time.

Secondly, addressing the entanglement itself has required substantial effort, involving US specialists on whale behaviour and vast peer discussions. Unfortunately the whales continue to ignore for example noise disturbance devices. These are some of the examples came to the Ministry through PISUNA. For example the whale entanglement took some seven years to answer[90].

Ababsi[91], a biologist and Coordinator from the Hunters branch council in the organisation *Kalaallit Nunaanni Aalisarsut Piniartullu Kattuffiat – KNAPK*, outlined the role of this umbrella organisation across Greenland in over 70 settlements. Much of the KNAPK work is to coordinate work with species of high international attention such as polar bear, walrus, big whales[92] and international conservational bodies. KNAPK has seen the good work of PISUNA for seven years and is ready to expand the model and discussions across Greenland.

[88] Summarized in the early part of this report.
[89] This has been summarized in the early part of this report.
[90] due to international agreements of marine mammal hunt affecting the choice of actions.
[91] Bjarne Lyberth
[92] in relationship to the International Whaling Commission

Ababsi used the example of the walrus hunt. The walrus stocks and number of reported hunts per year have stayed rather the same between 2014–2016 (65, 67, 74). Normally lost catches are calculated to be on the average of approximately 15%. Government adds this to the figure of reported catches. However, in Thule area they have a tradition to use harpoon with rope before shooting when hunting a walrus or narwhal in order not to lose the catch. This implies there are very few struck and lost animals but it is very hard to convey this message to the government or international organisations.

These non-written hunting traditions are not described in international documents and therefore the local preconditions are not understood. Adding these local examples could make hunting better, safer and more transparent.

Nette Levermann responded to this question raised by Ababsi by identifying the governance of the stocks to be a complex interplay between local actors, international observers and organisations like NAMMCO[93], the Greenlandic Institute of Natural Resources[94], Parliament[95] and other levels of administration. The actors have differing budgets and policy power, making coordination a real effort. She proceeded to use the example of the polar bear hunt in Greenland: *"You are not allowed to hunt a female with a puppy, but the catch is sometimes reported as a 'male'. Then the DNA sample that you always have to send together with the catch when reporting a polar bear hunt proves that the caught bear was a female…"*

She feels flexibility could be increased with some bird harvest quotas. As climate change impacts the bird species the window of harvest after nesting could deliver local adaptation of hunts and answer the local needs better.

Many of the participants reflected in discussion on the terminologies of PISUNA and TEK work:

- The Greenlandic Law from 1999 discusses 'user knowledge'
- Arctic Council has established the Ottawa Principles of Indigenous Knowledge as well as traditional ecological knowledge[96]
- The upcoming Nordic Intergovernmental Panel on Biodiversity and Ecosystem Services – IPBES work discusses ILK, Indigenous and local knowledge[97]

Snowchange has championed for almost two decades the more expanded role of oral histories, cosmologies and Indigenous and traditional knowledge in the boreal and Arctic. Important work on documenting indigenous knowledge of environmental features in Greenland have been undertaken by social scientist Lene K. Holm of Greenland Institute of Natural Resources.

It was discussed how to further include different knowledge epistemologies and different ways of knowing in natural resource management efforts in other parts of the Arctic. There are no easy answers to these hard questions.

3.2. Ocean Change: At the Ice Edge

On 6th December workshop participants sailed from Aasiaat to see the locations of the cod gill net harvests. Using two boats we travelled to the ice edge at the local fjord. According to Nuunoq and Aqqalu the ocean used to freeze already in November in the archipelago near Aasiaat in 1990s. This allowed the uses of dogsled in hunting and fishing trips. Today the ocean is ice-free and a trend in local economy has been to harvest cod instead of seals as these fish have expanded in range and in numbers and the markets to sell cod are good.

Janne Raassina and Aqqalu out at sea.

[93] North Atlantic Marine Mammal Commission
[94] Pinngortitaleriffik
[95] Naalakkersuisut

[96] For example Arctic Council 2013
[97] Nordic Intergovernmental Panel on Biodiversity and Ecosystem Services to be released in late 2018 is a new governmental process that will investigate scientific and Indigenous / local knowledge interpretations of how nature, ecosystems and socio-ecological systems are changing.

Krista and Halfdan survey the ocean conditions.

Pauliina Feodoroff

Ice had only formed at the end of the bays

Temperatures were roughly 20 degrees warmer than usually in December.

Unexpected Arctic Encounters: Visiting Amundsen's Maud

Upon returning from the boat trip out to the sea, the workshop participants had a chance to visit the HMS Maud, a vessel used by Roald Amundsen on his second Arctic expedition. The ship was built originally in Norway and launched in 1916.

Amundsen planned to use *Maud* for a trip to the Northeast passage, also known as the Northern Sea Route[98]. The actual trip lasted six years between 1918 and 1924. The ship transferred ownership many times since Amundsen sold it. Eventually *Maud* sank close to Cambridge Bay, in present-day Nunavut, Canada. From there it was towed over to Aasiaat, Greenland for the winter 2017–2018. The long-term plan is to salvage the ship back to Norway.

Workshop participants had a unique chance to see a piece of Arctic history of exploration from hundred years ago, marvelling the vessel Amundsen had used back in 1910s and 1920s.

[98] Across Siberian North.

3.3. Sharing Traditions: Joint Cooking

A central element of the eXchanging Knowledge workshop were jointly-cooked meals between the three cultures that took part in the event:

- First was a Skolt Sámi dinner with a special dish of reindeer.
- Finnish-Karelian dishes were served the second day, including rye bread and Puruvesi vendace.
- The event culminated in a Greenlandic dinner with seal, whale, eider, mattak (whale blubber) and wild reindeer.

These photos document and share the experience that transformed the spirit and atmosphere of the event into a new level. Traditional and cultural foods are effective methods of sharing knowledge and environmental practices.

Vladimir cut dried reindeer meat (left), Ababsi took care of wild reindeer steaks. Kaisu boils green peas as Augusta looks on.

Porpoise, a local delicacy.

Janne Raassina with reindeer sausages from Finland.

Pauliina Feodoroff coordinated the Skolt food evening with precision.

North Karelian Puruvesi vendace on rye bread prepared by Päivi Sokura in the village of Selkie.

Capelin and blubber on the left. Above, enjoying one of the common meals.

3.4. Meeting the Future Elders: School Visit

eXchanging Knowledge project and event wanted to make sure we reach out to the surrounding community of Aasiaat. This took place through a number of ways, including interviews and engagement with social and ordinary Greenlandic media as well as visits to handicrafts Center and an evening with the Amarok theatre in town.

