

# UNI KKAQATIGIIT



*Putting the human face on climate change*

ᑕᑭᑭᑦᑕᑦᑕᑦᑕᑦ ᑭᑦᑕᑦ ᑭᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦ

PERSPECTIVES FROM INUIT IN CANADA

ᑭᑦᑕᑦ ᑭᑦᑕᑦᑕᑦ ᑭᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦᑕᑦ

*Pre-release English only version*

## Credits:

Inuttitut Translation: Hilda Lyall

Inuktitut Translation: John Takawgak, Martha Flaherty,  
Simona Arnatsiaq

Inuinnaqtun Translation: Allen Maghagak

Inuvialuktun Translation: John Komak

French Translation: Daniel Renaud

Russian Translation: Yana Amis

Photos: Scot Nickels  
Chris Furgal  
Mark Buell  
Heather Moquin  
Robert Moquin

Copy-Edit: Mary Jean McAleer

Design: Earthlore Communications

© 2005 Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

Pre-release English only version

Nickels, S., Furgal, C., Buell, M., Moquin, H., 2005. Unikkaaqatigiti – Putting the Human Face on Climate Change: Perspectives from Inuit in Canada. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.



National Aboriginal Health Organization (NAHO)  
Organisation nationale de la santé autochtone (ONSA)

bəCŋ mə'ʔibɛlɪdʌc d̥ɑːd̥ɑːn̩tən̩sɪj bɔːzɒn̩

# UNIKKAAQATIGIIT



*Putting the human face on climate change*

ᑕᑭᑦᑭᑦᑭᑦ ᑭᑦᑭᑦ ᑭᑦᑭᑦᑭᑦᑭᑦᑭᑦᑭᑦᑭᑦ

## PERSPECTIVES FROM INUIT IN CANADA

ᑭᑦᑭᑦ ᑭᑦᑭᑦᑭᑦ ᑭᑦᑭᑦᑭᑦᑭᑦᑭᑦᑭᑦᑭᑦ

*Pre-release English only version*

WE DEDICATE THIS BOOK TO THE  
WORKSHOP PARTICIPANTS WHO  
OPENLY SHARED THEIR EXPERIENCE  
AND KNOWLEDGE ON CLIMATE  
AND ENVIRONMENTAL CHANGE.  
THEY HAVE TRULY PROVIDED  
THE HUMAN FACE OF ARCTIC  
ENVIRONMENTAL CHANGE.

Հիմա ԴՖԵԼԼԵԿ՝ ՉԳՆՈՇԻՆ ԵՆՖԵՐԵՆՍԻ  
ԼՈՒՆԵՐԴԵՐԵՐԸ ԴՖԵՐԵՆՍԻ  
ՎՃԻՆԵՐԵՐԸ ՎԼ ԵՆԴԼԵՐԵՐԸ ԴԵՐ ՎԼ  
ՎԵՐԵՐ ՎՆԻՐԵՐԸ ԴԵՐ ԴԵՐ ԴԵՐ  
ՎԵՐԵՐԸ ԴԵՐԵՐԸ ԴԵՐԵՐԸ ԴԵՐԵՐԸ  
ՎԵՐԵՐԸ ԴԵՐԵՐԸ ԴԵՐԵՐԸ ԴԵՐԵՐԸ



# TABLE OF CONTENTS

|                                                      |    |                                                     |     |                                  |     |
|------------------------------------------------------|----|-----------------------------------------------------|-----|----------------------------------|-----|
| List of Acronyms .....                               | 1  | Impacts of Environmental Change .....               | 71  | Conclusions .....                | 115 |
| Acknowledgements .....                               | 2  | • Introduction .....                                | 71  | • Evidence of Change .....       | 115 |
| Foreword .....                                       | 5  | • Culture & Knowledge .....                         | 71  | • Inuit Understanding .....      | 115 |
| Executive Summary .....                              | 7  | • Harvesting & Land-Based Activities .....          | 73  | • Working Together .....         | 116 |
| • Executive Summary – Inuttitut Translation .....    | 13 | • Travel .....                                      | 74  | Recommendations .....            | 117 |
| • Executive Summary – Inuktitut Translation .....    | 20 | • Food .....                                        | 78  | • A Way Forward .....            | 117 |
| • Executive Summary – Inuinnaqtun Translation .....  | 25 | • Water .....                                       | 81  | • Research Recommendations ..... | 117 |
| • Executive Summary – Inuvialuktun Translation ..... | 31 | • Vehicles & Equipment .....                        | 81  | • Policy Recommendations .....   | 117 |
| • Executive Summary – French Translation .....       | 37 | • Infrastructure & Housing .....                    | 83  | Raising the Voice of Inuit ..... | 118 |
| • Executive Summary – Russian Translation .....      | 43 | • Economy .....                                     | 85  | Appendix 1 .....                 | 119 |
| Introduction .....                                   | 50 | • Health .....                                      | 87  | Appendix 2 .....                 | 121 |
| • Methods .....                                      | 53 | • Conclusion .....                                  | 89  | Appendix 3 .....                 | 122 |
| • History .....                                      | 53 | Community Response and Adaptation to                |     |                                  |     |
| • Partnerships .....                                 | 53 | Environmental Change .....                          | 95  |                                  |     |
| • Context .....                                      | 54 | • Introduction .....                                | 95  |                                  |     |
| Understanding Inuit Observations,                    |    | • Hunting and Travelling .....                      | 96  |                                  |     |
| Impacts and Adaptations .....                        | 56 | • Resources, Equipment and Infrastructure .....     | 98  |                                  |     |
| Observations of Environmental Change in the Arctic:  |    | • Communication and Information Dissemination ..... | 101 |                                  |     |
| General Trends Across Regions .....                  | 60 | • Health .....                                      | 102 |                                  |     |
| • Introduction .....                                 | 60 | • Food Security .....                               | 103 |                                  |     |
| • Weather (Wind and Storms) .....                    | 61 | • Traditional Skills, Education and Research .....  | 104 |                                  |     |
| • Temperature .....                                  | 61 | • Community Recommendations and Needs .....         | 105 |                                  |     |
| • Sky (Sun, Stars and Moon) .....                    | 62 | • Erosion and Land Protection .....                 | 106 |                                  |     |
| • Precipitation (Rain and Snow) .....                | 62 | • Continued Observation/Documentation .....         | 106 |                                  |     |
| • Ice .....                                          | 63 | – Financial Support .....                           | 106 |                                  |     |
| • Land .....                                         | 63 | – Taking Local Responsibility .....                 | 106 |                                  |     |
| • Water .....                                        | 65 | – Supporting International Activities .....         | 107 |                                  |     |
| • Vegetation and Wildlife .....                      | 65 | – Community-Scale Research and Information .....    | 107 |                                  |     |
| • Conclusion: Patterns and Discrepancies .....       | 66 | • Conclusion .....                                  | 108 |                                  |     |

## LIST OF ACRONYMS

**ATV** – All Terrain Vehicle

**CBC** – Canadian Broadcasting Corporation

**GPS** – Global Positioning System

**HTO** – Hunters and Trappers Organization

**IISD** – International Institute for Sustainable Development

**IQ** – Inuit Qaujimajatuqangit

**IRC** - Inuvialuit Regional Corporation

**ISR** – Inuvialuit Settlement Region

**ITK** – Inuit Tapiriit Kanatami

**NGO** – Non-governmental Organization

**PRA** – Participatory Rural Appraisal

**UV** – Ultraviolet

**ZOPP** – Objectives Oriented Project Planning

## ACKNOWLEDGEMENTS

First and foremost, the workshop team would like to thank all of the workshop participants for their participation and for sharing their knowledge on climate and environmental changes. A full list of participants, organized by community and region, is provided in Table 1. The team would like to also thank all Inuit in the four regions and elsewhere for making the members feel welcome throughout their visits.

We would like to thank the following specific individuals and organizations for their help, participation, efforts and humour during the workshops that were conducted and for all their work in the organization and planning of the workshops. In the Inuvialuit Settlement Region (ISR), thank-you to Norm Snow, Roger Connelly, Jerome Gordon, Diane Dillon, Agnes Tardiff, Robin Fonger, Barbara Armstrong, Mark Buell, Lillian Kanayok, Heather Hansen, Chris Alway, CKHI FM Radio Station, Debbie Raddi, and Eleanor Ross. Special thanks goes to Markusie Qiisiq, Betsy Etidloie, Johnny Qinuajuak, Johnny Uitangak and Sarah Mark-Tardif in Nunavik, K Naeme Tuglavina, Sarah Obed Mary Denniston and Frances Murphy in Nunatsiavut, Christopher Amautinuak, Hugh Haqpi, John Ningark, Nick Amautinuak and Mishak Allurut in Nunavut for acting as interpreters / translators for the discussions and for helping to plan and carry-out the community aspects of the workshops.

We would also like to thank the following organizations and individuals for allowing their employees to participate in the workshops and for their interest and support in the project: In Nunavut, the Hamlet Councils of Kugaaruk, Repulse Bay and Arctic Bay, the HTO of Arctic Bay, Philippe Lavallee, Nunavut Tungavik Incorporated and the Nunavut Research Institute as well as the Naujat Hotel in Repulse Bay. In Nunatsiavut, the Nunatsiavut Inuit Association, the Nunatsiavut Inuit Health Commission, the Town Councils of all coastal communities and OKalaKatiget TV and Radio. In Nunavik, the Nunavik Regional

Board of Health and Social Services, the Nunavik Nutrition and Health Committee, Kativik Regional Government, the Parks Office in Kangiqsujaq, the Municipal Offices in Ivujivik and Puvirnituk and the Town Councils of Kangiqsujaq, Ivujivik and Puvirnituk. In the ISR, International Institute of Sustainable Development, the Inuvialuit Regional Corporation, the Joint Secretariat: Inuvialuit Renewable Resource Committee, the Hunters and Trappers Committee (Aklavik, Inuvik, Tuktoyaktuk, Paulatuk), Olokhaktomiut Hunters and Trappers Committee, Aklavik Hamlet Office, Holman Island Hamlet Office, Southwind Radio Station, Diane Ruben, Paulatuk Visitor Centre, Parks Canada, Gilbert Thrasher Sr., Heather Hansen and Chris Alway.

We would also like to thank all of the individuals who helped in the coordination and facilitation of the community workshops. The complete research teams for each community are listed in Table 2.

We would also like to acknowledge those that provided the financial support for this project. First, special thanks to the Northern Ecosystem Initiative of Environment Canada for recognising the value of Inuit knowledge and the need for long-term resources. This program not only provided the initial funding, but also consistent advice from their partners and financial support throughout the life of this project. We'd also like to thank Health Canada, le Ministère des Services de Santé et Sociaux du Québec for providing funding and the Canadian Institute for Health Research who contributed to the project through financing a fellowship provided to Chris Furgal. Finally, we'd like to express appreciation to Leslie Whitby and Indian and Northern Affairs Canada for financing the publication of this book.

