

# KNOWING WIDE AND DEEP

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Arctic  
Sustainability  
Lab



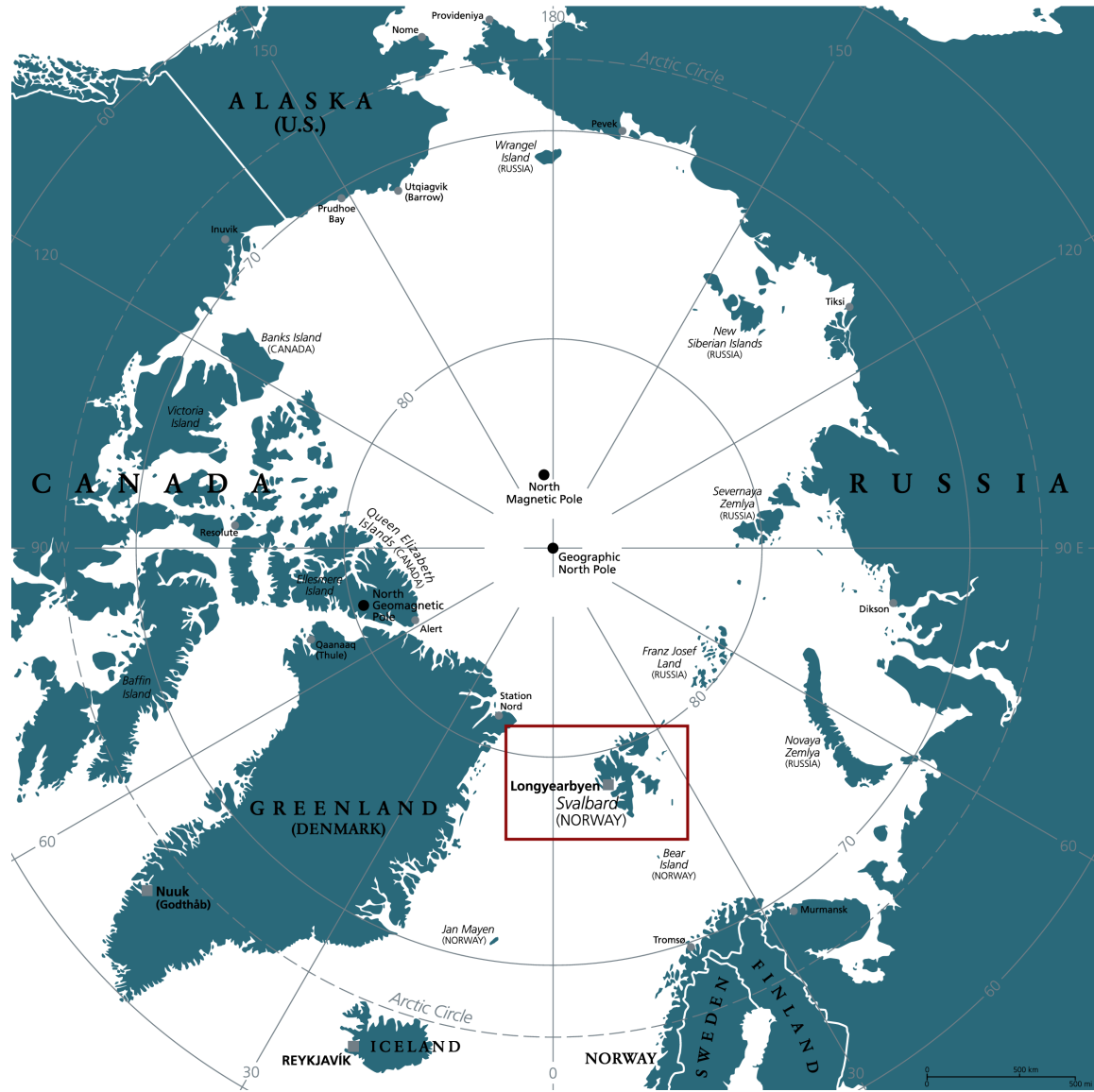
SVALBARD

BELMONT  
FORUM



THE ARCTIC UNIVERSITY OF NORWAY  
UIT

WHERE ARE WE?