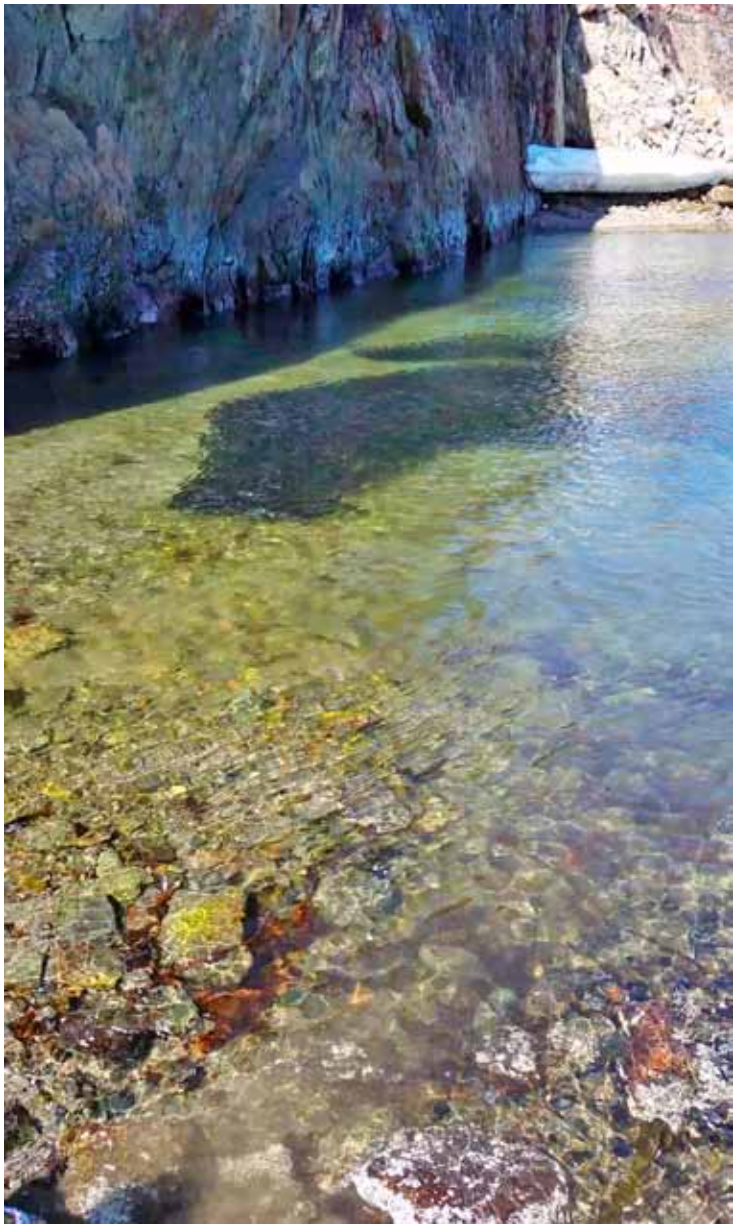
A special afternoon was dedicated to the visit of School of Aasiaat. Junior students had a chance to learn Skolt Sámi reindeer pulling skills and the English class asked a range of questions directed at the international participants. All delegates were impressed and surprised by the enthusiasm of the children and excellent levels of English spoken at the school. These children are the “future Elders” of Aasiaat in a century of tremendous change.

Sörine and Kristian shared traditional stories and legends, in a professional theatre performance.

Children of the Aasiaat school enjoyed asking questions in English (left).

Younger children played the Skolt Sámi reindeer games (right).

Sörine and Vladimir try out the traditional Greenlandic drumming.



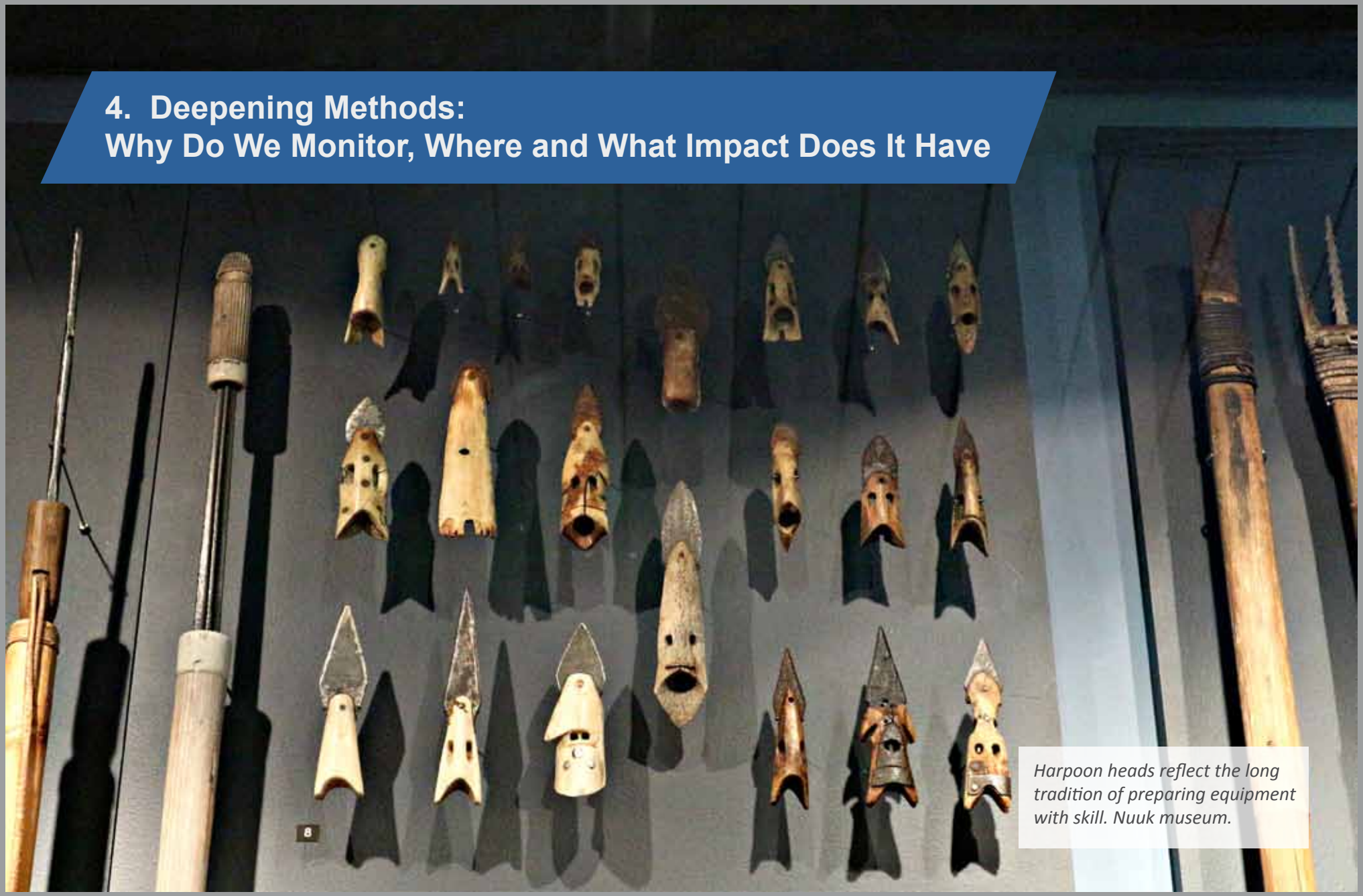
Uilu Pedersen harvesting capelin.
Photos: Halfdan Pedersen, 2017.