## TABLE I: LIST OF WORKSHOP PARTICIPANTS

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nunavik</b>                            | Mattiusi Luuku, Pauloosie Qaunnaaluk, Saviarjuk Usuarjuk, Mattiusi Iyaituk, Mary Ainalik, Johnny Qinuajuak (Interpreter / Translator), Sarah Mark-Tardif (Interpreter / Translator). Nellie Nungak, Samisa Sala, Eli Kenuajuak, Tamusi Sivuarapik, Lizzie Sivuarapik, Lucassie Qumaaluk, Paulasi Kanayuk, Annie Amamatuak, Putuguk Qumaaluk, Atami Putuguk, Minnie Assapak, Matiusi Amarualik, Johnny Qinuajuak (Interpreter / Translator), Johnny Uitangak (Interpreter / Translator). Aqujaq Qisiq, Inuluk Qisiq, Minnie Editloie, Naalak Nappalak, Tiisi Qisiq, Amamak Jaaka, Opigak Ilimasaot, Jessica Arngak, Adami Alaku, Bernie Adams, Atittuq Kiatainaq, Annie Alaku, Aloupa Kulula, Aisik Sakiagak, Markusie Qiisiq (Interpreter / Translator), Betsy Etidloie (Interpreter / Translator).                                                                                                                                                                                                       |
| <b>Nunavut</b>                            | Kaujak Pauloosie, Joseph Kautaq, Atagutak Ipeelee, Lisha Qavavaug, Mucktar Akumalik, Daniel Iqaqrialu, Lisha Levi, Olayuk Kigutikakjuk, Sam Ipirq, Rhoda Tooloogak, Bertha Tatatuapik, Joseph Omadlah, Leah Oqallak, Mary Tatatoapik, Mishak Allurut (Interpreter / Translator). Otto Apsaktaun, Guy Kakkianiun, Gino Akkak, Barthelemy Nirlungayuk, Christian Nalungiaq, Jose Angutingunierk, Columban Pujuardjuk, Charlie Niptayuk, Makabe Nartok, John Ningark (Interpreter / Translator), Nick Amautinuak (Interpreter / Translator). Cecelia Angotialuk, Donat Milortok, David Tuktudjuk, Elizabeth Mapsalak, Sata Kridlapik, Alice Nanorak, Peter Manik, John Ivalutanar, Honore Aglukka, Jennifer Kadjut, Joni Kringayark, David Numiqtaqtuq, Christopher Amautinuak (Interpreter / Translator), Hugh Haqpi (Interpreter / Translator).                                                                                                                                                            |
| <b>Inuvialuit Settlement Region (ISR)</b> | William Vaneltsi, Lucy Adams, Ruby McLeod, Sarah Tingmiak, Johnny Banksland, Andy Tardiff, Joe Teddy, Mary Teddy, Walter Elias, Jessie Colten, Elias Aviugana, Maureen Elias, Deva Gordon, Elizabeth Firth, Albert Bernhardt, Agnes Nasogaluak, Catherine Mitchell, Mary Allen, Louie Goose, Roy Goose (observer), Lynn Lau (observer). Danny A. Gordon, Annie B. Gordon, Carol D. Arey, Jacob Archie, Danny C. Gordon, Pat Kasook, Jerome Gordon, Louisa Kelanik, Jim B. Edwards, Agnes Edwards, David John, Alice Husky, Gary Montgrand, Ruth Furlong, Faye Gordon (observer). Maureen Pokiak, Agnes Felix, Noah Felix, Lena Anikina, Dennis Raddi, Bradley Voudrach, Ernest Pokiak, Emmanuel Adam, Billy Jacobson, Ernest Cockney. John Alikamik, Lisa Alikamik, Anita Oliktoak, Joshua Oliktoak, Ryan Oliktoak. Connie Green, Josie Green, Peter Green, William Kuptana, Brenda Ruben, Edward Ruben Sr., Kathy Ruben, Larry Ruben, Mary Evik Ruben, Peter Ruben, Veronica Ruben, Gilbert Thrasher Sr. |
| <b>Nunatsiavut</b>                        | Mary Dicker, Sarah Ittulak, Julius Merkuratsuk, Ronald Webb, Gus Dicker, Joe Webb, Pauline Andersen, Randy Keizer, Horace Goudie, Mary Adams, Boas Jararuse, Clara Ford, Joas Fox, Silpa Edmunds, Douglas Jacque, Kitty Jacque, Winnie Michelin, Jack Shiwak, Allan McNeil, K Naeme Tuglavina (Interpreter / Translator), Sarah Obed (Interpreter / Translator).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## TABLE 2: LIST OF RESEARCH TEAMS FOR COMMUNITY WORKSHOPS

|                              |                                                                                                                              |                                                                                                                                                                                                                                   |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NUNAVUT                      | Kugaaruk                                                                                                                     | Scot Nickels, Chris Furgal, Andrea Carter, Heather Moquin, Mark Buell, Jamal Shirley, Tanya Nancarrow (Invited Researcher), John Ningark (Interpreter/Translator) and Nick Amautinuvar (Interpreter/Translator).                  |
|                              | Repulse Bay                                                                                                                  | Scot Nickels, Andrea Carter, Heather Moquin, Mark Buell, Jamal Shirley, Christopher Amautinuvar (Interpreter/Translator), Hugh Haqpi (Interpreter/Translator) and Tanya Nancarrow (Invited Researcher).                           |
|                              | Arctic Bay                                                                                                                   | Scot Nickels, Chris Furgal, Joanasie Akumalik, BJ Barnes, Mishak Alllurut (Interpreter/Translator) and James Ford (Invited Researcher).                                                                                           |
| NUNAVIK                      | Puvirnituk                                                                                                                   | Chris Furgal, Pitsey Moss-Davies, Pierre Marchand, Daniel Martin, Johnny Qinuajuak (Interpreter/Translator) and Johnny Uitangak (Interpreter/Translator).                                                                         |
|                              | Ivujivik                                                                                                                     | Chris Furgal, Pitsey Moss-Davies, Daniel Martin, Pierre Marchand, Johnny Qinuajuak, (Interpreter/Translator) and Sarah Mark-Tardif (Interpreter / Translator).                                                                    |
|                              | Kangiqsujuak                                                                                                                 | Chris Furgal, Pitsey Moss-Davies, Markusie Qiisiq (Interpreter/Translator) and Betsy Etidloie (Interpreter/Translator).                                                                                                           |
| INUVIALUIT SETTLEMENT REGION | Aklavik                                                                                                                      | Chris Furgal, Scot Nickels, Pitsey Moss-Davies, Jennifer Castleden, Mark Buell, Robin Fonger, Barbara Armstrong, Diane Dillon and Faye Gordon (Observer - Resource Person, Aklavik Hunters and Trappers Committee).               |
|                              | Inuvik                                                                                                                       | Chris Furgal, Scot Nickels, Pitsey Moss-Davies, Jennifer Castleden, Mark Buell, Robin Fonger, Barbara Armstrong, Richard Binder, Roy Goose, (Observer - Inuvik, CBC) and Lynn Lau (Observer - Northern News Services Limited).    |
|                              | Tuktoyaktuk                                                                                                                  | Chris Furgal, Scot Nickels, Pitsey Moss-Davies, Jennifer Castleden, Mark Buell, Robin Fonger and Barbara Armstrong.                                                                                                               |
|                              | Holman Island                                                                                                                | Pitsey Moss-Davies and Robin Fonger.                                                                                                                                                                                              |
|                              | Paulatuk                                                                                                                     | Pitsey Moss-Davies and Robin Fonger.                                                                                                                                                                                              |
| NUNATSIAVUT                  | One workshop was held with participants from Rigolet, Happy Valley-Goose Bay, Nain, Northwest River, Makkovik and Postville. | Mary Denniston, Chris Furgal, Scot Nickels, Daniel Martin, Pitsey Moss-Davies Frances Murphy, Sandra Owens, K Naeme Tuglavina (Interpreter/Translator), Sarah Obed (Interpreter/Translator) and Becky Sjare (Invited Researcher). |



*Mr. Jose A. Kusugak,  
President, Inuit Tapiriit Kanatami*

## FOREWORD

When an environmental change occurs, especially one caused in part by human behaviour on a global scale, it doesn't just affect flora and fauna, it affects all living things including people. To address the impacts of change, it makes sense to consult with those most affected.

In this case it is the Inuit, living in the vast Arctic regions, who are feeling the first and substantial effects of global warming. Forces mostly outside of the Arctic have caused climate change, manifested in the Arctic by changing sea-ice, tundra, and wildlife patterns. And the traditional Inuit way of life is threatened.

Inuit must adapt, once again. Inuit are going to have to find new ways to make a living from the land. And whatever form that takes, it will not be what Inuit would have wished for, it will not be ideal, and it will not be an uninterrupted continuation of the traditional ways. We know this because the old ways are already being changed to adapt to the changing conditions.

I could list the already familiar symptoms of our warming Arctic. I could give a recounting of stories Inuit elders and

hunters have been telling for years about the new perils they face on the land. But just as the Newfoundland fishers recounting their plight didn't bring the cod back to the Grand Banks, talking about the effects of global warming on the Arctic isn't going to stop the impacts from growing. Still, Inuit are taking action to ensure the world is aware of how these climactic changes are not only threatening the survival of traditional Inuit culture but the earth's survival.

At international fora such as the United Nations, domestically in Canada, and at specific venues around the world Inuit have spoken out to alert the planet of the critical changes occurring at an ever increasing rate across the Arctic regions.

That's what makes the book you are holding so important. Inuit Tapiriit Kanatami and Inuit across the Arctic and Canada have made tackling climate change a priority. But Inuit don't have the monetary, infrastructure, or human resource capacity to go it alone. *Unikkaaqatigiit: Putting the Human Face on Climate Change* is the result of collaboration between Inuit Tapiriit Kanatami, the Nasivvik Centre for Inuit Health and Changing Environments at Laval University, the Ajunnginiq Centre at the National Aboriginal Health

Organization, and the regional Inuit land claim organizations.

Inuit, who are already being deeply affected by changes to the climate, must play an integral role in studying climate change and in any efforts to curb and adapt to it. Our millennia-old traditions are already being altered because of the warming Arctic, and we face the possibility of having to completely reinvent what it means to be Inuit. This is a prospect that we fear.