**MAPPED KNOWLEDGE +  
EXPERIENCES OF  
ENVIRONMENTS, THROUGH  
OBSERVATIONS MADE BY  
PEOPLE LIVING, TRAVELING  
AND EXPLORING SVALBARD.**



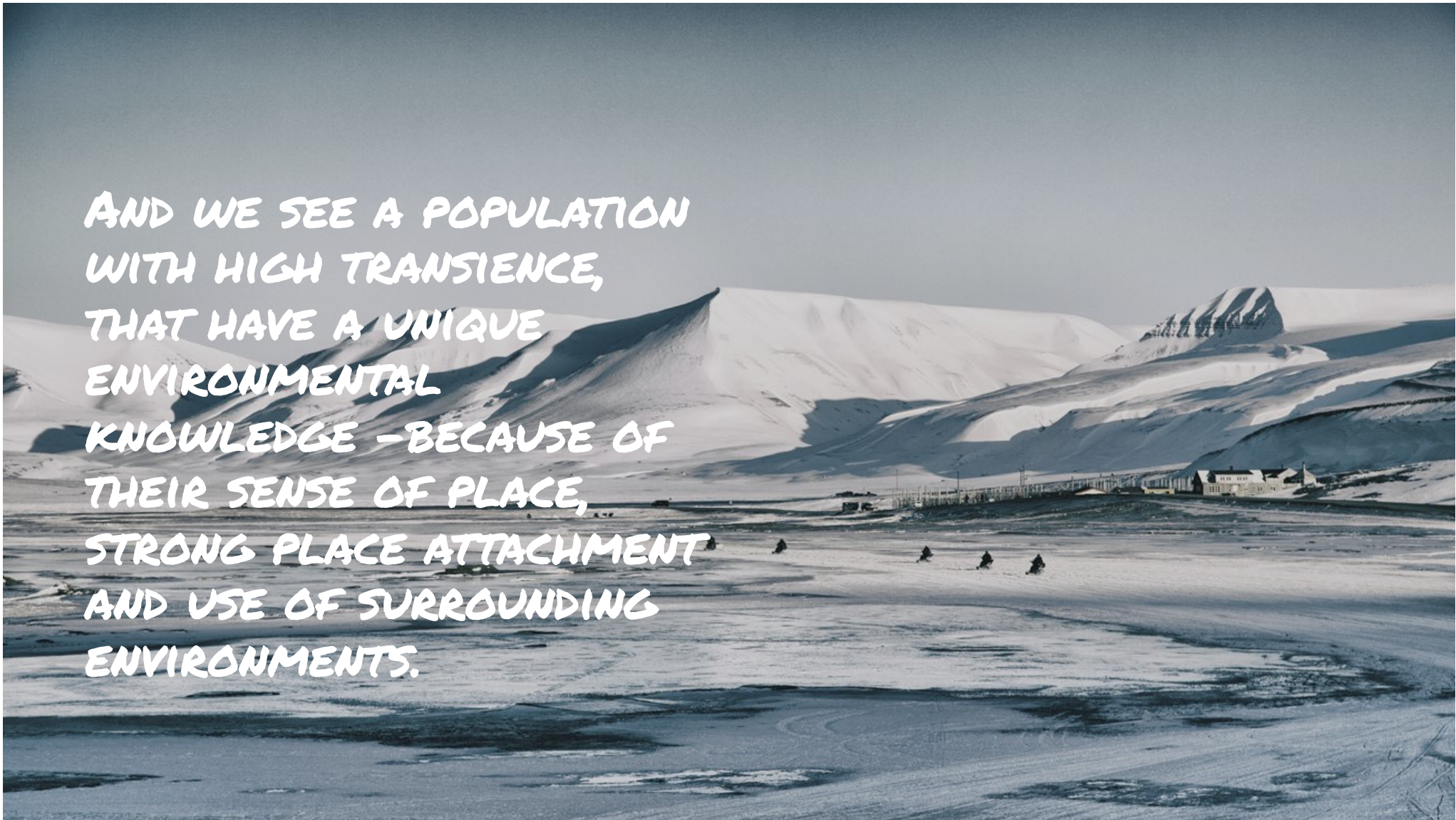
**MAPPED KNOWLEDGE +  
EXPERIENCES OF  
ENVIRONMENTS, THROUGH  
OBSERVATIONS MADE BY  
PEOPLE LIVING, TRAVELING  
AND EXPLORING SVALBARD.**

**...EXPLORING CONNECTIONS TO  
LONG-TERM MONITORING.**

A black and white photograph of a rocky coastline. The foreground shows a dark, pebbly beach leading to a rocky shore. The rocks are of various sizes and shapes, some with dark, possibly wet or shadowed surfaces. The background shows a body of water with a textured surface, possibly from waves or a boat's wake. The overall scene is rugged and natural. The text "SENSE OF PLACE..." is overlaid in the center in a white, bold, sans-serif font.

