# The Atlas of Community-Based Monitoring in a Changing Arctic: Connecting local initiatives across governance scales

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Inuit Circumpolar Council

# ICC: Who we are


**160,000 Inuit live in the Arctic spread across Greenland, Canada, Alaska (USA) and Chukotka (Russia). The Inuit Circumpolar Council advocates for Inuit rights internationally.**

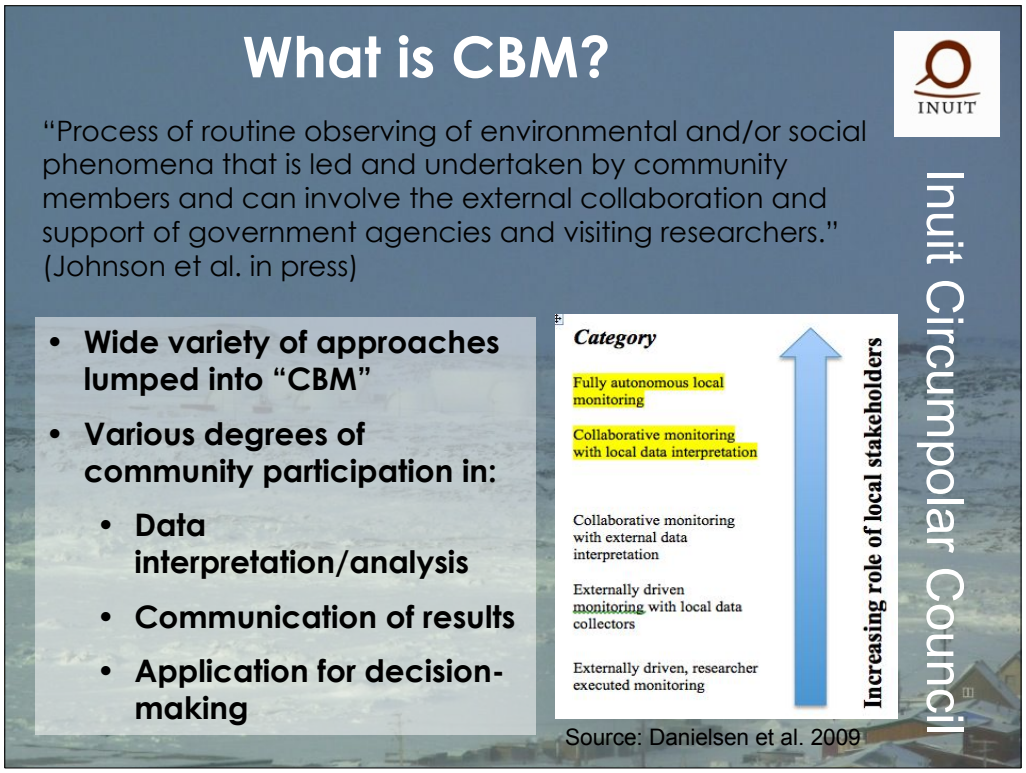
Inuit Circumpolar Council


Connect and promote community-based monitoring (CBM) programs

Promote retention/transmission of Inuit traditional knowledge (TK)

Insist upon use of TK in scientific work and relevant decision-making processes

Promote awareness of CBM activities rooted in TK and initiatives for sharing information/knowledge and data in/from the Arctic




"Process of routine observing of environmental and/or social phenomena that is led and undertaken by community members and can involve the external collaboration and support of government agencies and visiting researchers." (Johnson et al. in press)