We have already undergone immense changes as a result of colonization and modernization. We are still struggling to deal with these changes, and having to adapt our ways completely to a different world is not only far from ideal, it is unacceptable. I hope processes like the one that lead to *Unikkaaqatigiit*, where Inuit and non-Inuit working together to face the challenges of climate change, will continue on a larger scale with our full participation, because our very way of life is at stake.

It was mentioned several times that the workshop process that led to *Unikkaaqatigiit: Putting the Human Face on Climate Change*, was a start,

that it just “scraped the surface” of the problem. But we’ve all heard the ancient Chinese proverb, what Lao-tzu said about a journey of a thousand miles. *Unikkaaqatigiit* is that single step that will begin our journey towards having Inuit as full partners in dealing with climate and environmental change across the Arctic.

A handwritten signature in black ink, appearing to read 'Utuqungasuk' or similar, with a stylized, flowing script.



“Our Elders tell us  
that ‘in those days it  
was a different time  
where the ecosystem  
and the land were  
beautiful”

(Repulse Bay, Nunavut).

## EXECUTIVE SUMMARY

The Arctic environment is changing. In fact, a number of scientific models suggest that the Arctic will be one of the most severely impacted regions from global climate change. As this northern region experiences dramatic environmental change, Inuit are already observing the changes, experiencing the impacts and being forced to respond.

The Inuit Tapiriit Kanatami (ITK), the Nasivvik Centre for Inuit Health and Changing Environments at Laval University, and the Ajunnginiq Centre at the National Aboriginal Health Organization, in cooperation with the regional Inuit organizations and communities and other partners, conducted a series of workshops focused on environmental change and what it means for communities in the four Inuit regions of the Canadian Arctic. These workshops were held from 2002 to 2005 following an International Institute for Sustainable Development research initiative in Sachs Harbour, Northwest Territories, in 2001. This book, *Unikkaaqatigiit: Putting the Human Face on Climate Change – Perspectives from Inuit in Canada*, presents the results from these workshops.

In the workshops, the project team assisted community members in recording observations, impacts and local adaptations taking place as a result of climate and other forms of environmental change. The observations reported are indicative of an Inuit awareness that the environment is changing or has changed in specific ways. Some of the common observations identified include: increased frequency of storms; thinning ice and snow; increased frequency of freezing rain events; and, increased intensity of solar radiation.

Workshop participants also identified how these observed changes are having an impact on individuals and communities: unpredictable weather is resulting in more people being stranded on the land; changes in ice and snow conditions and weather predictability has hindered access to country foods, which, in turn, has resulted in shifts in the consumption patterns of other foods; thinning ice has had an impact on travel routes, the timing of travel and the types of vehicles used; changes to lakes and rivers have affected fresh drinking water sources; and increased UV exposure is causing more sunburns and rashes.

In many cases, individuals and communities have already started to adapt or react to

these impacts in order to minimize the effects. For example, in the Inuvialuit Settlement Region (ISR), fish channels in rivers have been dredged to respond to declining fish populations due to significantly lower water levels.

Workshop participants identified a web of complex relationships between observations, environmental impacts and impacts on the people living in the North. The increased incidence of freezing rain and thaw-freeze events serve as a perfect example. In nearly all regions, it was reported that increased ice cover in winter over lichen (as a result of thaw-freeze events or freezing rain events) has decreased access to lichens, the primary source of food for caribou. With less food to eat, the caribou are now thinner and in poorer health. Furthermore, these animals must travel farther distances in search of lichen, and are often found to be travelling to new areas. They are therefore harder to locate or access when hunting. This in turn has an impact on the food security of Inuit and Inuit communities, as both the quality and the accessibility of caribou meat have decreased, in some communities. Communities have recommended potential adaptations to this situation: the

introduction of food exchanges, the establishment of community freezers where they do not already exist, and local informal education of the hunters in terms of becoming more selective about the caribou they hunt.

Not all recorded changes in the environment or climate reported by Inuit have a negative impact. For example, a changing climate has led to the introduction of new species, some of which may be beneficial for Inuit to harvest in the future. The introduction of spruce hens in the Inuvik, Northwest Territories area, and moose along the Nunatsiavut coast bring the potential for new food sources, although restrictions on the hunting of some of these new species currently exist. Also, the shifting seasons mean that some activities, such as fishing, whaling and sealing, may be conducted later into the season than in previous years. However, this book reflects the observations and impacts as identified by Inuit and, accordingly, most of the observations to date are reported to have resulted in negative impacts that, in some cases, require significant adaptive measures.

The evidence reported in the workshops indicates that Inuit are especially vulnerable to changes in the Arctic environment. As a result of altered migration routes and travel routes, hunters must now travel further, or



“Making the scientific community aware of our knowledge is important. We have a long history of being on the land and we want to provide local and traditional information that science does not have”

(Inuvik, ISR).

along adjusted routes, to harvest country foods. This has an impact on food security in a community, increased household expenditures to access country foods, and safety of hunters using new and increasingly risky travel routes. Limited access to country foods also leads to a greater reliance on some expensive store-bought foods. No doubt this alteration in diet—from healthy, nutrient-dense country foods to refined store-bought foods—may significantly impact the health of the Inuit, which in turn has far reaching implications in communities.

Virtually all communities identified that predicting the weather based on traditional methods is becoming more difficult. This puts Inuit at greater risk, as residents are more likely to get stranded out on the land or caught in bad storms. Increasing frequency of extreme weather/unpredictable weather events, an inability to rely on traditional weather/navigational cues, and more landscape hazards is resulting in increased damage to and loss of infrastructure and vehicles. In some cases, in combination with impacts to infrastructure such as airstrips, these factors have made medical evacuations more difficult. Additionally, landscape hazards and extreme or unpredictable weather patterns prevent individuals from getting out on the land as often as they used to and create longer periods of time between seasons. The lack of access to the land and sea during these transitional season-

al periods makes people more vulnerable to stress or anxiety (referred to in some communities as “spring fever”).

All regions reported a decrease in both quality and quantity of fresh drinking water sources as a result of changes in precipitation regimes, waterways and water levels in their local area. Decreased availability of these sources increases the chance of Inuit drinking contaminated water, particularly for those who use, by choice, untreated water supplies. Poorer water quality implies a need for more or improved drinking water infrastructure. Some regions reported that Elders are reluctant to drink treated water, making them particularly vulnerable to water-borne diseases. As well, maintaining freshwater related infrastructure is both difficult and expensive, especially in an environment that is forecast to receive more frequent extreme events and changing or destabilizing permafrost conditions related to warming and melting of the structural foundation.

Responses to cope with or adapt to the impacts these changes yield in northern communities have taken a variety of forms, from building cabins out on the land (to reduce the need to travel back and forth from the town to harvesting sites and to provide safe shelter for those stranded because of increasingly unpredictable weather) to taking bottled water on trips on the land (in reaction to

the decreased availability and quality of natural sources of drinking water).

A number of reported adaptations are related to habit-changing behaviours. Some communities in the ISR noted that individuals are dressing more appropriately for the new conditions brought on by changes in the insect population. They are also beginning to install mosquito netting on windows in their homes in response to the increased incidence of biting flies. Also in the ISR, warmer water temperatures are reported to be causing fish caught in nets to rot more quickly. In response, fishers are checking nets and collecting fish more often. They are also harvesting fish earlier in the year. In Nunatsiavut, geese are harvested earlier in the year, and in Nunavut, seals are increasingly harvested in the summer when they are fatter and less likely to sink when shot.

The ability to shift the time and place of harvesting activities by a community was reported to support their ability to adapt to the changes taking place. As noted above, some regions and communities have already shifted the times and places where they hunt certain animals. This has occurred as a natural adaptive response and, in most cases, it is viewed as part of being an Inuit hunter. However, there is a need for enhanced flexibility from regulators in wildlife management regimes and regulations as well, if harvesting activities must occur outside of regular or currently defined hunting seasons or established boundaries due to changes in animal movements or migration times. In other regions,

flexibility may be required to allow the harvest of new or invasive species to take advantage of the opportunity that change provides. For example, participants in northern Nunatsiavut expressed concern that although moose were now appearing in their region, they could not yet harvest them because of hunting regulatory restrictions. As ecosystems change, regulatory frameworks must adapt to reflect the realities of the land and the needs and changing relationship of Inuit to their surroundings.

The access to and use of various technologies and new forms of infrastructure were identified in the context of adaptive measures as well. In Arctic Bay, Nunavut, bigger and faster boats are being used in response to rougher and more unpredictable waters, and global positioning system (GPS) technology is being used to aid navigation. Even though technology has played a role in some instances, communities did not unanimously advocate for western technological fixes. In Kugaaruk, Nunavut, and Ivujivik, Nunavik, some participants noted that travel by dog team is safer than more modern technologies, such as snowmobiles, and should therefore be used more often. Many individuals support the use of a mixture of traditional and modern measures to deal with environmental changes most effectively.

Some of the adaptive measures recommended by communities involved the

communication of information and strengthening of abilities to share information among individuals in a community or between communities and regions. First, better communication between communities and regions would facilitate the sharing of information about successful coping and adaptive measures. Second, some communities stated that increased communication capacity could support the collection and dissemination of updates on local conditions by a central source on ice, land and weather conditions. This service would lower the risk for hunters and travellers out on the land. Although many hunters already use radio to stay in contact while on the land, it was stressed that there is increased need and support for such communication in an environment that is becoming more variable. And third, participants noted that greater accessibility to regional-specific weather forecasts (similar to those available for other southern Canadian regions) would be helpful.

Many of the adaptations already in place or recommended by community residents require economic resources. However, not all households or communities have access to these resources, and some forms of revenue are even being impacted by the changes taking place. For instance, some communities, particularly in the ISR, have identified that revenue from trapping and hunting is already decreasing. So for some, household and community expenditures will increase in an effort to adapt to impacts related to climate change while their income will be decreasing.

The issue of financial resources is particularly important because the ability of individuals and communities to implement a number of adaptation strategies depends on their ability to pay for them. Some communities identified the need for support as a result of increased expenditures on fuel, on repairs to snowmobiles, and on the acquisition of faster or larger boats, depending on the local environmental circumstances being faced. Community freezer programs were noted as a possible adaptive measure in many communities where they do not already exist. However, many also reported that community freezers are expensive to operate and manage. The construction of infrastructure for treatment of drinking water and breakwalls to prevent shoreline erosion, as well as improvements to existing housing—these activities cost money. Whether it is minor investments for the installation of mosquito netting for homes or a major expenditure in shoreline erosion projects or better water treatment infrastructure, communities noted that the costs associated with some adaptive strategies make them prohibitive and unrealistic to consider.