3.5. Example of a Seasonal Harvest

In earlier times the use of capelin[99] was life-and-death traditional food in the Disko Bay area and for the local communities. In Summer 2017 Uilu Pedersen and her father harvested capelin using dip nets. These fish are dried on stones and then can be used through-out the winter. Especially in late winter and early spring when other food resources might have been scarce the capelin provided for the people in the Greenlandic communities.

[99] Mallotus villosus

4. Deepening Methods:
Why Do We Monitor, Where and What Impact Does It Have



Harpoon heads reflect the long tradition of preparing equipment with skill. Nuuk museum.

While the three communities – Finnish, Sámi and Greenlandic – are very different in their cultures, two being Indigenous and one with a status of a local-traditional village, common monitoring messages could be detected from exchanging knowledge and experiences.

The Finnish delegation emphasized that the work in Jukajoki operated under heavily-altered ecosystems amidst loss of traditions. A critical question for Selkie remains:

Why have Finnish-Karelian traditional knowledge systems been almost destroyed?

The answer, according to the Finnish delegates, lies in socio-political change. Up until 1939 Finland was a non-industrialized, rural space. Traditional knowledge systems, both Sámi and Finnish-Karelian, renewed themselves through the land-based traditional economies and ways of life in remote villages and communities in the taiga, the boreal forest belt.

Between 1939–1944 a war was waged when Soviet Union attacked Finland. Finland retained independence, but had to pay war debt to Soviets. This led to an uncontrolled industrialisation and modernisation in a single generation: 95% of natural forests and habitats were lost, generational trauma resulting in alcoholism and loss of ILK systems, and rapid urbanisation.

During the workshop we wanted to reflect deep-reaching and significant questions. For example:

How to bring ILK/TEK back as a way of knowing?

This knowledge is a way of understanding the world from an endemic perspective – it maintains connections with nature, culture and cosmos and contributes positively to the human societies and their renewal both for the Sámi and Finns.

The Skolt Sámi are an Indigenous people that re-settled in Finland in 1944 after a forced relocation from areas ceded to the Soviet Union in Petsamo region. They have undergone severe collective trauma but have also been able to re-establish their traditional governance and ways of being, fishing, hunting and herding in the Näätämö river catchment area.

Over the past seven years when the work has been going on in the basin several realizations have emerged:

- A baseline of monitoring both from Skolt Sámi viewpoint and scientific studies has been established. This includes uses of cultural indicators for the salmon and other species, catch diaries, database work and "living mapping" of the Sámi spaces.
- Method of 'visual histories'[100] was developed by the Sámi to convey better the Indigenous knowledge observations from the river. They have successfully detected the arrival of southern insect species such as scarabaed beetles into the catchment areas which has then been confirmed by scientists[101].
- A central narrative both for the Jukajoki and Näätämö case is that once monitoring happens, and it delivers new information about the status and trends of an ecosystem, actions follow. In the case of the Näätämö work, this has included the detection of Vainosjoki lost spawning areas as well as other damaged areas. In 2017 the first-ever Indigenous -led ecological restoration actions were initiated, funded both by the state and the Sámi themselves and donors[102].

[100] Mustonen 2015
[101] Pecl et al. 2017
[102] Including private donations from Laura Murtovaara and others.

4.1. Improving Communications Through Video Projects

The Sámi have also successfully introduced the importance of inter-community and stakeholder communications into the project. Monitoring and results are of little use, if larger audiences, including community members who cannot take part in the actual work, are left out or are not aware of the actions on the ground. Especially the youth is often excluded if the results are not communicated in ways that reach and interest them.

In order to address this, the eXchanging Knowledge project developed a number of community videos highlighting the work, methods and results as well as the surrounding context of traditional knowledge. These videos will be placed for public platform on the second year of the project[103]. Currently the following videos have been utilized and / or developed for the project purposes:

[103] Provided that new funding is received.

For Finland:

"In-Between": A 11 minute reflective piece that documents the Selkie collective moose hunt, Linnunsuo wetland and a cultural history of the Finnish-Karelian peoples[104].
"Jukajoki": A short trailer-style video capturing some of the natural scenes and key messages from the Jukajoki work over 2014-2017[105].
"Puruvesi": A five minute short film documenting the traditional winter seiners of Puruvesi, North Karelia, Finland as a way to explain about the Finnish boreal traditions related to fishing[106].

[104] Available at https://vimeo.com/199418073
[105] Available at https://vimeo.com/122000332
[106] Available at https://vimeo.com/174303297

Brown bear hunting in Selkie and Alavi villages (above) and winter seining in Puruvesi, North Karelia, Finland

Selkie village blacksmith house.

For Skolt Sámi work:

"Skolt Sámi Archive": A five-minute video that captures the ways of life of the Skolts along the Näätämö river and the age-old Gramota edicts confirming the land and water rights of the Skolts[107].
"Restoration of the Vainosjoki": This video captures the key moments of the Näätämö river work of the Skolt Sámi in the context of Arctic climate change. It features the restoration actions of the Vainosjoki river from summer 2017. It will become publicly available in the spring 2018.

[107] Available at https://www.youtube.com/watch?v=qI2J-qQRUrs

Pauliina Feodoroff has led the monitoring efforts in the Näätämö catchment area for years (right).