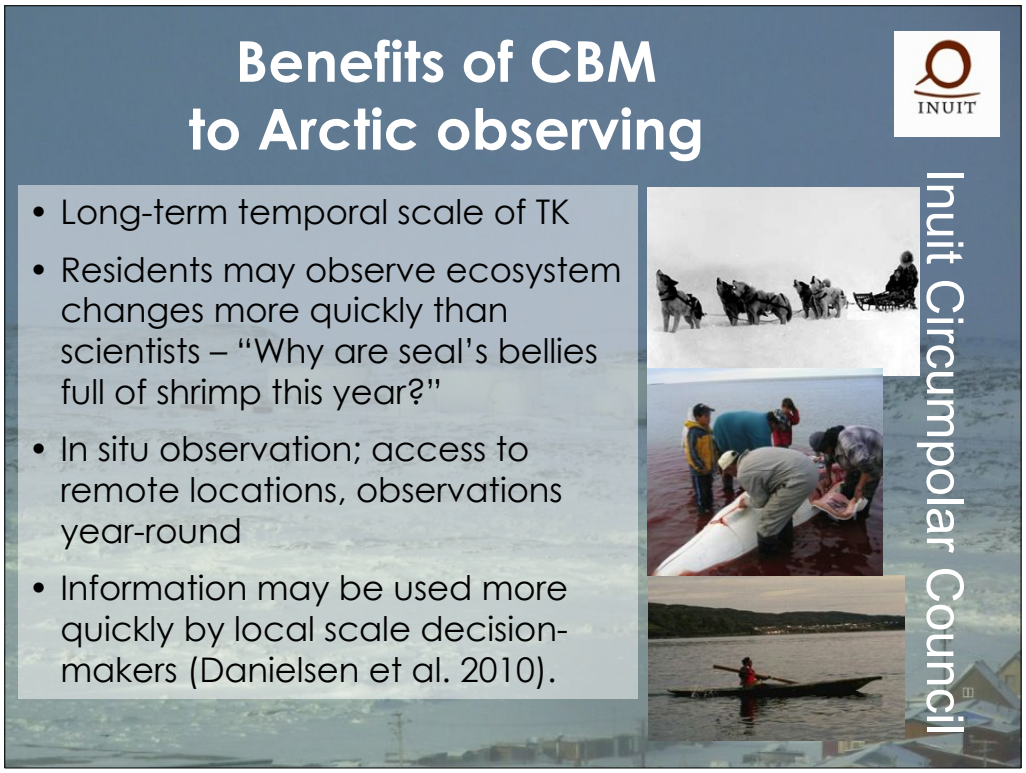
This is an approach to categorizing different kinds of monitoring initiatives developed by Finn Danielsen and colleagues. (Citation: Danielsen et al. 2009. "Local participation in natural resource monitoring: a characterization of approaches." Conservation Biology 23(1): 31-42).

Based on conversations we have had with different CBM initiatives, this spectrum shows the important distinction in terms of identifying what constitutes community-based monitoring compared to other types of monitoring: community involvement. The top two approaches are what we would highlight as CBM, although certainly communities can also initiate monitoring with external data interpretation that is also validated at the community level. The important element is community involvement and control.


CBM in the Arctic with Inuit and other Arctic indigenous peoples is distinct and requires a different approach. It is distinct from "citizen science" in that it may utilize TK, and its goals are often not to benefit research or science, but to support local communities to address their observing, monitoring, and decision-making needs.

CBM can be considered part of right to Indigenous self-governance based on TK, protected in land claims agreements and other international treaties and conventions.

CBM in the Arctic can have very distinct methods (based on TK) that can overlap with or diverge from Western science. Also distinct in purpose – use of knowledge is built into observing systems; not separation as in western science between knowledge generation and application. Seeing this partly in the atlas, itself – iterating with scientific observing systems where knowledge application is a secondary aspect and sometimes atlas infrastructure is a way of facilitating application/use.