This book reveals the importance of co-operation and partnerships among various levels of government, among government departments, with non-governmental organizations, and most importantly, involving Inuit in order to develop meaningful and effective solutions to environmental change in the Arctic. The partnerships developed in this endeavour brought together a scientific understanding of environmental change with



“The land has been  
changed by machines.  
We used to be able to  
lie on the land and  
smell its sweetness.  
It used to be comfortable  
with plants and flowers”

(Paulatuk, ISR).

Inuit understandings of actual changes taking place at the local level and what these changes mean to Inuit. The knowledge gained through the exchange of different ways of knowing helps to identify and overcome the significant challenges Inuit face today and will face in the future. Continued partnerships and strong community-level involvement are crucial in the development of policies, programs and strategies that successfully cope with environmental change.

Community residents involved in these workshops expressed appreciation that Elders, adults and youth had the opportunity to gather, discuss and learn from each other on this important subject. They also stressed the need to continue work on this issue as the workshop format simply “scraped the surface” of the knowledge existing within communities. Participants suggested that further detailed studies could be undertaken to document the full breadth of Inuit knowledge.

Community participants identified a variety of groups that should receive information from the workshops, ranging from local and regional governments and wildlife management organizations all the way up to international bodies, such as the Arctic Council and the United Nations. There was general consensus from all groups for the need to “get the word out”; in this context, participants identified a number of clear policy and service recommendations.

Most importantly, this partnership project has provided a venue for Inuit to express their concerns, ideas and knowledge, and has given some support to the Inuit voice on an issue that affects their lives on a daily basis. The project partners hope that community concerns can be brought to the attention of regional, national and international governments and institutions where policy change can be achieved. Further, the information in this book provides a solid platform to begin the development of tools that will allow community decision-makers to include climate change scenarios and potential impacts in their everyday activities.

It is clear that Inuit have been adapting to the effects of climate change for some time. This puts Inuit in the rare position to teach the rest of the world about what may be to come. Inuit ingenuity and knowledge in adapting to local-scale environmental change can set an example for communities that may face these issues in the near and distant future. Regrettably, this ability to adapt has never been more important for Inuit than it is today. Environmental changes—of all kinds—are coming at a rate and to an extent that may exceed the threshold of Arctic peoples’ capacity to respond.





“It is more difficult to  
predict the weather  
now. It is changing”

(Arctic Bay, Nunavut).

## ANGAJUKÂNGULUANIT PIJUT (EXECUTIVE SUMMARY - INUTTITUT TRANSLATION)

Tamanna Arctic aujuittuk avatinga asianguvallialittuk. Allâlu, unuttumaget sunagalatuinnanik kamajingit isumaKajut tâmma Arctic ilagijaugajatuk sukkutaunimmut tamatsumangat silatsuap silanga asianguvallianinganut. Solllu tamanna tachagalavut tikitaual-liallippiat avatinga asiangutitaumaginim-mut, Inuit manna takuKattaligettut asianguvallianinganik, Kaujivalliallutillu attutauninganik ammalu ajunnamat kiugutigigiaKalidlugu.

Tamakkua Inuit Tapiriit Kanatami (ITK), Nasivvik atuttauKattatuk mitsânut Inuit InosiKatsianinginnut amma Asianguvallianinginnut Avatingit Ilinniavialuni Laval University, amma tâmma Ajunnginiq Centre uvani National Aboriginal Health Organization, ikajuttigedlutik tamâne-galattut Inuit katutjiKatigenningit ammalu nunalituKait asingillu ikajutil-lugit, kamasimajut adjigengitunik workshopidlutik mitsânut avatet asian-guallialimmata ammalu Kanuk tukiKaniallimmangât nunalituKaujunut tamakkunani Inuit Kanitagenninginni Canadamiut Ajujittoningani Arctic-mi. Tamakkua katimadlutik pigiasilauttut 2002-mit 2005-tikidlugu kingungani International Institute for Sustainable

Development Kimigguningit pigiasijaulaum-mat Sachs Harbour-mi, Northwest Territories, 2001-mi. Tâmma Kaujisautik, *Unikkaaqatigiit: Putting the Human Face on Climate Change – Perspective from Inuit in Canada* (kenattâgumadlugu Silaup Asianguvallianinga – Pitillugit Inuit Canadamiit) sakKititsilauttut ukuninga tamakkunangat katimattunit.

Tamâni katimajuni, tamakkua suliamik suliaKajungit ikajulauttut nunak Katigejunik alladlutik takusimajamminik, sukkutauniKagajappata ammalu nunammini atugiaKasimajamminik pasidlugu silak sulimmangât ammalu asingit ilupsitâttujut avatinga asianguvallialimmat. Tamakkua takuKattatut alladlutik Inuit Kaujivalliatanginnik tamanna avatinga asianguvallilimmat ugvalu asiangusiman-ninginnik adjigengitukkut. Ilangit takujauKattatut Kaujidlugit ukuangujut: silalukauvalliaKattaluanninga; sâttoluak sikunga amma Kanningalu, KuaKattananga silannilulimmat; amma, unannisauval-lianingalu silatsuap pusinga.

Workshopimelauttut Kaujilaummijut amma Kanuk tamakkua takujangit asiangugialla-mata sukkutauniKatitsittuk kinakkunik ammalu nunalituKauvinginnik: nigijugijaungi-tuk silaup ilupsinga inunnik

nukKangatitsilidluni nunatsuami;  
asiangumat sikuit Kaniningalu silaullu  
sunialimmangât agviaKattalittuk  
nunatsiami niKitsasiugiamut, taimâk,  
pasijaunialidluni nigijauKattagianginnut  
niKet asingit; sâttoluadlallimmat sikuk  
sukkutauniKatitsilittuk namogumanim-  
mut, sidonitinga aullagiamut amma  
sunamik aullautimik atunialimmangâm-  
mi; asiangutitauningit taset kollu  
îmitsianguKattatunik piungilititsidlutik;  
amma piluadlatukut UV-Kalidluni otâtti-  
sisongulittuk puijuKaluaKattalidlunilu.

Unuttumagigalanni, kinakkut amma  
nunalituKait manna allât pigiasisimalit-  
tut inogiamik ugvalu atugiamik  
tamakkununga sukkutauitsilittuk ikajut-  
siutisanullu Kaujisadlutik ânnianginit-  
sauniannimut. Sollu ukua, taipsumani  
Inuvialuit Settlement Regionimi (ISR),  
apKutigiKattatangit ogait konni machak  
pejattaugiaKalidluni ogait nunguvallial-  
immata imanga panivallialuadlallimmalu.

Workshopimut ilaujut Kaujisimajut  
Kagitaujakkut nalunattumaginnik ilage-  
galannikut akungani takunnajamminik,  
avatingit sukkutaumoKammata ammalu  
sujauninganut inuit inojut Tachâni.  
Piluadlatumik Kuannatumik silannilulim-  
mat ammalu aukKâdluni-Kuammat

tamanna sulimmagittuk. Tamakkunani  
ilonnagalanginni sanilligegalait,  
Kaujitisimajut auttaililuadlaKattaniganik  
okiumi KoadjaKutet nigijaugunnagunnaima-  
ta (sollu aukKâdluni-Kuammat ugvalu  
Kuasâdlasomik silannilummat pasijaujok)  
nigigunnangiKattaatut KoadjaKutinnik,  
nigigialinginnik tuttuut. NiKitsaKatsianginim-  
mut, tamakkua tuttuut salulijut ammalu  
inosiKatsianginitsaulittut. Ammalugiak,  
tamakkua omajuit ingiggagiaKalittut  
Kaningiluamut niKitsasiujut, amma aijalid-  
lutillu nutânut pitaKammangâta.  
Taimaidlutik ajunnalualittut takugiangit  
ugvalu pinasuagiattugiamut. Taimâk  
amma sukkunattuk niKinginnut Inuit  
Inuit nunakKatigenninginnulu,  
tamaita piuningit pijausonguningillu  
tuttuviniKanginitsauKattalimmat.  
NunalituKait pikKujaliangutitsisimajut  
atugajattaminik tamatsumunga;  
Kaujigiamut niKinnik Kanuk tautsilitsatâ-  
giamut, pitâttulutik nunakKatigeni  
Kuatsevitsanik pitaKangipata, ammalu  
Kaujimanitsaugiamut ilillutik  
pinasuaKattatut mitsânut nallinginnik  
tuttunik pinasujutsaunimmut.

Ilonnatiungituk allatausimajut mitsanut  
asiangusimajut avatinginni ugvalu silak  
pillugu taijangit Inuit sukkutauniKangitun.  
Sollu, asiangumat silak atusok Kaujijauluni



“Weather forecasting  
is difficult now. Elders  
are not predicting the  
weather because they  
do not feel that the  
prediction will be reliable”

(Nunatsiavut).

nutanut oganut, ilangit ikajugajak Koninginnik Inuit tigullalippait sivunit-savut isumagillugit. Tamakkua kauji-jauningit agigget Inuvik-mi, Northwest Territorigalammi, amma tuttugait (moose) Labradorip satjugiangani isumagijaugajattut niKitsagial-launitsanginnut, taimâk maligatsa-Kagaluatillugu pinasuagiangit ilangit tamakkua nutât manna tamânejut. Ammalugiak, ablasângutitsimata nalli-uninginnut sujuKalimmat ilanginnut, sollu ogannianik, apvet amma puijet, kamagijaunialittilugit siagugiak nalliunimmi sollu Kauji-jauningit Inunnut amma, taimatsainak, ilonnagalattik takujait mânnamut allataudlutik atungininginnik sukkutauninginnut taimâk, ilanginni, atugiallagialet tiguangunialittilugit Kauji-jauningitigut.

Tamanna takunnatukkut Kaujitsisjuk katimajuni tamakkua Inuit piluattumik ânnitaugajanningit asiangulippat Arcticiup avatinga. Sollu tapsumonatsainak ingiggagunnamata ammalu aulalugunnamata atuKattatamigut, pinasuattet manna ingiggagia-KalikKut Kaninginitsamut, ugvalu apKutigijaugialingitigut, Kiniligunik nunatsuamit niKitsanik. Tamanna sukkutauniKajuk niKet sujauttailinian-ninginnut nunalituKauvingani, akitunit-saulidlutillu illumine kenaujait atuttangit pisigiamut nunatsuamit niKinnik, ammalu Kanuingitukkut pinasuattet atugialinginnut nutânik ammalu anajanatukut ingigganimmik. Pigialimminik

kisiani nunatsuamit niKet amma pijauluaKattalimmijut niuvifinit-pisigiattudlugit. Nalunangilak taimatsainak nigitsianik asingumimat – inosiKatsiagutinnit, ilagiallatausimajunit nunatsuamit niKinnit pisigiattungâ-Kattaligamik niuviffimit – pisijaujunik niKinnik – sollu sakKititsimagittuk attuininganik inosiKatsianinginnut Inuit, taimâk uKumailivalliatitsitillugu nunalituKaujunik.