Below, Skolt Sámi specialists are restoring the Kirakkakoski rapids and Vainosjoki stream (right).

For Greenland:

"PISUNA Work": This five minute video captures the 2009-2017 PISUNA work in Greenland by documenting meetings between hunters and scientists as well as resource managers. Footage includes visits to Disko Bay and large eider flocks out at sea. It will become publicly available in the spring 2018.

5. Next Steps and Recommendations

A view of Aasiaat. Photo: Johanna Roto

The increased need for understanding the environment and the necessity of promoting locally relevant knowledge and management actions suggest that there are substantial prospects in the coming decades for more Community-Based Monitoring around the Arctic, and that such an increase will contribute to effective and locally meaningful natural resource management actions. Our work has been closely related to the PISUNA project based in Greenland and implemented, pilot-style in selected areas of Finland.

It is important to realize that traditional / Indigenous knowledge and western scientific knowledge are based on different knowledge systems or epistemologies. Thus TEK cannot and should not replace conventional scientific knowledge. Rather these two knowledge systems complement each other and strengthen the knowledge

Tero (left), Vladimir (right) and late knowledge holder Filip discuss Näätämö river changes, Autumn 2012. Photo: Gleb Raygorodetsky

Paviarak Jakobsen presented the PISUNA results during the workshop.

foundation on which decision makers base their management decisions. It should however be emphasized, that the local-traditional and Indigenous knowledge, should be considered equally relevant as scientific knowledge.

There is a need for more data, both by the locals, and the scientists. The Indigenous and local communities are often wishing for more ways to document and share their observations about the resources which are relevant for them. They too wish to build their adaptive management practices on the best possible foundation and best available knowledge. Furthermore, they need ways of documentation in formats that the administrative system locally and nationally can use and include for making decisions upon to strengthen their possibilities for being 'heard' and gaining local management and ownership. Government agencies should also be trained to be more culturally aware and responsible in their actions.

At the Workshop the recommendations from the larger 2009–2017 PISUNA work in Aasiaat, Greenland was reviewed and complemented during the week. More specifically:

- **In Finland, participatory and traditional knowledge monitoring among fishers helps river restoration and other landscape management actions to become responsive to the situation in the field.** Our results also show that restoration efforts are successful in Jukajoki river, Linnunsuo wetland and the sub-catchment areas such as the Kissapuro Basin and TEK monitoring helps guide management in North Karelia, Finland.
- **For the Skolt Sámi and Näätämö river in Finnish Sámi area the monitoring actions reveal observations on the salmon fishery, on problems faced in the fishing, on the weather and river conditions, on fishing areas, and on fishing methods.** The monitoring has led to ecological restoration of Vainosjoki and other damaged trout

Nuunoq broke into a song during a visit to the information center of Aasiaat.

Trawler at the Aasiaat harbour.

habitats. Therefore it is easy to demonstrate the link between monitoring and follow-up action. The Sámi have also felt that the use of 'visual histories'[108] is a method to convey Indigenous observations from the land in a more direct way than the use of forms in themselves. For a two-way exchange, use of communal, dialogic videos production and larger society is a method of conveying the urgent messages of the changing Arctic.

- **Greenlandic fishers and hunters documented trends in living resources and are in a position to propose management decisions.** With 2–3 keystrokes, decision-makers can access trend-information and management proposals at PISUNA-net, a searchable web-based database. This programme helps link observed resource use and environmental changes to management action. However, there is a need to further develop the message and communications framework. There are several instances where hunters, who have submitted their data and proposals for decision-making, have not heard back from the ministries or municipalities. Communications should take place in languages and dialects which are spoken in the villages.

[108] Mustonen 2015

- **Success criteria for collection, inclusion or recognition and use of local knowledge should be further described.** Attention should be given to the formulation of criteria that incorporate the different points of view on success, so that all participants are aware of when the goal is reached.

The larger PISUNA (and associated NUNAVIS, Nordic Resource Management) project has also defined methods and recommendations for the uses of local and Indigenous knowledge in decision-making. Arctic people observe the environment all year round. Their knowledge and understanding are critical for effective management of the natural resources.

Today, local people are active in over 150 Community-Based Observation Programmes across the Arctic. Many kinds of organisations are also involved, including community groups, all levels of government, universities, schools and industrial groups. These diverse projects contribute to adaptive resource management in the rapidly-changing Arctic. Summarizing the best practices from our joint learning we point to the following key messages:

- **Visual histories and ecological restoration:** New tools developed in Greenland and Finland enable communication of observations and recommendations on natural resources from indigenous and local people to a vast range of stakeholders as has for example been demonstrated in the Jukajoki and Näätämö river cases in Finland.

- **The Piniakkanik Sumiiffinni Nalunaarsuineq (PISUNA) approach in Greenland:** in communities where there is interest, the village community establishes a local Natural Resource Council comprising local hunters and fishers. They decide which species and resource uses should be observed. Together, they compile data on species and resource uses during their hunting and fishing activities. Every quarter (three months), data are summarised and analysed, and possible management interventions discussed. The proposed management interventions and supporting data are forwarded to the local government authority. The hunters and fishers use matrices that encourage self-interpretation and validation of the observed changes in resources and, at the same time, they promote discussion and agreement on relevant resource management actions.
- **Activating local people:** Over the past few years, use of indigenous and local knowledge for decision-making has emerged as a powerful approach that can achieve multiple objectives. Use of indigenous and local knowledge makes government decision-making more responsive to local situations. It can help small communities develop economically and survive, within environmentally sustainable limits. Moreover, local people become mobilised to take an active part in the management of resources. This helps reduce distrust between people and government, and promotes sustainable development.

Children of Aasiaat on the way back from school.

- **New technologies enable people in the community to collect data and communicate their management proposals with more accuracy and precision than ever before:** For example, a harvest calculator equips community members with the capacity to explore 'what-if' scenarios regarding future harvest regimes for local herds of muskox and reindeer. Likewise, icon-based searchable databases on the internet enable local knowledge on trends in resources and management proposals to be easily accessed and used, not only by other community members but also by the authorities.
- **Overcoming barriers:** One barrier to maximising the potential of indigenous and local knowledge for decision-making may be the perception within the scientific community that data from local people are unreliable with regard to standardisation and reproducibility. A growing body of literature, however, demonstrates that data collected by community members are comparable to those of professional scientists. Another barrier is that some government agencies and international organisations are unwilling or unable to incorporate local information into their management decisions. Indigenous and local knowledge can, however, help government agencies adapt decision-making to local realities in the changing environment of the Arctic and in the boreal. Central to these reformed approaches is the role of women and the Elders of each culture to make sure all stakeholders are involved and equity issues solved.