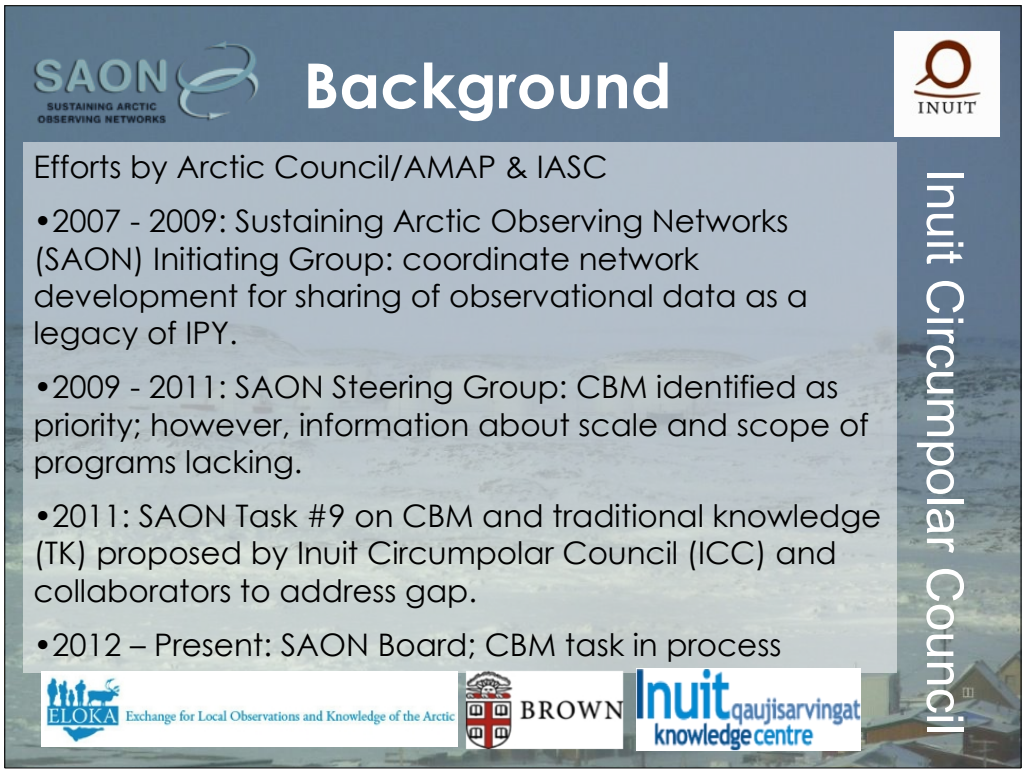



There are many benefits associated with CBM in the Arctic:

Traditional knowledge, which goes back many generations, is much more easily incorporated into CBM, and bring a long-term scale to monitoring, along with a holistic view of the environment. This can add knowledge about different indicators and can bring insights into the nature of changes that are happening in the Arctic.

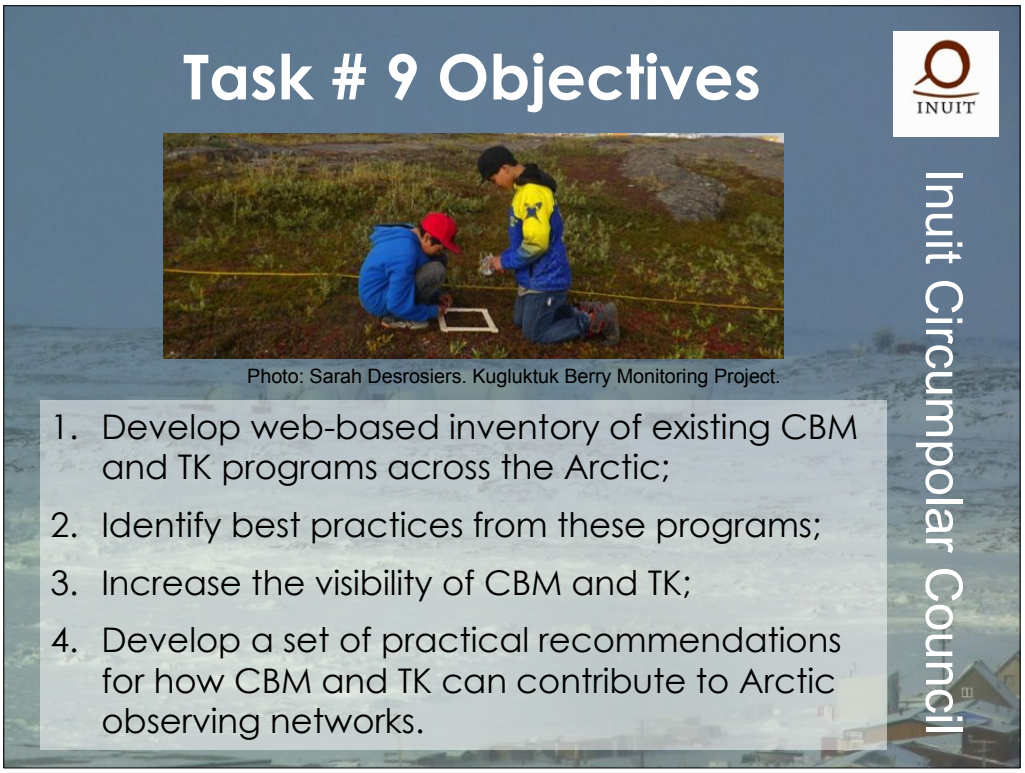
Since CBM is conducted by local people, it allows also for easier access to remote locations, can yield observations year-round, and is more cost-effective.