Mitsâguluak ilonnatik nunalet kaujidlutik tamna sunialimmangât silak tungatil-lugu siagutsuanit piusilauttunit ajunavalliatuinnatuk. Inuit anajanavalliatuinnalittut, tamânimut utakKituinna-Kattalimmata nunatsuamogamik ugvalu silalukammuk nukKangalidlutik. Pivalliatuinnalimmat silalukaunit-sauninga/nigiugijaugani piungiliKattaninga, atugiamillu siagunitatut silak sunialimmangât/namomialimmangâmillu maliKattalauttaminik pitaigutimmat, ammalu ilupsinganik nunami aiviugiaKangitunik pasijaulittut piungilivallialittut siKumitsigamik asiugijamil-lonet atuKattataminut sunanullu atugialimminut. Ilanginnut, atangatillugillu sujauninginnut sollu migvet, tamakkua Kauji-jausimalittut ânniasiuvinnut aigiaKajuKalimmat uKumainnualinninginnik. Ilagiallalugulu, nunanginni aiviugia-Kangitut ammalu pimmagittut ugvalu-lonnet nigiugijaungitut sunialimmangât silaup piusingit nukKangatitsiKattatut kinakkunik aullagumagaluatillugit nunannut tamât piusigilauttamitut taip-

sumani siagutsuami nalliunigiKattalaut-tanginni inunnik tamanna pijauni-Kalualittilugit utakKingunimmut ugvalu aullagumanimmut (atuttaugiallasongum-mata ilanginni nunalituKaujuni sollu “upingâmi ippiniagiligamiuk”).

Ilonnatik sanitaget nunait Kaujitsidlutik imiutsiagunnaininginnik nunguvallianingin-lu imijauKattalauttut pasidlugu asiangu-vallianinga sivungani inigiKattalauttangit, imait apKutingit amma imaup ulinninga. ImaKatsiagunnamat taimaidluni tikitauga-jattut Inuit imigusuligunik iminiallutik imilukammik, piluatillugu tamakkununga atuKattatunut, atugumagamik, salum-matausimangitumit imittavimmit. ImittaviKatsiagunnamat pitâgiagiallagia-Kasonguvuk piunitsanik imittavitsanik. Ilangit nunalet Kaujitsidlutik tamakkua InutuKait imigumaKattangitut salum-masagiallatausimajumik imimmik, taimaid-lutik pijauluagajaniaidlutik imait-Kumanginnut Kanimmasittâgiambut. Ammalugiak, pitaKatsainagiak imatsianguti-taugialimmik tamainnut uKumaittuk akitujodlunilu, piluattumi avatimmi Kaujimajaujumi silanga piungilitsainanian-ninga ammalu asinguvalliajumi ugvalu aujitosiangitumi piusilinni unatsivallialippat amma auKattalippalu inialuata tungavinga.

Kiujaummata atugiamut ugvalu pigiasigia-mut sukkutaunikut asiangulittunit tachanginni nunalituKait sakKititsijut adjigengitukkut piusilinnik, pigiasidlutik aullavingita illunginnit nunatsuami (utittatuinnaniangimata nunammagimminut

niKitsaliuvingata ininganit amma Kanuinginimut initsanginnik asiumalip-pata silalukaummat) pullaujammetumik imiKattagasuannimut nunatsuami (ikKaigiallagamik Kangatuinnak imitsiaKalaunnimut ammalu piudla-Kattaninganut Kangatuinnak imigumatu-aligami imisongulaunniminik).

Unuttugalait Kaujisautet tiguangusot mitsânut ilingajut sollu ikKagijaugatik-asinguvullialimmata piusigilittangit. Ilangit nunalituKait ISR-mi malugusud-lutik kinakkutuinnait asinginnik nam-matunik annugâttusimaKattalittut takutainnaKattaligamik asiangutigut sollu niviuvagalait unutsivallialimmata. IliukKailidlutillu kittugianut nuluangin-nik igalâmmiini kejautsainaligamik kit-tugianut. Ammalugiak ISR-mi, unanniKalimmata imangit Kaujitsisijut sutagga ogait sujuvullialittut tagvain-auluak nuluasimadlutik. Kiuningilli, oganniatet nulualliaKattalittut tagvain-auluak tigullagiattudlugillu tamângulu-ak. Ammalugiak katitsuiKattalittut ogannik tagvaianauluak jaringani nâkKâtinnagu. Labradaorimilli, nillesiugiattuKattalittut sivunganiuluak jâringata, ammalu Nunavut, puijinni-alua-Kattalittut aujami Kuittotillugit kivinginitsauKattatillugit Kukittaugamik.

Pisonguningit akKisigiamut sidontin-ganik amma ininganik tigullagumaliguni nunalituKaujuk Kaujitsilauttuk ikajud-luni pisongunimminik atugiamut asinguvulliajuKalimmat. Sollu malu-

gijaukKaumat Kulliani, ilangit Kanitaget nunangit amma nunalituKait atuligettut asianut sidontinginnik ininginillu pinasuavigi-Kattatangit omajunniagumaluattaminut. Tamanna sakKisimajuk taimatsainak tiguanguninginnut ammalu, ilonnagalanginni, takunnâdlugu Inuit pinasuattiuninganut. Taimaigalauttilugu, atugiallagumajut mit-sânut maligatsaliuttet akKisuiliginik ikKaumakKulugit omajunniatinnik ammalu maligtsaliuliginillu, sollu tigullanik pigiasi-gajappat silatiani pinasuagiaKalippata nalli-uningani ugvalu akKisuttausimajut killiningit pasidlugu asiagolinningit omajuit ugvalu ingiggasiasinningata sidontingani. Ininginni asingita Kanitaget nunait, pikKujaunik immaKâ tamânegialik pikKujauninginnut tigullagiamik nutânut ugvalu tigollatauningit adjigengituit pivitsaKannisauliginik tapsumona asianguvullianimmut. Sollu, ilaujunut tachânit Labradorip oKajut isumajâgutiKanniminik tamakkua tutttuvait (moose) sakKivallialimmata nunangani, ajuttangit pinasuagiamut sutagga maligat-sani pikKujaulunginamik. Sollu iningit asian-guvullialimmata, maligtsaliuttau-Kattatut atuttausongugialet mitsânut nunanginni ammalu atugiallagiamut ammalu asiangu-vallianinginnut Inuit pillugit avatânejut.

Tamakkua aiviuKattatut amma atuttau-Kattatut adjigengitut Kagitaujagalalet ammalu nutât sollu illualugalait Kanuittogajammangâta mitsânut atutta-giangit amma. Arctic Bay-mi, Nunavut, anginitsanik amma sukkanitsanik umianik atuKattalittut malilualimmat nigiuigijaugatil-lu sakKiKattatauni imakkoligamik, amma

silatsuak ilupsiminegiaKalimmat global system (GPS) Kagitaujatigut atuttau-Kattalittuk ingiggajunut namogiaKalimmata. Allât Kagitaujatigogaluappata ilangitigut, nunalituKait ilonnatik tukisialaungitut kan-giani Kagitaujatigut akKisuttausimajunik. Kugaaruk-mi, amma Nunavut, amma Ivujivik, Nunavik, ilangit ilaujut katimajunut malugusulauttut Kimutsikogiak Kanuinginitsauninganik nutânnit atuttauKattatunit, sollu sikidokkut, ammalu taimaidlutik atuttauluaKattajutsaujut. Unuttumaget kinakkutuinnait ikajuttut atu-giamut nallinginnik siagunitanik amma manna nutânik kamagiasiginik avatittinik asianguvullianingagut atuttausianiammata.

Ilangit tigujauningit atugumadlugit pikKujaliangutitadlutik nunalituKaujunut ukuanguvut sollu KaujimaKatigegiamut KaujijauKattatunik ammalu sunginitsautil-lugit pisongugiangit KaujimaKatigennimut akungani kinakkutuinnait nunalituKauvimmi ugvalu akungani nunalitikait Kanitagellu nunalet. Sivullipâk, piunitsakut KaujimaKatigennik akungani nunalituKait amma Kanitaget nunait tusattisigajattuk Kaujitsisigiamut pillugit atuttausot amma tiguagijausot sunait. Kingullia, ilangit nunalituKait oKajut KaujimaKatigetsianik ikajummagigajattuk katitsuinimmik ammalu sakKijuKappat nutânik inilinni piusiujunik sollu sunamik sikummejuKalippat, nunami amma silaup sunianninganik. Tamanna sul-iak anajanginitsautititsiluni pinasuattinut amma aullagasuajunut nunatsuamut. Taimaigalauttiluguli unuttumaget pinasu-at-tet atuKattagaluappata nâlautinnik

Kaujimajauniagamik nunatsuamenningit, pimmagiuttitaulauttuk atugiallagiamut amma pitâgiallagiamut Kaujimauninnik avatittinut kamagijautsiagia-Kalualittumut. Amma pingajua, ilaujut katimannimut malugusudlutik tamakkua atugumadlutik nunaliniu-luak silavut sunialimmangât (sollugalautillugu atuttausonik asinginnut siKingattini Canadaup nunanginni) tamanna ikajugajammagijattuk.

Unuttumaget tiguagijaujut akKisut-tausimaligettut ugvalu pikKujaliang-utitausemajut nunalituKajunut kamagijaugiaKagajattut kenaujaliugutin-nik Kaujimajunut. Taimaigalautillugu, ilonnatiungituk angiggamejut ugvalu nunalituKajuni aigunnangitut tamakku-nunga kamajinut, amma ilangit kenaujait suttisilittut asianguvalliajukalimmat. Sollu una, ilangit nunalituKait, piluat-tumik ISR-mi, Kaujisimajut tamakkua kenaujait pijut tarapinniaKattatunut amma pinasuattinut manna ikillisima-ligettuk. Taimaimmat sollu ilanginnut, angiggamejut ammalu nunalinni kenau-jait atuttauKattatut akillivallianialittut pigumavalliapata sujauninginnut mit-sâgut asianguvallianingit silait taimaitil-lugu kenaujattâgiKattatangit mikillival-lialittilugit.