References

Arctic Council, 2013. *Arctic Biodiversity Assessment*, 2013.

Berkes, F. et al., 1993. *Traditional Ecological Knowledge concepts and cases*, International Program on Traditional Ecological Knowledge and International Development Research Centre.

Danielsen, F. et al., 2014. Counting what counts?: using local knowledge to improve Arctic resource management, *Polar Geography*, 37(1), pp. 69–91.

EPA, 2011. *Integration of Traditional Ecological Knowledge (TEK) in Environmental Science, Policy and Decision-Making*.

Feodoroff, P. and Mustonen, T. Ponoi and Näätämö River Collaborative Management Plan. Kontiolahti: Snowchange Cooperative. Available at http://www.snowchange.org/pages/wp-content/uploads/2014/05/Naatamo_sisus_1205_p.pdf

Huntington, H. et al., 2004. Matching Traditional and Scientific Observations to Detect Environmental Change, *Ambio*, 2004.

Mustonen, T., 2015. Communal visual histories to detect environmental change in northern areas: Examples of emerging North American and Eurasian practices. *Ambio* 2015, 44:766–777. DOI 10.1007/s13280-015-0671-7

Nuttall, M. et al. 2005. Hunting, Herding, Fishing and Gathering: Indigenous Peoples and Renewable Resource Use in the Arctic. Arctic Council: *Arctic Climate Impact Assessment*, 2005, www.acia.uaf.edu

Pecl GT, Araújo MB, Bell JD, Blanchard J, Bonebrake TC, Chen I-C, Clark TD, Colwell RK, Danielsen F, Evengård B, Falconi L, Ferrier S, Frusher S, Garcia RA, Griffis RB, Hobday AJ, Janion-Scheepers C, Jarzyna MA, Jennings S, Lenoir J, Linnetved HI, Martin VY, McCormack PC, McDonald J, Mitchell NJ, Mustonen T, Pandolfi JM, Pettorelli N, Popova E, Robinson SA, Scheffers BR , Shaw JD, Sorte CJB, Strugnell JM, Sunday JM, Tuanmu M-N, Vergés A,

Villanueva C, Wernberg T, Wapstra E, Williams SE (2017) Biodiversity redistribution under climate change: Impacts on ecosystems and human well-being. *Science* 355, . DOI: 10.1126/science.aai9214

Sejersen, F., 2003. Greenlands Nature Management (in Danish). Copenhagen: Academisk Förlag. *UN Statement by Greenland*, 2017.pdf.

Tengö, M., Hill, R., Malmer, P., Raymond, C.M., Spierenburg, M., Danielssen, F, Elmqvist, T. & Folke, C., 2016. Weaving knowledge systems in IPBES, CBD and beyond – lessons learned for sustainability. *Current Options in Environmental Sustainability*. **26-27**, 17-25

Whyte, K.P., 2013. Justice forward?: Tribes, climate adaptation and responsibility. *Climatic change*, pp. 517–530, https://doi.org/10.1007/s10584-013-0743-2

Appendix 1: Workshop Participants

Helle Torp Christensen works at the Greenlandic Institute of Biological Resources, especially with fish stocks as the main topic. She is interested to know how to combine biological scientific knowledge, political goals and local knowledge and knowledge from industry – and how to put everything together.

Pauliina Feodoroff is a Skolt Sámi. She was honored to be visiting Aasiaat as the first Skolt Sámi. Feodoroff has worked as the President of the Sámi Council between 2007 and 2009. Currently she works as playwright and theatre and movie director. She is a Sámi activist and works actively in her community on issues of land and water rights, traditional knowledge and other issues.

Vladimir Feodoroff is a Skolt Sámi and a retired reindeer herder who still have some reindeers. He is a local coordinator for River Näätämö restoration work. He thinks that the old Sámi knowledge of the river is very valuable (even not valuated by outsiders).

Per Olof Fredriksen, '*Nuunoq*' is fisherman and hunter from the village of Attu. He has participated in PISUNA since 2010 and is the project coordinator in his village. He is mostly fishing in these days as cod has come back to Disko Bay in growing numbers. He used to hunt more when the fish stocks in bay were not that good. He is a President in the local fishermen and hunter association and a member of local village council for the last three periods.

Bjarne Lyberth, '*Ababsi*' comes from KNAPK, the Greenlandic Association of Hunters and Fishermen. He is a biologist who has also worked in Inuit Circumpolar Council since 2014, coordinating a branch council for hunting and fishing.

PâviâraK Jakobsen is from Aasiaat and has worked for twenty years as business advisor. He is the municipal member in Pisuna project. Born in Arsuk, trained as ship officer, he worked a third of his life at sea.

Augusta M. Jerimiassen is from Department of Fisheries and Agriculture, works as Nette's collegue. She has worked before at KNAPK. Her main interests lie in fish and fishing. She lives in Nuuk but was born in small village in Southern Greenland.

Nette Levermann works at the Ministry of Fisheries. She has lived in Greenland for the past ten years and has participated in PISUNA since 2009.

Kaisu Mustonen does biodiversity work at Snowchange Cooperative. She is from the village of Selkie.

Tero Mustonen is the Head of Snowchange and a professional fisherman. He is also a researcher.

Aqqalu Olsen is a 44-years old fisherman and a hunter from the village of Akunnaq. He has a wife and three almost grown-up kids. He used to be a worker and handcrafter but has worked as a full time hunter-fisher since 2006.

Halfdan Pedersen is a language specialist and an interpreter (Danish/English - Greenlandic) from Aasiaat. He studied in Denmark and works now as a consultant, an interpreter and a multitasker. He is interested in language learning.

Janne Raassina is working with Snowchange on questions of aquatic habitat restoration. He is a private entrepreneur.

Johanna Roto is the Snowchange geographer, mapping not only local conditions. She has an interest also how to combine ILK and mapping.

Appendix 2: Summaries of the Report in English, Finnish, Danish and Greenlandic

Aasiaat harbour.

English

At the *eXchanging Knowledge Workshop 2017* held in Aasiaat, December 2017 methods of inclusion of local, traditional / Indigenous knowledge of the boreal and Arctic communities into monitoring and observation of ecosystems was discussed and reviewed. Participants included Greenlandic hunters, fishermen, research scientist and managers, Finnish fishermen and restoration specialists as well as Skolt Sámi knowledge holders from Finland. *Deepening Voices Report* captures the results of the Nordic cooperation and the key messages from the participating regions.