**SENSE OF PLACE...**

AND WE SEE A POPULATION  
WITH HIGH TRANSIENCE,  
THAT HAVE A UNIQUE  
ENVIRONMENTAL  
KNOWLEDGE - BECAUSE OF  
THEIR SENSE OF PLACE,  
STRONG PLACE ATTACHMENT  
AND USE OF SURROUNDING  
ENVIRONMENTS.



**HOW DID WE MAP THEIR  
KNOWLEDGE AND  
OBSERVATIONS?**





# INTERVIEWS AND FOCUS GROUPS

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**EVERYONE CONTRIBUTED IN  
THEIR OWN UNIQUE WAY!**








**OVER 750  
REGISTRATIONS!**



A satellite map of Longyearbyen, Norway, showing the town's layout and surrounding terrain. A red outline highlights the town's boundary. A dark green box with the text "Longyearbyen" is positioned in the lower-left quadrant of the map.

Longyearbyen



**LET'S TRAVEL TO THE  
TRAPPER'S CABIN BUILT BY  
OXAAS AND ULLSFJORD**

**-BUILDINGS**

**-INFRASTRUCTURE**

**-MOLD**


**-NESTING SITES OF ARCTIC SKUA**

**ALL CONNECTED TO PERMAFROST**



## **ICE AND SNOW CONDITIONS**

- CHANGE OF SEASONS**
- ICINESS**
- STRONGER MELTWATER FLOWS**
- WEATHER**

A topographic map of Longyearbyen, Norway, showing the town's layout and surrounding terrain. A red outline highlights the town's boundary. Two blue location pins are placed on the map, one near the town and one further south. A black box with the text 'Longyearbyen' is positioned to the left of the pins.