Isumagijauninga mitsânut kenaujattâgijau-Kattatuit piluattumut ikKanammagittuk sutagga pisonguningit kinakkut amma nunaliKaujut sakKititsigasuappata nallinginnik tiguagigumajamminik

suliagigumallugit Kaujimappait akilega-janniminik. Ilangit nunalituKait Kaujimajut atugiallagiamut ikajunnimik sollu atuluammat kenaujanik utsualuk, akKisuigiamut siKumimmata sikidoo, amma pigumanimmut sukanitsanik ugvalu anginitsanik umiannik, isumag-illugu nunammini avatinginnut sakKiKattatunit. NunakKatigeni Kuatsevet suliagijauKattatut malugijaud-lutik. Taimaigalautillugu, unuttumaget Kaujititsilauttut tâмна nunangani Kuatsevet akitujauluit aulattigiangit kamagigiangiillu. Tâmnalu sanattauninga illualuk imittauKattatumut imimmut ammalu pijauttailitsinimmut-Kammangit sidjami, ammalugiak akKisuigiallanimmut tamâneligettunik illunik – tamakkuagalait suliagijait atu-jut kenaujanik. Sollu mikijogalauppata sollu ilitigiamut kittugiat nuluanganik illunut ugvalu angijogalauppata satjugia-mut pijauniangimat malinnut suliagijait ugvalu imitsianguniangugaluappata, nunalituKait malugusujut tamanna akinga ilaKatillugit tiguangujut atugian-git nukKatuinnangianginnut ammalu tukiKangininga isumagidlugu.

Una allak upkuisijuk ikKanammagittumik suliaKatigetsianimmut ammalu ikajutti-genimmut akungani sunatuinnait isumagidlugu kavamait, akungani kava-mait suliaKavingit, pitaKatillugit kava-mamengitunik katutjiKatigettunik, amma ikKanannipâmik, ilagijau-Katautillugit Inuit Kaujigasuumut

pivallianimmik tukiKajunut ammalu akKisuttausianinginnut avativut asianguval-lialimmata Arctic-mi. Tamakkua ikajuttiged-lutik pivalliatitsilauttut tamatsuminga suliagijautillugu tamainnut sunatuinnanik suliaKaKattatunut tukisiadlutik avativut asinguvallialimmat Inuit tukisiKattatillugit asiangujuKalimmat imminik nunammini ammalu sunaummingâta tamakkua asian-gujut tukiKammangâta Inunnut. Tapkua Kaujijaujut atulauttut utittadlutik oKâlannimik Kaujimajamminik ikajulauttut nallinginnik ammalu ikajudlutik sunautsian-gulimmangâta salakkumautiginiattangit Inuit uvlumi ammalu kamaginiattangit jarini Kaijuni. NukKautinnagit ikajunnitit ammalu sungunimmut nunalituKajuit oKautiKattalugit atummaginiattuk pival-lianimmut maligatsaliugiamik, sulianut amma Kanuk pinialimmangâmmik atutsia-niattunik asinguvallianinganut avativut. Nunalinni inungit ilaulauttut ukununga katimajunut Kujannamemmagilauttut tamakkua InutuKait, inummaget amma inosuttuit pivitsaKalaummata katigiamut, oKâladlutillu ilinniaKatiKadlutillu asim-minit tamatsumunga ikKanammagittumut oKalautilgijaujumut. Tamakkua amma oKaudjilaummijut pimmagiuninganik tamanna nukKautinagu suliagijauninga isumagijauluammat katimautauninga sollu pigiasituinnamata “Ketsosituinnanimmik Silatianik”; Kaujimajaummalu iluani nunalituKait manna. IlaukKaujut pikKujijut kamagiallaKujidlutik Kimiggugiamut allalugillu iluingalugu Inuit kaujimaligettanginnut.

Nunalinnit ilaujut Kaujilauyttut adjigengitunik katutjikatigaennik pitajutsau-Kotunik Kaujijaujunik katimammata, pidlutik amma nunalinni kavamangit amma omajunnik kamajinginnut katutjiKatigenningit ilonnainut silatsua-mi katutjiKatigenninginnut, sollu Arctic Council amma United Nations. Angiuti-Kadlutilla ilonnainit atugiallagiamut “oKausik tunillugu” tamatsumunga, katimakKaujut Kaujidlutik unuttugalaît tukiKatsianimmut maligait amma sulia-gillugit pikKujaliangusimajunik.

IkKanammagiutillugulu, tamna ikajut-tigennikut suliak sakKititsijuk atuttau-somik Inunnut oKâlagiamut isumagilu-attaminik, isumagijamminik amma Kaujimajamminik, amma ilanginni ikajunimmut Inuit nillimata mitsânut isumagilualdugu attuimat suna inosinginni uvlutamat. Tamatsumunga suliamut ikajuttingit gumajut tamna nunanginni isumagijauluattut tunijau-sot kamagijaukKulugit Kanituni nunalinni, nunatsuami amma silatsuami kavamanginnut amma ininginnut mali-gatsaliuttet asingutitaummata kamgi-jauniattilugit. Ammalugiak, tamakkua Kaujijausimajut tamatsumunga pitalet pigiasitigitsiagianga pivallianimmut atugialinginnut pisonguniammata nunalet kajusinimmut ilijauniammata asianguvallianinganik silak ammalu sujaunnet tamakkua uvlutamat sug-alalimmata.

Nalunangilak tamakkua Inuit atuvallialittut sujaugamik silak asianguvallianinganut akuniulittuk. Tamanna ilipsijuk Inunnik iniutsiangitumut ilinniatitsigiamik ilonnânik silatsuamik mitsânut sunait tikigajanningin-nik. Inuit pisonguningit amma Kaujimajangit tiguattâgiamut imminiksanimmini avatin-ganut asiangugasippat takutitsigajattuk sollu asinginnik nunalituKaujunik taimat-sainak pijaugajappata tamakkununga isumajâgijaulippata jarini Kaijuni. KaKianagivullu, taimâk pigiak tiguaKagiamik Kanganonnet ikKanginit-saulaungituk Inunnut uvanganit uvluminit. Avatittivut asianguvallianinga – ilonnatik sunatuinnait – tikivalliajut tuavi tuavi amma piluagjat-tukullu immaKâ nigiuigingitattigut tamakku-nunga Arctic inunginnut angiluagâlommat kamagigianga.



“There are already  
a lot of established  
Inuit concepts on  
the weather, but  
they are changing”

(Repulse Bay, Nunavut).





[illegible][illegible][illegible]









“I can feel the change  
in the climate... It is  
obvious that global  
warming is taking  
place. Our wildlife is  
changing too”

(Repulse Bay, Nunavut).

## NAITUMIK UKAUTAIT

### (EXECUTIVE SUMMARY - INUINNAQTUN TRANSLATION)

Ukiuktaktut hilakyuanga aalanguktilik-tuk. Ilaa, anigaitut kauyimayatukangit atuktut ukaktut ukiuktaktuk angiyumik ikpinaktitauniaktuk aviaktukviani hilakyuami hilait aalanguktigutainik. Hamna ukiuktaktuk aviktugutait piniaktuk angiyumik hilakyuanga aalanguktititiluni, Inuit kungiaktaaliktaait aalangutiligutait, pilutik ikpinagutikhainik ovalo pipkailuni kanuginiagutikhainik.

Inuit Tapiriit Kanatami (ITK), Nasivvik havakviit Inuit aniaktiligini ovalo aalanguktiligitutait hilakyuat Laval Universitimi, ovalo Ajunnginiq havakviit Kanatami Nunakakaakhimayut aniaktiligiyyit havakviit, ilaukatauplutik Inuit aviktukhimayut havakviit ovalo nunait ovalo aalat ilaukatauyut, pihimayut amigaitunik ayoikhaitjutainik piyut hilakyuamik aalanguktitigutainik ovalo humauyt nunani hitamaini Inuit aviktukhimayainik Kanatami Ukiuktaktuini. Hapkoa ayoikhaitjuait pihimayut 2002mit 2005mut malikhutik Hilakyuami Ilihakviit Tamailaitunik Hanatiligiyyit ihivgiugutainik uktugutainut Ikaahukmi, Nunatiami 2001mi. Hamna tuhaktakhak, *Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Inuit in Canada* (Unikkaaqatigiit: Ilitjutainik

Inuit kiinainik Hilakyuat Aalangutigutait – Ihumagiyaait Inunit Kanatami) tunihimayait iniktigutainik hapkoa ayoikhaiyaiyinit.

Ayoikhaiyaiyiini, hanayakhak ilaukatauyut ikayukhimayut nunanit ilaukatauyunik titigaktitlugit kungiakhimayainik, ikpinagiyaayut ovalo nunanit aalanguk-tikatigiinik piyainik pipkaiyainik hilami ovalo aalat hilakyuanik aalanguktigutainik. Kungiagutait titigakhimayut ukakhimayut Inuit nalungitainik hilakyuak aalanguktitilik-tuk ovaluniit aalangukhimayut aalatkiinik mikhaanut. Ilangit aatjikiit kungiagutait naunaiyakhimayut ilangit: amigailiktut pikhikatainaligutait; haaktuialigutait hikut ovalo apotit; amigailiktut hikutuinaliktunik nipalunik; ovalo amigailiktut akhut hikinikmit unakutait.

Ayoikhaktuni ilaukatauyut naunaiyakhimayutlu kanuk kungiagutainik aalanguktiliktut ikpinagiliktaait Inuit inminik ovalo nunanini: naunakhuyut hilat pipkailiktut amigaitut Inuit nutkangatitaulikpaktut nunani; aalanguliktut hikut ovalo apotit kanugitjutit ovalo hila naunakhitjuutinik nutkaktiliktaait pilaaktainik nunanit nikikhainik, taimaimat, pipkailiktut aalangutiligutainik nigitjutainik aalat nikinik; haaktuialigutait hikut ikpinakhigutiligilitait autlaagiagani

maligutainik, ubluit autlaagutit ovalo atuktangit nunahiutiminik; aalangligutait tahiit ovalo kuugat ikpinagiliktut imilaaktunik imainik pitkutiganit; ovalo angililigutait hikinimit unakutait uvinikmini pipkailimat utilagilaaliktunik ovalo kukuuyagutunik.

Amigaituni piyainik, Inuit ovalo nunait pilihaaktut aalangulikhutik ovaluniit piplutik tahapkoa ikpinagiliktait pinahuakhutik mikhitinahuaklihgut ikpigutait. Ilaa; Inuvialuit Nunataagutit Nunini (IRS), ikaluit kuugani mayuukatagutait uyagaiyakhimayut ikayuknahuakhugit ikililiktut ikaluit amigaitjutait ilaa, angiyumik imaiyalikmata kuugait.