In summary;

1. **The Arctic and the boreal are changing in profound and new ways.** Dynamic governance and community-based and -meaningful responses are urgently needed to address this 'new normal'. Sea ice change, warmer winters, impacts to fish stocks, mammals and birds are all examples of this, providing complex new realities that the marginalised Indigenous and local-traditional communities often face first. Yet in most cases they have the least resources at their disposal.
2. **Indigenous and traditional knowledge is a meaningful, but under-used method in monitoring and observing northern ecosystems.** PISUNA project, oral and visual histories, land use and mapping as well as community-based and -guided video projects are suitable tools to convey messages of status, change and trends. Community-led work can contribute positively to the self-esteem, -capacity, responsibily and pride of the participants. Free, prior and informed consent-FPIC should be the established standard for all such initiatives.
3. **Indigenous and local-traditional communities in the European North have self-governed natural resources on their own terms for thousands of years.** A classical example is the Sámi *siida* system, a family-based use of lands and waters that contained mechanisms for nature conservation, self-limiting of catches and direct resource management based on the community needs and interests. Modern governance of, for example fish, marine mammals and other renewable resources should include and embrace this Indigenous and local-traditional governance to the best extent possible. The Näätämö river co-management model of the Skolt Sámi and the PISUNA work in Greenland are examples of Nordic Good Practices towards achieving these targets.
4. **Indigenous and local-traditional -led monitoring has the capacity to lead to a community-led restoration of lost or damaged habitats** in tandem with science, as has been documented in the Jukajoki case, North Karelia, Finland. Replication of this model has a great potential in the boreal and the North. In order to be meaningful this work needs the resources for success especially in the village level.
5. **Great benefits can be achieved if communications between the communities, managers and the governments are enhanced.** A two-way exchange of acknowledging observations back to the communities, and improvements in the ways agencies interact with villages will further enhance effectiveness and equity. Success criteria for collection, inclusion or recognition and use of local knowledge should be further described. Attention should be given to the formulation of criteria that incorporate the different points of view on success, so that all participants are aware of when the goal is reached.
6. **The impacts of monitoring and management of natural resources and ecosystems in Greenland and Finland can be improved by further enhancing culturally and gender appropriate approaches.** The involvement of women, children, Elders, schools as well other special stakeholders, often excluded, should feel welcome and to be able to contribute to the future of simiar initiatives as assessed in the Deepening Voices report.

Deepening Voices / Syvenevät keskustelut -raportti

Suomi:

eXchanging Knowledge -hankkeen työpaja järjestettiin Aasiaatissa, Länsi-Grönlannissa joulukuussa 2017. Kokoukseen osallistujat arvioivat perinteisen ja alkuperäiskansatiedon mahdollisuuksia kalottialueen ja havumetsävyöhykkeen luonnonelinympäristöjen seurannassa. Mukana oli grönlantilaisia metsästäjiä, tutkijoita sekä hallinnon edustajia, suomalaisia kalastajia ja vesiensuojelun ammattilaisia, tutkijoita sekä kolttasaamelaisia perinteisen tiedon kantajia. Työraportti tiivistää Pohjoismaisen yhteistyön ja osallistuneiden alueiden näkökulmasta kokouksen avaintulokset.

Yhteenvetona;

1. **Pohjoinen kalottialue ja havumetsävyöhyke ovat kokonaisvaltaisen muutoksen keskellä.** Dynaamista hallintoa ja yhteisöpohjaisia ratkaisuja tarvitaan pian, jotta muutoksen vaikutuksia kyetään käsittelemään ja niihin voidaan vastata myös yhteisö- ja kylätasolla. Merijään muutos, lämpimämmät talvet sekä muutokset kala-, nisäkäs- ja lintukannoissa ilmentävät tätä monimutkaista uutta todellisuutta. Marginalisoidut perinne- ja alkuperäiskansojen yhteisöt kohtaavat uuden tilanteen ensimmäisten joukossa usein vailla riittäviä keinoja tai resursseja puuttua muutoksen vaikutuksiin.
2. **Alkuperäiskansa- ja perinnetieto ovat merkittäviä, mutta usein riittämättömästi hyödynnettyjä tapoja, joilla pohjoisten alueiden muutosta voidaan seurata ja tulkita.** Grönlantilainen PISUNA -hanke, kerrotut ja visuaaliset historiat sekä perinteisen maankäytön kartoitus ovat hyviä keinoja, joilla luonnonelinympäristöjen tilaa, muutosta ja kehitystä voidaan paremmin seurata. Yhteisöpohjaisuus on merkityksellistä osallistujien omanarvontunnon näkökulmasta. Heille on tärkeää saada äänensä kuuluviin ja jakaa tietojaan omista lähtökohdistaan. Uudet käyttäjät tulisi kuitenkin varustaa riittävin voimavaroin, jotta onnistuminen voidaan taata erityisesti kylien kannalta. Kansainvälinen menetelmä, *FPIC* eli vapaa, ennakoitu ja informoitu suostumus tulee olla uusien hankkeiden ytimessä.
3. **Pohjois-Euroopan alkuperäiskansat ja perinneyhteisöt ovat hallinnoineet omia luonnonvarojaan tapalakiensa mukaan tuhansia vuosia.** Saamelaisten siida -järjestelmä on tästä tunnettu esimerkki. Sukujen oma alueidenkäyttö, -suojelu ja -hallinta takasivat ylipyynnin välttämisen turvaten samalla yhteisön elinmahdollisuudet. Nykyaikaisen luonnonvarojen hallinnan tulisi kehittyä ottamaan huomioon ja sisällyttää perinteisiä tapaoikeuksiin ja alkuperäiskansojen tietoon pohjaavia menetelmiä. Näin voitaisiin toimia vaikkapa kalatalouden, merinisäkkäiden tai muiden uusiutuvien resurssien osalta. Esimerkiksi Näätämöjoen yhteishallintahanke ja Grönlannissa sovellettu PISUNA ovat pohjoismaisia huippukäytänteitä.
4. **Alkuperäiskansojen ja paikallisten yhteisöiden seurantatoimet voivat edistää vesiensuojelu- ja ennallistamishankkeiden toteutumista yhdessä tieteen kanssa.** Käytännettä on sovellettu esimerkiksi Jukajoella, Pohjois-Karjalassa, Suomessa. Mallia voidaan laajentaa tältä pohjalta havumetsävyöhykkeen muihinkin osiin.
5. **Viestinnän tulee parantua hallinnon, paikallisyhteisöiden ja hallitusten välillä.** Kaksisuuntainen muutoshavaintojen käsittely, hallinnon suhteet kyliin ja muutoksen perustilan yhteinen selvitys (n.s. baseline) ovat tarvittavia askeleita, joilla voidaan korjata olemassa olevia luonnonvarahallinnan epäkohtia. Toimien onnistumiskriteerit tulee määrittää siten, että ne ovat myös paikallisuudesta käsin merkityksellisiä.
6. **Luonnonvarojen seurannan ja hallinnan uudistusten tulisi samaan aikaan olla myös kulttuuria kuuntelevia ja eri sukupuolia kunnioittavia.** Naisten, lasten, vanhimpien, kulttuurin kantajien, koulujen sekä muiden sidosryhmien mukaanotto on työn keskiössä. Näiden erityisryhmien pitäisikin päästä vaikuttamaan *Deepening Voices* -raportissa esiteltyjen toimien käytännön soveltamiseen.