Longyearbyen



## ENVIRONMENTS ARE GETTING WETTER

- CHANGE OF SEASONS
- RAIN
- LANDSLIDES
- MELTWATER



## LANDSLIDES

- THAWING PERMAFROST
- LANDSCAPE CHANGE
- WEATHER AND PRECIPITATION





## **EROSION AND WHEN THE COASTLINES MOVE**

**"IT IS AS IF THE COASTLINE IS IN  
CONSTANT CHANGE."**

**-RESIDENT OF SVALBARD**



## **WHEN BRIDGES OF ICE DISAPPEAR**

- CHANGES IN SEA ICE CONDITIONS**
- CHANGE IN TEMPERATURES**
- COMPARISONS OVER SEVERAL YEARS**



## GLACIERS MOLDING LANDSCAPES

- GLACIAL CHANGES OVER TIME
- CREVASSES
- MELTWATER
- MOBILITY AND SAFETY



**MORE POLAR BEARS  
WITH CUBS...**



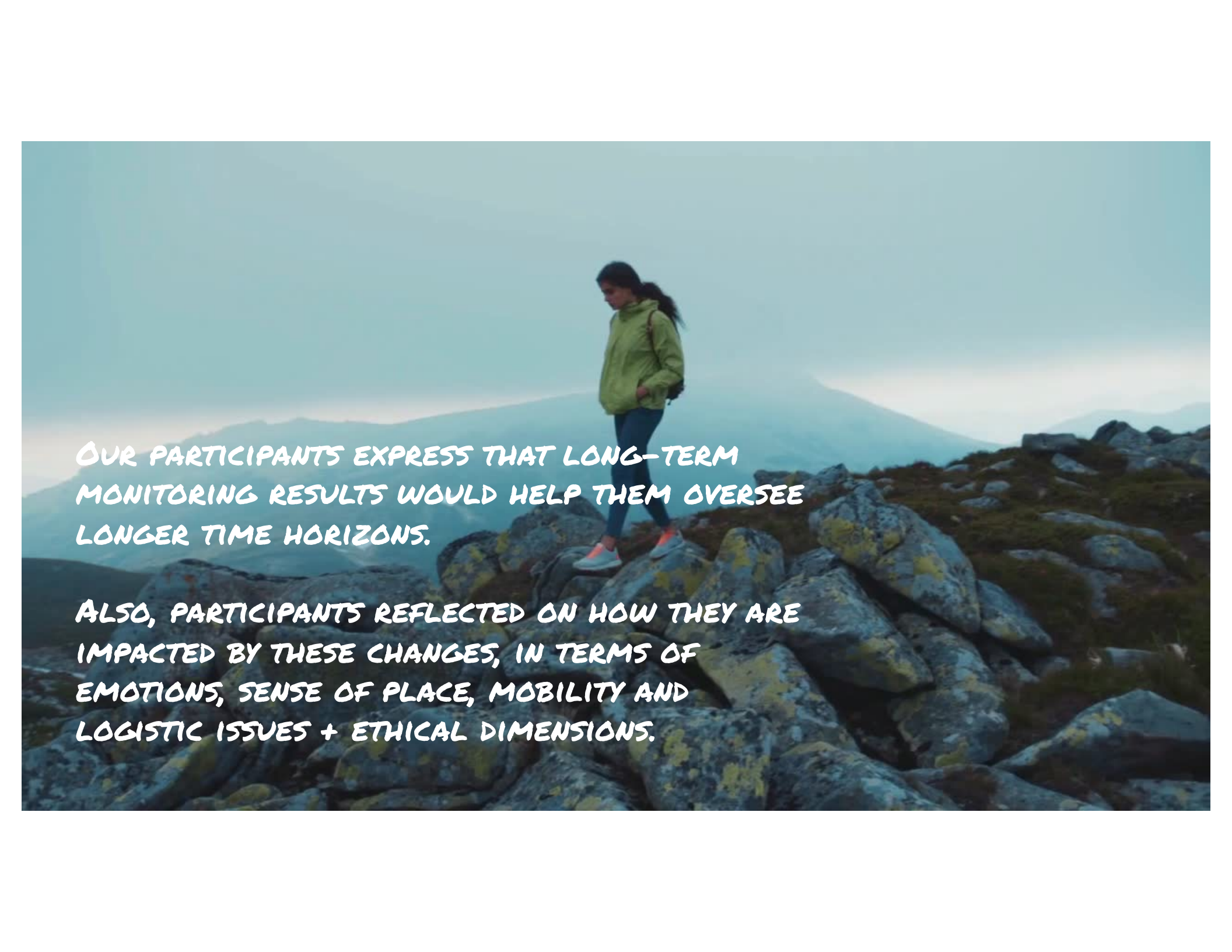
**...AND REINDEER**



## **BUILDINGS AND PERMAFROST**

- BUILDINGS COLLAPSING**
- CHANGE IN LANDSCAPE**

**WHAT DID WE LEARN?**

A person wearing a bright green jacket and dark pants is standing on a rocky mountain peak. The background shows a vast, hazy landscape with mountains under a soft, twilight sky. The person is looking down and to the left.

OUR PARTICIPANTS EXPRESS THAT LONG-TERM  
MONITORING RESULTS WOULD HELP THEM OVERSEE  
LONGER TIME HORIZONS.

ALSO, PARTICIPANTS REFLECTED ON HOW THEY ARE  
IMPACTED BY THESE CHANGES, IN TERMS OF  
EMOTIONS, SENSE OF PLACE, MOBILITY AND  
LOGISTIC ISSUES + ETHICAL DIMENSIONS.



# MAPPING AND ASSESSING THE DIMENSIONS OF LONG-TERM SCIENTIFIC MONITORING

BASED ON METADATA ANALYSIS USING RESEARCH IN SVALBARD, NY ÅLESUND RESEARCH, AND MOSTJ AND SIOS REPORTS, AS WELL AS PUBLICATIONS:

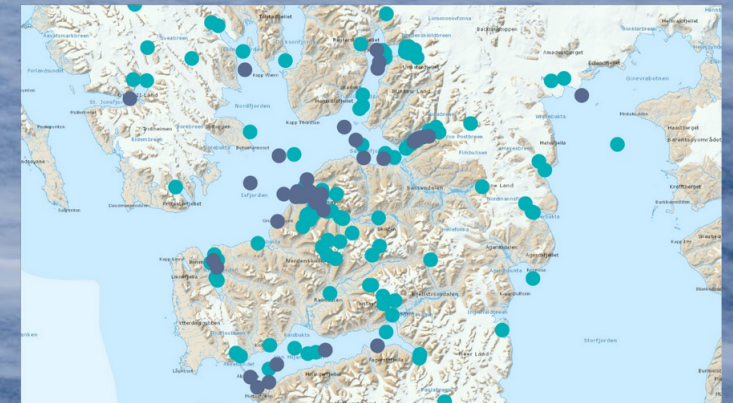
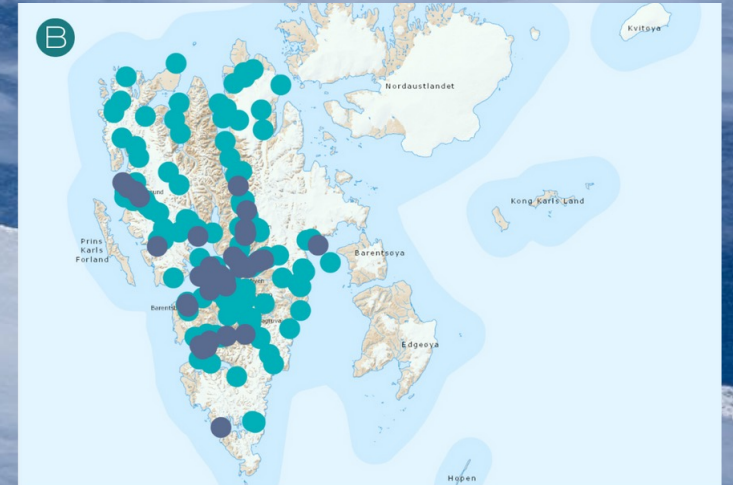
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LEVEL 1	LEVEL 2	LEVEL 3
Climate: Atmosphere	air temperature; precipitation	derived climate parameters: e.g., freeze-thaw events; proportion of rain versus snowfall
Climate: Land	hydroclimate; snow cover; permafrost; glaciers	river discharge; snow-cover depth and duration; soil temperature and active-layer depth; glacier mass balance
Climate: Ocean	sea ice; physical oceanography	sea-ice extent, sea-surface and sub- surface temperature
Ecosystems: Marine	biogeochemistry; phytoplankton and zooplankton; benthos, fish; marine mammals and seabirds	nutrients; chlorophyll; copepod abundance and composition; polar bear population; little auk population
Ecosystems: Terrestrial	mammals and birds; vegetation; integrated ecosystem state	breeding pairs; vegetation productivity; combined multiple indicators

# POSSIBILITIES

## A NETWORK OF OBSERVATIONS

COMPARING THESE ROUTES  
CAN LEAD TO  
IDENTIFICATION OF  
MONITORING NEEDS WHEN  
THINKING OF MOVEMENT,  
SAFETY AND WELL-BEING



# IDENTIFYING FUTURE MONITORING

IS THE MONITORING AND RESEARCH DONE ON SYVALBARD  
VISIBLE, ACCESSIBLE AND RELEVANT FOR LOCAL PUBLICS –  
AND MEETING THE NEEDS IDENTIFIED BY THEM?




# IDENTIFYING FUTURE MONITORING

IS THE MONITORING AND RESEARCH DONE ON SVALBARD VISIBLE, ACCESSIBLE AND RELEVANT FOR LOCAL PUBLICS – AND MEETING THE NEEDS IDENTIFIED BY THEM?

THERE ARE OPPORTUNITIES FOR INCREASING THE RELEVANCE AND INCLUSIVENESS OF LONG-TERM MONITORING OF ENVIRONMENTAL CHANGES.

ALTHOUGH THERE IS AN EXTENSIVE AMOUNT OF LTM, IT IS NOT HOLISTIC AND THERE REMAIN MANY GAPS NEAR AND FAR THAT LOCAL OBSERVATIONS CAN FILL.





IT IS NOT ONLY ABOUT GATHERING  
KNOWLEDGE BUT ALSO HOW YOU GATHER IT,  
WHAT TOOLS YOU USE TO UNDERSTAND AND  
LINK THE NARRATIVES, AND HOW IT CAN  
CONTRIBUTE IN A WIDER CONTEXT AND  
MEANINGFUL WAY...

**WANT TO KNOW MORE:**

**[WWW.ARCTICSUSTAINABILITY.COM](http://WWW.ARCTICSUSTAINABILITY.COM)**

**[WWW.THEGRANDSHIFT.COM](http://WWW.THEGRANDSHIFT.COM)**

**[WWW.A-AAGORA.NO](http://WWW.A-AAGORA.NO)**

**INSTAGRAM:**

**[ARCTIC\\_RESEARCH\\_DIARY](#)**