Ayoikhaiyut ilaukatauyut naunayakhimayut amigaitunik naunaktunik ilaukatautjutinik kitkanit kungiagutait, hilakyuami ikpinagutait ovalo ikpinagutigiliktainik Inuit inuutjutainik Ukiuktaktumi. Amigailiktut pivaliktut kikitigiyut nipaluit ovalo mahaktihaktut kikihaktut pilivaliktut ilauyut aalat pikataligutait. Tamamik aviktukhimayuni, tuhaktitihimayut hikukataliktut ukiumi kaagani nunauyanik (pipkailimata mahaktihaktut kikihaktut pilivakliktuni ovaluniit kikihaktut nipaluit) mikhiti-

liktait pilaaktainik nunauyanik, hivuliit pitkutait nigiyakhainik tuktut. Mikilikhutik nigiyakhait nikikhainut, tuktut kapaliktut ovalo aniaktutut iliktut. Ovalo, tahapkoa umayut pihuliktut ungahitkiyainik kinikhiaplutik nunauyanik ovalo nalvaaktauliktut pihukviinik aalanik nunani. Taimaimat, ayoknakhiliktuk naniyaagani ovalo ayonakhiliktuk umayukhiugiagani. Hamna pipkailiktait ikpinagutainik nikikhainik Inuit ovalo Nunait, tamamik nakuutjutait ovalo pilaakvikhait tuktut uyunik mikhilimat. Nunat pitkuhimayut pilaaktukhamik aalangutigutainik hamna pihimaliktumik: Piliktukhat nikinik himautikataliklutik, ililutik nunani kikitiviniik pikangituni ovalo nunani iniminik ilihagutikhainik umayukhiuktut pikataliktiklugit piyumayainik talvatuak mikhaanut tuktut umayukhiuktainik.

Tamamik titigakhimayut aalangugutait hilakyuami ovaluniit hilami tuhaktitayut Inunit nakuungitumik ikpinakaktut. Ilaa, aalanguligutait hilat takupkailiktut nutaanik umayunik, ilangit ikayulaaktait Inuit umayukhiulaaktait hivunikhamini. Takukataliktait aalat akilgitut itut Inuvikmi, Nunatiak, ovalo Labradorimi tuktuvaat takuyaukataliktut, pilaaktait nutaat nikikhait, ilaa keelinikaktuugaluit tahapkoa nutaat umayut, umayukhiulaaniaktait hivunikhaini. Ovalo aalanguligutait ukiut



“It costs more money  
to go hunting because  
you have to go further  
from the community  
to hunt animals  
like caribou”

(Tuktoyaktuk, ISR).

pipkailiktut ilangit umayukhiugutait, ilangit ikalukhiugutit ovalo kilalugakhiugutit ovalo natikhiugutit, pikatalaaliktut ukiakhanut ukiuhaguikmat. Kihimi, hamna tuhaktakhak takupkaiyuk kungiagutaini ovalo ikpinagutaini naunaiyakhimayut Inunit ovalo taimailimat, amigaitut kungiagutait ublumi tuhaktitayut pipkailiktut ihuitumik ikpinagutainik, ilangit, pipkailiktut aalanguktiliktait umayukhiuktunut.

Takukalaiktait tuhaktakhat ayoikhaktuni naunaiyaliktuk Inuit ayohagutiliktut aalanguktiligutainik ukiuktaktumi hilakyuunganik. Taimaimat aalanguliktut havaktigutait umayut ovalo autlaagutait, umayukiuktut autlaakataliktut unghiktmut ovaluniit aalanut atukpaktainik umayukhiuviik nikikhakhiugutait nunamit. Hamna ikpinagiyauliktuk nikikhainik piyumayainik nunaminut, angilipkailikhugit iklumini akiligitikhait piyaagani nikikhainik nunanit ovalo anaktiligutait umayukhiuktut autlaagiagani. Keelininingit pilaaktainik nunanit nikikhait pipkaiyut angiyumik atugutikhait ilangit akituyut niuvikhi-mayut nikikhat niuvikvinit. Ilaa, hamna aalangutiligutait nigiyainik – anianaitunik, nakuuyunik pikaktut nunanit nikikhainik naunaiyakhimayunik niuvikpaktut nikikhainut – pilaaktut ikpinagutainik aniaktiligutainik Inuit, pivamat unghiktmut pipkailaaliniaiktait nunaini.

Tamakmivyak nunaït naunaiyakhimayut naunaiyanahuagiagani hilat aalanguk-

tigutait atukhugit inuuiviniit ayonakhilik-tuk. Hamna ilipkaiyuk Inuit angiyumik ayokhahaligutainut, nunakatigiit ayokha-halimata aalangayumi hilmik ovaluniit pikhiinalikataktunik nunamiititlugit. Amigailiktut aalangukpiagutait hilat, nau-nakhiliktut hilat pikataligutait, pilailik-paktait atugutikhainik inuuiviniit hilat naunaiyautikhainik, namungaukatagiagani ovalo nunat naunaiyautait ayokhagutig-ilimagit ahigugutainik nunahiutiminut. Ilangit, ilaukatauyut ikpinaligutait havakatigiainut, ilangit tingmiakakviit hapkoa pikataliktait atugiagani ani-akvikmungangauyukhat kilamik ayokh-agutigilimagit. Ovalo nunat ayokhaligutait ovalo akhut aalangutiligutait hilat Inunit nunamungauyaagani ubluktamaat pikatagunaiktut naunakhiligutigigamiuk akhut aalangutiligutait nunamiitaami kitkaniit ubluinit. Pilailiktait pilaakviit nunamut ovalo tagiumut atukatayuktainik ubluini, pipkailiktait Inuit ayokhagutigilikhugit inminik ovaluniit ihumaaluinakatali-givlugit (taivaktuk ilangit nunaini “upingaami ihumaalugutait”).

Tamamik aviktukimayut tuhaktituyut mikhitigutait nakuuyut ovalo amigaitjutait imilaaktainik imanik pipkailiktut aalanguktilimat nipaluligutait, kuu-gauyait ovalo imaiktiligutait ilangit nunamni. Mikhitigutait pilaaktainik hapkoa pitkutikhait angilipkailiktait Inuit imilaalilutik imanik aninaktukaktunik, ilaa, tahapkononga atuyuktut, inminik, ihuakhakhimayunik imanik imikatalimata nunamini. Nakuuluangitut imait pip-

kailiktuk pikataliktainik ovaluniit naku-utkiyanik imanik havagutainik atulinialik-tainik. Ilangit aviktukhimayut tuhaktituyut Inutukait imilimaimata hanayauhimagunik imanik, akyaktauvaiktut akhaluutikut, aniak-tilaaligimagit imigaagamigit. Ovalo pihi-manahuagiagani munagitjutait ayonaktut ovalo akituyut, ilaa, hilakyuamik hivunikhap-tini pikataliktait akhut aalanguktiligutainik hilainik ovalo aalanguktiligutait nunat ataani kikumayut mikhhaanut unakatalimat ovalo makhaktilimata tungavingit.

Kiunahuagiagani atugutikhait, aalangutiligutait atugutait ikpinagiliktait nunait ukiuktaktumi aalatkiinik, hanalutik iklukhanik nunanit (mikhitigiagani aut-laagutikait ayokhahakumik nunani ilaa nau-nakhilimat hilait) nakhakatalikhutik imik-takhainik nunamiiligaagamik (pipkaiyut mikhitilimat pilaaktainik ovalo nakuuyunik imikvikhaink).

Amigaitut tuhaktakhat aalanguligutait mikhaani pikatayuktainik. Ilangit nunat ISRmi tahakpaliktut Inunit anugaalikpa-likhutik nutaanik pipkailimata aalangutigutait kiuyaukatalimata niviuvanit amigali-mata. Ilikatalikhutik kiktugialigutainik igalaamini ikluminut amigailimata kiuyaukatagutait. Ovalo ISRmi unaliktut imat tuhaktituyut, pipkailiktut ikalukhiugutit pivaktut kuvyanit nakuuhiukataliktut kilamik. Taimaimat, ikalukhiuktut ihivgiukatainaliktait kuvyaminik kilamik amigaitkiyainut. Ikalukhiukatalikhutik ukiuni hivunikhaaganit aipaagani ukiunit. Labradorimi, kangukhiukataliktut hivu-

nikhaaganit ukiuni aipaaganianit ovalo Nunavumi, natikhiuktut amigailiktut umayukhiuktait auyami, ilaa kivihalaititlugit, kapakhimaititlugit.

Pilaaktainik aalangutiligutainik ubluit ovalo nani umayukhiukviit nunani tuhak-titiyut ikayuktauyut aalangutiligutainik piliktut. Titigakimayuk hamani, ilangit aviktukhimayut ovalo nunait nuutitihak-tut ubluinik ovalo nani umayukhiuliktut ilangit umayut. Hamna pikatainagamigit aalangugutait, ilaa Inuinaugamik umayukhiuktit. Kihimi, piyukhauiliktut aalangulaalugit atanguyait umayukhiuk-tiligiyinit munagiyunitlu ovalo maligali-ugutainik, umayukhiugutait pikatalimata hilataanit umayukhiuvaktainit, nunat atukatagaluaktainitlu aalangulimata umayut nuutitigutainik, ubluitlu. Ilangit aviktukhimayut aalat, aalangutigutihait maligaliugutait nutaat ovaluniit taku-laikataktut umayut ilangit, piyaagani nutaat ovaluniit aalanguligutait takuyaukatagutainik pilaaliktukhat aalanguligutainik munagiyinit. Ilaa, ilaukatauyut Labradorimi ukakhimayut, tuktuvaait takukaliktuugaluit nunamini, umayukhiulaitait ilaa, maligali-ugutainamik pitkuhimaimata. Nunat atugutait aalanguligutainik, maligaliutit atuktainik, aalanguktiyukhatlu munagiyaagani hamna aalangulik-tigutainut nunani ovalo ilaukatautjutainik Inuit nunaminut munagiyaayaagani. Pilaaktakhainik ovalo atugutait amigaitut atugutainik naunaiyakhimayut mikhaanut aalangutiligutainiklu.

Ikpiajuqmi, Nunavut, angitkiyait ovalo kayumitkiyait kayat atuktauliktut kiunahuakhugit malikhiukpialigutait ovalo nalunakhiliktut imait ovalo GPSnik atuligutainik naunaiyagiagani naniitut. Atugutait ilaukatalimata taimakataliktuni, nunat tamamik ikaungitut pitkuyainik nutaat atugutait ihuakhagiagani. Kugaaruk, Nunavut ovalo Ivujivik, Nunavik, ilangit ilaukatauyut ukaktut kingmiktugutit ihu-atkiyaulliktut nutaanit atugutainik ilangit, nunahiugutit ovalo atukataliktait. Amigaitut Inuit ikayuktut atugutaikhainik aalatkiinik nunamiitjutikhanik ovalo nutaanik maligutikainik aalangulimata hilait nakuutkiyamik.