Administrativt resumé – Deepening Voices

Dansk:

På eXchanging Knowledge Workshop 2017, der blev afholdt i Aasiaat i december 2017, blev følgende diskuteret og vurderet: metoder til inklusion af lokal, traditionel / indfødt viden i nordiske og arktiske samfund ved overvågning og observationer af økosystemer. Blandt deltagerne var grønlandske fangere, fiskere, videnskabsmænd og ledere, finske fiskere og genoprettelsesspecialister såvel som indehavere af Skolt Sámi viden fra Finland. *Deepening Voices Rapport* indeholder resultaterne af det nordiske arbejde og hovedbudskaberne fra de deltagende regioner.

Her et sammendrag:

1. **Arktis og det nordiske område er under forandring på omfattende og nye måder.** Der er et presserende behov for dynamisk ledelse og for svar baserede på samfundsgrupper, der samtidig er meningsfyldte for disse for at gøre noget ved den 'nye normalitet'. Havisændringer, varmere vintre, indvirkning på fiskebestande, pattedyr og fugle er alle eksempler på det, der bringer komplekse nye realiteter, som de marginaliserede indfødte og lokale-tradtionelle samfund ofte er de første til at stå over for. Men i de fleste tilfælde står de færreste ressourcer til deres rådighed.
2. **Indfødt og traditionel viden er en meningsfuld men under-benyttet metode ved monitorering og observering af økosystemer i nord.** PISUNA projektet, mundtlige og visuelle historier, arealanvendelse og kortlægning så vel som samfundsgruppebaserede og guidede videoprojekter er egnede redskaber til at kommunikere budskaber angående status, ændring og tendenser. Arbejde ledet af samfundsgrupper kan bidrage positivt til deltagernes selvværd, evner, ansvar og stolthed. Fri, forudgående og oplyst FPIC-samtykke burde være den fastsatte standard for alle sådanne initiativer.
3. **Indfødte og lokale-traditionelle samfund i det nordlige Europa har på egne betingelser selv styret naturressourcer i tusinder af år.** Et klassisk eksempel er Sámi *siida* systemet, en familiebaseret landareal- og vandarealanvendelse, der indeholdt mekanismer til naturbevarelse, eget fangstbegrænsningssystem og direkte styring af ressourcer baseret på samfundets behov og interesser. Moderne ledelse af for eksempel fisk, havpattedyr og andre vedvarende ressourcer burde indeholde og tage denne indfødte og lokale-traditionelle ledelse til sig i videst muligt omfang. Skolt Sámi-rnes sam-ledelsesmodel for Näätämö floden og PISUNA arbejdet i Grønland er eksempler på Nordic Good Practices for at nå disse mål.
4. **Monitorering ledet af indfødte og lokale-traditionelle har kapacitet til at lede hen mod en samfundsgruppestyret retablering af mistede og beskadigede habitater** i følgeskab med naturvidenskab, som det ses dokumenteret i Jukajoki sagen, Nordkarelien, Finland. Replikation af denne model har et stort potentiale i det nordiske og i det arktiske. For at være betydningsfuld har dette arbejde behov for ressourcerne til succes specielt på bygdeplan.
5. **Store fordele kan opnås hvis kommunikation mellem samfundsgrupper, ledere og regeringer bliver forbedret.** En gensidig udveksling af bekræftelse af observationer tilbage til samfundsgrupperne, og forbedringer i måden hvorpå instanser arbejder sammen med bygder på, vil yderligere forbedre kvaliteten af effektivitet og rimelighed. Succeskriterier for opsamling, inklusion eller anerkendelse og brug af lokal viden burde beskrives yderligere. Opmærksomheden bør rettes mod formuleringen af kriterier, der inkorporerer de forskellige meninger for succes, således at alle deltagere er bevidste om det, når målet er nået.
6. **Effekten af monitorering og styring af naturressourcer og økosystemer i Grønland og Finland kan forbedres ved yderligere at forbedre de kultur- og kønsrelevante tilgange.** Inddragelse af kvinder, børn, Ældre, skoler såvel som andre interessenter, der ofte holdes uden for, skal føle sig velkomne og være i stand til at bidrage til fremtidige lignende initiativer som vurderet i Deepening Voices rapporten.

Pingaarnersiuilluni eqikkagaq – Deepening Voices

Kalaallisut:
eXchanging Knowledge Workshop 2017 december 2017-imi Aasianni ingerlanneqartumi makku eqqartorneqarlutillu nalilersorneqarput: nunani avannarlerni aamma issittumi uummaviit nakkutigineranni takusallu nalunaarsorneranni inoqarfiusuni sumiiffimmiut, qangaaniilli / nunap inoqqaavisa ilisimasaasa ilanngutitinneqarnissaannut periaasissat. Peqataasut akornanniipput kalaallit piniartut, aalisartut, ilisimatuut aqutsisullu, finlandermiut aalisartut aamma iluarseeqqinnermik immikkut ilisimasallit soorlu aamma Finlandimi Skolt Sámit qangaaniilli ilisimasanik pigisallit. *Deepening Voices Reportip* nunani avannarlerni sulinerup inernerinik aamma nunat immikkoortui peqataasut oqariartuutaannik pingaarnernik imaqarpoq.