A study by Finn Danielsen and colleagues further found that while it typically takes managers three to five years to implement the recommendations generated through "scientist-executed" monitoring programs, monitoring activities involving local residents are more effective in driving policy changes over a shorter timeframe, often within one year of the data acquisition and analyses. Additionally, while "scientist-executed" monitoring programs drive decisions on regional, national and international levels, they have little impact at a community scale.




ICC's Sustainable Observing Arctic Network, Task #9 was initially proposed by ICC in collaboration with ELOKA (Exchange for Local Observations and Knowledge of the Arctic) and Inuit Qaujisarvingat (ITK's Inuit Knowledge Centre). It was created to provide a searchable inventory of CBM projects on the internet, and to undertake a comprehensive review of CBM practices in the circumpolar Arctic, using examples from the web atlas and discussing definitions and providing a gaps analysis as well as recommendations.

We are also coordinating with other groups that are also focused on CBM and TK in SAON, including CAFF, the European Environment Agency's Eye on Earth initiative, and Victoria Gofman who is leading a task on definitions that was originally proposed by AIA.




to inventory existing CBM and TK programs across the Arctic;

to identify best practices from these programs;

to identify the needs of Arctic communities and scientists with respect to CBM methods and outcomes;

and to develop a set of practical recommendations for how CBM and TK can contribute to Arctic observing in the context of SAON.


Arcticcbm.org is an online metadatabase that inventories community-based monitoring and TK initiatives.

Infrastructure based on the Nunaliit Atlas Development Framework (http://nunaliit.org). This framework combines online mapping functions with document management and multimedia portrayal features. Use a number of open source technology packages – if anyone has questions about the technical development, ask Peter Pulsifer who will speaking right after me.

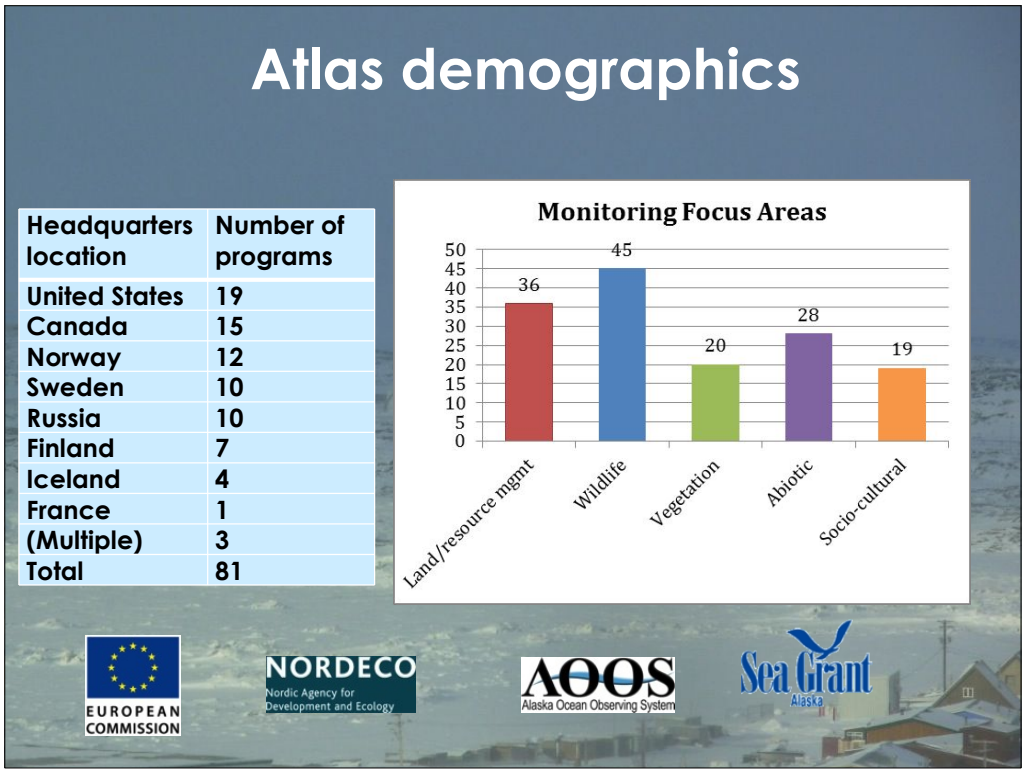
Recruitment methodology: Open to any project or initiative that is interested in being part of the atlas – very broad. Not only Arctic but also sub-arctic programs; most have environmental focus. Because of holistic way that communities engage in monitoring and understand purpose of monitoring, many include social, economic, political aspects. Not all ongoing – some are project based but could provide useful baseline data for long-term monitoring.

Programs have all given permission to be part of atlas.

Content partners – European Commission, NORDECO, CAFF/CBMP, AOOS & Alaska Sea Grant.

Currently 81 projects/initiatives in atlas, many more that we hope to add pending time/resources.

We also are using the infrastructure to host other maps including a map of Inuit mental health and wellness programs.




As of August 2014, the atlas contained a total of 81 community-based monitoring and observing and traditional knowledge programs across the circumpolar region. Of these, 37 recruited through the European Commission study by NORDECO, 9 recruited through collaboration with AOOS and Alaska Sea Grant. Programs had their institutional headquarters based in the following countries (slide).

Twenty (22) programs were carried out either in a single community or a single ecological area (such as a fjord or bay) with a single coordinating organization. One of these planned to expand to a second location within the same country; another was part of a network but each project had its own goals and leadership. The majority of programs (45) were carried out at multiple locations in a single country. Of those programs carried out in multiple countries (14), nearly all were designed around common attributes, such as a particular region (i.e. Bering Sea), Indigenous identity that spanned country boundaries, as in the case of Sami or Inuit, or were based on shared land use activities such as reindeer herding.

The programs in the atlas hosted by a variety of institutional types, including Indigenous peoples' organizations (IPOs – including 3 higher education institutions); NGOs; research institutions; government agencies (national, territorial, county, and municipal); and other institutions, including museums (3) and the private sector (1). Of the initiatives that were co-led, the majority (9 out of 10) involved an IPO as one of the hosts.

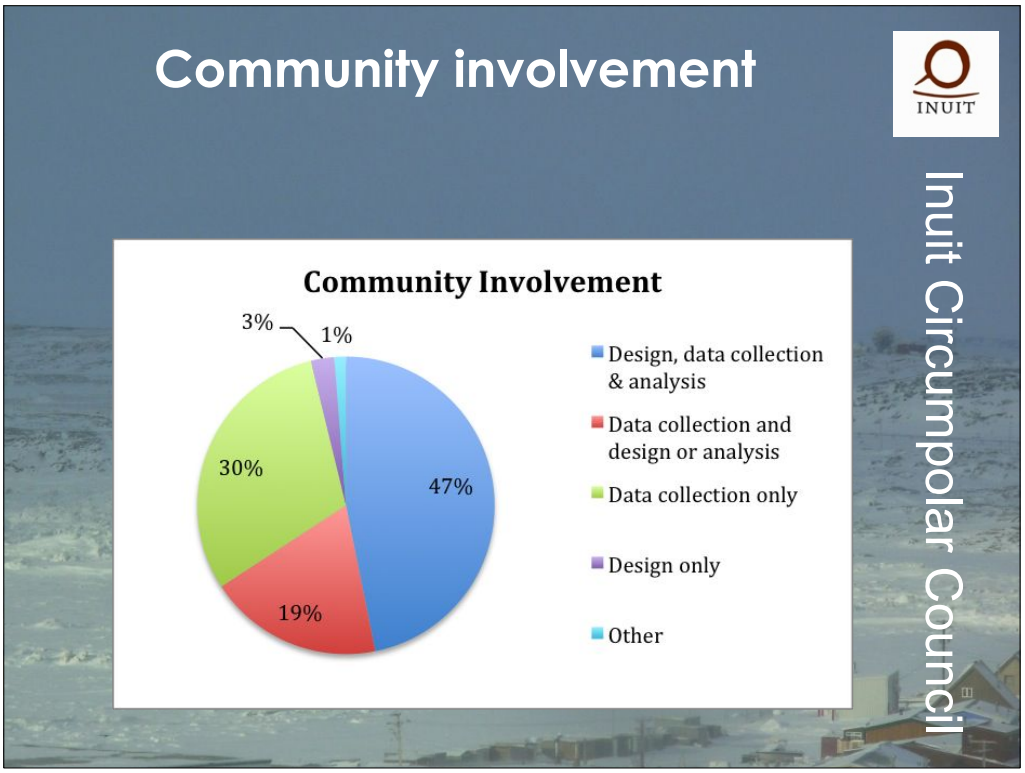
Management of land and resources (36 programs) in relation to, e.g., reindeer husbandry, hunting, commercial or managed fisheries, tourism and industrial development;