Aana eqikkagaq:

1. **Issittoq avannarleq aamma nunat avannarliit annertuumik siornatigullu takuneqarsimanngitsunik allanngoriartorfiupput.** Sunniuteqarsinnaasunik siulersorteqarnissaq aamma ‘nalinginnaalersoq nutaaq’ qanoq iliuuseqarfiginiarlugu sumiiffinni inooqatigiikkuutaanik tunngaveqartunik aamma taakkununnga isumaqartunik qanoq periarnissaq nukinginnarluinnartumik pisariaqartinneqarpoq. Immap sikuisa allanngornerat, ukiukkut issikinnerusarnera, aalisakkanut, miluumasunut timmissanullu sunniutit piviusut nutaat paasilertoruminaatsut kingunerannut tamarmik nunap inoqqaavisa avinngarusimasut aamma inooqatigiikkuutaat sumiiffimmiut-qangatuulli ingerlasut siulliukkajunnerullutik misigisartagaannut assersuutissaapput. Kisiannilu amerlanertigut nukissanik ikinnerpaanik atugassaqartinneqartarlutik.
2. **Nunap inoqqaavisa ilisimasaat qangaaniillu ilisimasat tassaapput periuseq isumalik kisianni avannaani uummavinnik alapernaarsuinermi nakkutiginninnermilu atorneqarpianngitsoq.** Sumut killiffiit, allanngornerit sumullu ingerlaqqajaanerit pillugit suliniut PISUNA, oqaluttuat aamma isiginnaagassiat oqaluttuartut, nunanik atuinerit nunallu assiliorneri soorlu aamma sumiiffinni inooqatigiikkuutaat aallaavigalugit videonik suliniuteqarnerit ilaannikkullu taakku ilitsersuisoralugit tassaapput sakkut tulluartut tusarliussassanik ingerlatitseqqiinissamut. Suliat sumiiffinni inooqatigiikkuutaanit siulersorneqartut peqataasut imminnut naleqartinnerannut, piginnaasaannut, akisussaaffeqarnerannut tulluusimaarnerannullu ajunngitsumik sunniuteqarsinnaavoq. Kiffaanngissuseqartumik, sioqqutsisumik aamma qaammarsarneqareerluni FPIC-imut akuersaarneq pilersitsiniarnernut taamaattunut tamanut malittarisassaasariaqaraluarpoq aalajangersimasoq.
3. **Europap avannarpasinnerusuani nunap inoqqaavi aamma inooqatigiikkuutaat sumiiffimmiut-qangatuulli ingerlasut periarfissatik najoqqutaralugit pinngortitap pisuussutai ukiuni tuusintilikkaani namminneq aqussimavaat.** Assersuut nutaanngilisussaanngitsoq tassaavoq Sámit aaqqissuussaat *siida*, tassaasoq ilaqutariit aallaavigalugit nunanik ernginillu atueriaaseq pinngortitap paarinissaanut, pisat killeqarnissaannut namminneerlutik aaqqissuussaat aamma inooqatigiit/inuiaqatigiit pisariaqartitaat soqutigisaallu tunngavigalugit toqqaannartumik aqutsineq. Nalitsinni aqutsinermi soorlu aalisakkanik, miluumasunik imarmiunik aamma isumalluutinik allanik ataavartunik nunat inoqqaavisa inooqatigiikkuutaallu sumiiffimmiut-qangatuulli ingerlasut siulersueriaasiat taanna sapinngisaq tamaat naapertorlugu atulertariaqaraluarpaat. Finlandimi Skolt Sámit kuussuaq Näätämö pillugu peqatigiillutik siulersuisimanerannut iluseq aamma Kalaallit Nunaanni PISUNAp ataani suliat siunnerfiit taakku angunissaannut Nordic Good Practices (Avannarlerni Periaatsit Pitsaasut) pillugit assersuutissaqqipput.
4. **Alapernaarsuineq nunap inoqqaavinit aamma inooqatigiikkuutaani sumiiffimmiunit-qangatuulli ingerlasunit siulersorneqartut uummaviit annaaneqarsimasut ajoqusersimasulluunniit inooqatigiikkuutaanit aqunneqartumik pilerseqqinnissaannut piginnaaneqarput** pinngortitamik ilisimatusarneq ingiaqatigalugu, soorlu suliami Jukajokimi, Nordkarelien, Finlandimi uppernarsarneqarsimasoq. Ilutsip taassumap nunani avannarlerni aamma issittumi assilillugu

atornissaa annertuumik piukkunnaateqarpoq. Pingaaruteqassappat suliaq tamanna iluatsilluarnissamut nukiit pisariaqartippai ingammik nunaqarfinni.

5. **Sumiiffinni inooqatigiikkuutaat, aqutsisut aamma Naalakkersuisut akornanni attaveqaqatigiittarneq pitsanngorsaavigineqartuuppat annertuumik iluaqutigineqarsinnaavoq.** Takusat pillugit nalunaarutit tigusimanerannut uppernarsaaneq illugiissumik paarlaateqatigiinnikkut sumiiffinnni inooqatigiikkuutaanut aamma aalajangiisartut nunaqarfinnik suleqateqariaaseqarnerisa pitsanngorsaavigineqarnerannut kinguneqartitsilluarnerup pitsaassusia aamma tulluassuseq suli anginerusumik pitsaanerulersissavai. Katersuinerit, ilanngutititsinerit imaluunniit akuersaarfiginninnerit aamma sumiiffimmiut ilisimasaannik atuineq pillugit iluatsitsilluarnermut tunngavigineqartussat annertunerusumik nassuiarneqartariaqaraluarput. Iluatsitsilluarnerup isumaa pillugu tunngaviit isummanik assigiinngitsunik ilanngutititsisut oqaasertaliornissaat immikkut eqqumaffigineqartariaqarput, siunnerfigisaq anguneqarpat peqataasut tamarmik nalunnginniassammassuk.
6. **Kalaallit Nunaanni Finlandimilu alapernaarsuinerup aamma pinngortitap pisuussutaanik uummavinnillu aqutsinerit sunniuteqarnerat pitsaanerulersinneqarsinnaavoq pullaviit kulturimut aamma angutaanermut arnaanermullu tulluartut annertunerusumik pitsanngorsaaviginerisigut.** Arnat, meeqqat, Utoqqaat atuarfiit aammalu soqutiginnitsit allat ilaatinneqakkajunngitsut ilanngutitinneqassapput tikilluaqqusaasutullu misigissallutik, siunissamilu suliniutinut assingusunut tuniseqataasinnaassallutik soorlu Deepening Voicesip nalunaarusiaani taama nalilerneqartoq.