Wildlife (45 programs) including species-specific programs on insects, shellfish, fish, birds, mammals;

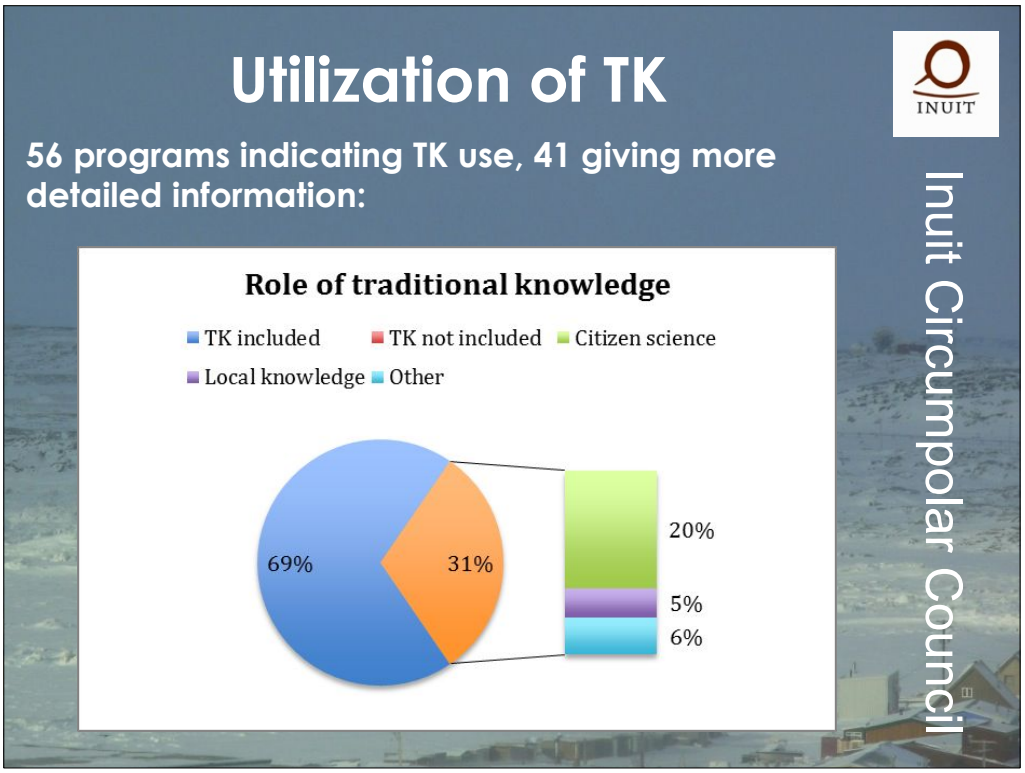
Vegetation (20 programs) including fungi and plants.

Abiotic phenomena (28 programs) such as water, air, snow, ice, wind, and weather;

Socio-cultural attributes (19 programs) such as health, wellness, and language and traditional



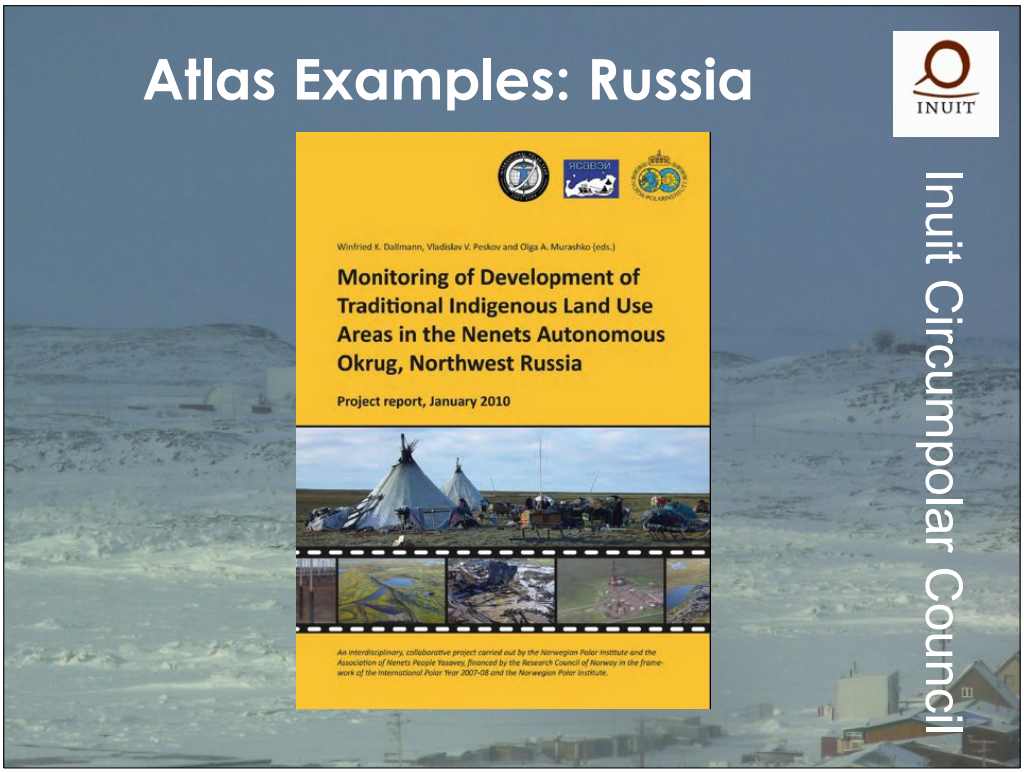

37 programs involved community members in program design, data collection, and analysis. 15 programs involved community members in data collection and *either* program design *or* data analysis. 24 programs only involved community members in data collection, whereas scientists undertook program design and data analysis. Two (2) of the programs involved community members in the project design stage only. For one (1) program, community involvement was limited to setting up instrumentation for scientists.




Of the 56 programs that indicated that TK was involved, 41 provided specific explanatory text that allowed for additional analysis. Of those that did not (25 total), 16 were citizen science initiatives that engaged volunteers in collecting data for scientific research and monitoring purposes, and many were not specifically based in the Arctic.

Many research (rather than ongoing monitoring) programs were designed to elicit TK to inform natural resource management processes or to understand where conflicts between traditional use and mining and oil and gas developments may be emerging; in these projects, methods primarily focused on using interviews, focus groups, and participatory mapping exercises. The majority of programs in the atlas elicited TK through these methods, but it was often unclear from the information provided how much community members were involved in shaping research goals or analysing the information gathered.

Twenty-three (23) programs in the atlas document TK and scientific observations, or documented one or the other for the purpose of supporting decision-making based on multiple evidence bases, or multiple ways of knowing (see "co-production" section below for specific examples). In several cases, programs collected TK through interviews or oral histories alongside more conventional approaches to ecosystem monitoring. It was unclear from the information provided whether these observations were then compared or how they were analyzed to lead to greater understanding of ecosystem dynamics.




Association of Nenets People of Yasavey, Norwegian Polar Institute collaboration

Monitoring development of traditional Indigenous land use areas and industrial development in the Nenets Autonomous Okrug (NAO)

Developed a GIS map database

Help Indigenous populations protect their interests in relation to development in the region


In Jokkmokk, Sweden, Snowchange Cooperative-led  project.

Documenting impacts of hydroelectric reservoirs in Europe, focusing on the Luleå watershed.

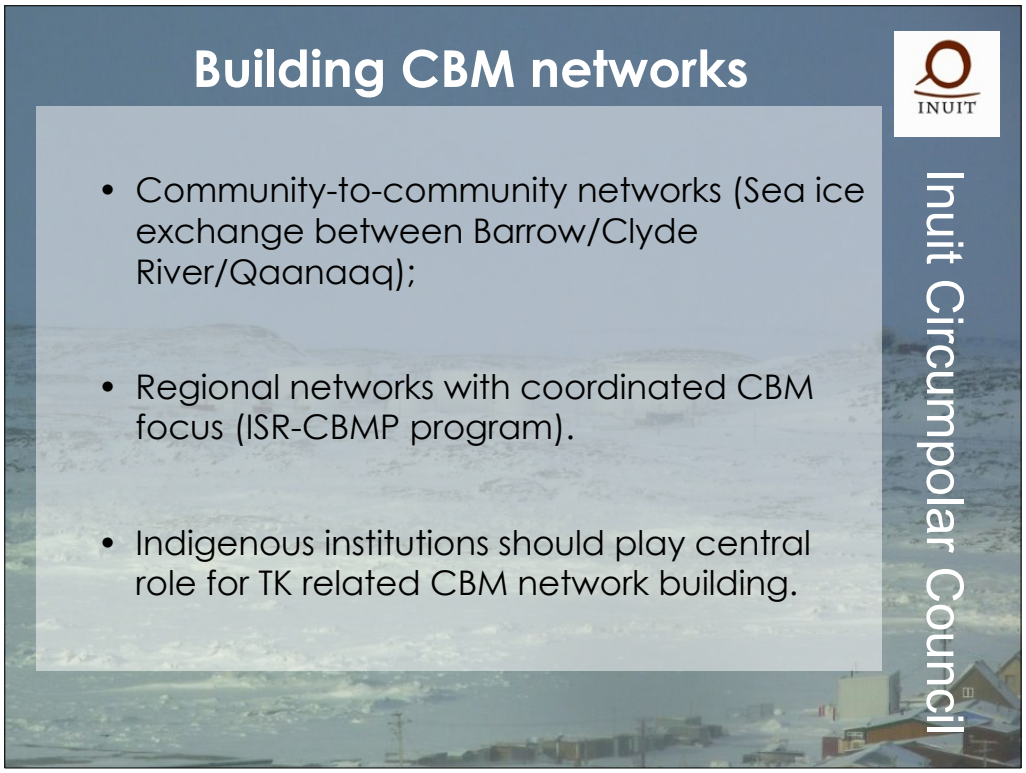
Used oral history interviews, place names, maps, diary entries, and photos, documenting Sami reindeer herders, community member observations.

Contributed to the Arctic Biodiversity Assessment; can be used as baseline for long-term monitoring of change due to development in the region.


Kotzebue, Alaska: program on organic nutrients and contaminants

Focused on species important to subsistence for Kotzebue residents (spotted seal and sheefish)

Studying nutrient and contaminant concentrations and changes to these concentrations resulting from food preparation methods.




- Network building is critical for disseminating and scaling CBM observations;
- Field is largely decentralized, so coordinated focus on network-building could help expand this approach;
- Many different possible network formations exist. Some important for CBM:
  - Community-to-community networks (Sea ice exchange between Barrow/Clyde River/Qaanaaq);
  - Regional networks with coordinated CBM focus (ISR-CBMP program).
  - And we have to remember that organic


Task is for a finite period but continuing work/engagement will be needed to move forward within SAON and at international level. Need to properly resource these efforts. In Canada, there is interest/desire for regional engagement with land claims organizations, but this takes time and resources.

1.CBM program outreach & identification ongoing;

2.Development of review of CBM and TK in the Arctic (to be released soon);

3.Addition of other thematic areas, e.g. health module of atlas

4.Data considerations: comparability/interoperability and confidentiality/local control

5.Streamlining for potential uses:

- Could inform assessment processes (e.g.

# Thank you!

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