Ilangit aalanguligutainik atugutaini pitkuhi-mayut nunanit ilauyut tuhaktituitjutainik ovalo hakugikhilugit pilaaktakhainut ilaukatigilugit inunut nunaini ovalo aviktukhimayaini munagiyaagani ilangit tuh-agutikhait nakuutkiyamik ayokhagutainik atuliktainik ublumi. Aipaa, ilangit nunat ukaktut amigailigutainik tuhaktitjutikhainik ikagiagani katitigutainik ovalo ilauakatigiyaagani tuhakataktahainik kanugitjutaini nunamini hikuit, nunait ovalo hilainik. Hamna ikayugutikhak mikhitilaak-tait aninagutikhait ovalo ayokhagutikhait umayukhiuktunut ovalo autlaaktunut nunamini. Ilaa, amigaitut umayukhiuktut atuliktuugaluit naalautinik nunamiili-gaagamik, akhuutut piyukhat ovlaa ikayuk-taulutik tuhaktituitjutikhat hilaminik atukataliktakhait amigaitkiyanik. Ovalo pingahuanut, ilaukataut tuhaktitiyut, pilaak-takhainik tuhaktiliktukhat aviktukhi-

mayainik, naalautikut kitkani pikaliktukhat tuhaktitaukatagiagani kanugitaakhait hila nunaminut (aatjikutaatut nigagiagani Kanatami) ikayugutigilaamata.

Amigaitut aalanguligutait ovaluniit pitkuhi-mayut nunanit pihimayukhat kinauyakhainik hanatiligiini. Kihimi, iklut ovalo nunat ilaukatailaimata hapkoa pitkutikhainik ovalo ilangit kinauyakhainik ikpinagiyauli-mata aalanguligutainik pikatagutainut. Ilaa, ilangit nunat ilaa, ISRmi naunaiyakhimayut kinauyaliugutait nanigiakhiuktuni ovalo uyagkahiuktuni mikhiliktut. Taimaimat, iklut ovalo nunat ilangit akiliktuutjutait angilinia-likut aalanguligutainik nunaini kihimi kinauyaliuktait mikhililagalualutik.

Ihumagiyaait kinauyanut mikhaanut ilaa ikpinaktut ilaa, pilaaktainik Inuit ovlaa nunait iniktiktakhalmagit amigaitut uktugutikhait akikamata ovalo kitkut akiliniamagit. Ilangit nunat naunaiyakhimayut piyumayainik ikayugutikhait pipkai-likut akiliktugutikhainik ilangit, ukhuhait ovalo ihuakhagutikhainik atugutainik nunhiutinik ovalo niuvigutikhainik kayu-mitkiyanik ovalo angitkiyanik kayanik, kanugitaakhainut nunamini hilait pivaktainut. Nunat kikitiviit pilihimayut naunaiyakhimayut pilaaktut munagiyaagani amigaitut nunat pikangitunut. Kihimi amigaitut tuhak-tititaaktut nunani kikitiviit akituyut atugia-gani ovalo munagiyaagani. Hanatjutikhait havagutaikhainik ihuakhagutikhait imanik niukagiagani ovalo nungutigutait hinaat imanit ovalo ihuakhagutikhainik ikluminik nunani – hapkoa piyumayait akikamata

ihuakhagiagani. Mikiyuugalualutik tutkuktuitjutikhait ilitigumagumik kikutugiiyagutit ikluni ovaluniit angiyut aki-likutugutikhait hinaanik nungutigutainut hanayakhait ovaluniit ihuakhagutikhait imatiligiynik, nunat tuhaktitiyut akiit mikhaanut ilangit aalanguligutait uktugutikhainik ilaani pilaitut ovalo pitkuhimaitut ihumagiyaagani.

Hamna ukaktait makpigaat takupkaiyuk ikpinagutainik ilaukatautjutikhainik ilangit amigaitut kavamatkuni, ilangini kavamatkut munagiyni, kavamatkuugitut havakviini ovalo ilaa, ilanginik Inuit hanayaagani nakuuyunik ovalo ihuaktunik ihuakhagutihait hilakyuaptinik ukiuktaktumi. Ilaukatautjutikhait hanayakhait hamani katitihimaliktut kauyimayatukaniit nalungitainik hilakyuat aalanguligutainik Inuit nalungitainik pikataligutianik aalanguligutait nunamini ovalo hapkoa kanuginiagutikhainik Inuit. Naluhuigutait tuhaliktait mikhaanut ilaukatauyunut aalatkiit ikayulaamata naunaiyagiagani ovalo munagiyaagani angiyut akhuugutigiyait Inuit ublumi ovalo akhuugutigiyakhait hivunikhaini. Ilaukataugumik ovalo hakugiktut nunani ilaukataugumik ikpinaktuk akhut hanatiligiyaagani pikuyakhainik, piliimayukhainik ovalo uktugutikhainik nakuuyumik piyaagani hilakyuat aalanguligutainut ikayulaamata.

Nunanit nunakatigiiktut ilauyut hamani ayoikhaktuni ukakhimayut koyagivlugit Inutukait, Inikniit ovalo Inuulgamiit

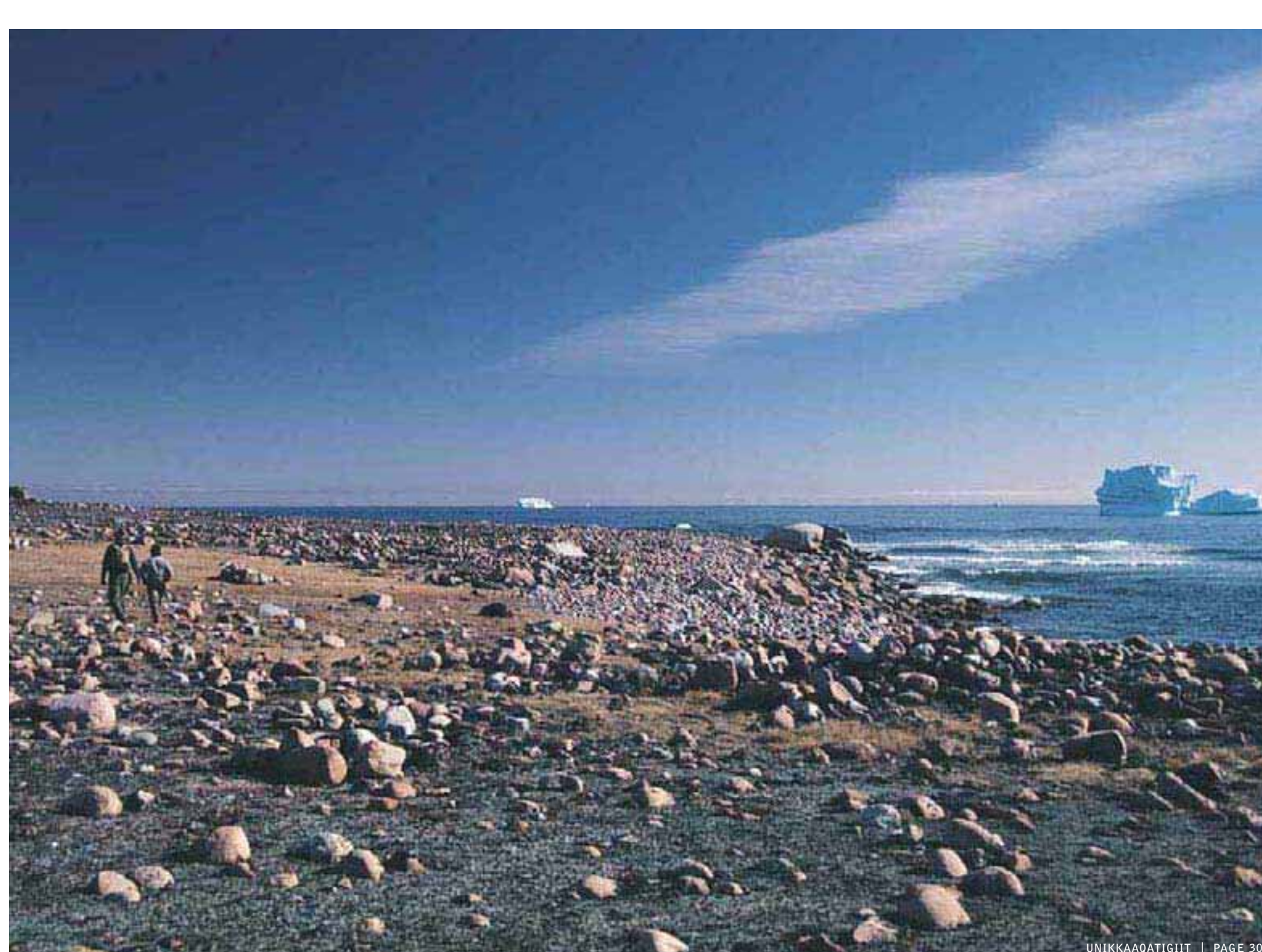
katimakataumata, ukakatigiimata ovalo ayoikatigiimata ilakatigiiminit hamna ikpinaktuk ihumagiainik. Ukaktutlu akhut piyumayainik havakatigiilutik hamna ihumakatigiigutainut ayoikhaktuni ukaktait “kaaganiikafumata” nalungitait pihiyainik iluani nunamini. Ilaukatauyut ukaktut ihivgiu faalugit hamna iluaniit makpigaani piyukhat naluhuigiagani kanuk angiyut Inuit kauyimayatukangit.

Nunanit ilaukatauyut naunaiyakhimayut amigaivyaktunik ilaukatauyukhat tunilugit tuhagutikhainik hamani ayoikhakvimit, ilangit, nunanit ovalo aviktukhimayut kavamatkut ovalo umayuligiit havakviit, tatpaunga hilakyuami havakviinut, ilangit Ukiuktaktumi Katimayiit ovalo United Nationmut. Angikatigiiktut tamakminit, piyumayut “ukakatigilugit tamaat tuhaktakhainik” hamani ukakhimayainik, ilaukatauyut naunaiyakhimayut amigaitunik pikuyakhainik ovalo ikayulaaktut pitkutikhainik.

Ikpinatkiyainut, hamna ilaukatautjutait hanayakhait tunihimayut atulaaktainik Inuit ukagiagani ihumaalugiainik, ihumagiainik ovalo nalungitainik ovalo tunihimayut ikayugutikhainik Inuit tuhaktiyumayainut ihumagiyaunik ikpinagiliktait inuuhiminik ubluk tamaat. Hanayakhait ilaukatauyut piyumayut nunat ihumagiyaat tuhaktitaulutik aviktukhimayunut, Kanatamut ovalo Hilakyuamut kavamatkuit ovalo

havakviit pikuyakhait aalanguktiyaagani piyumayainik. Ovalo, tuhagutikhiat hamna tuhaktakhat tunihimaliktuk hakugiktumik atulaaktainik piligiagani hanatiligiyyukhat atugutikhainik pipkaiyaagnai nunat angigutikhainik ilaulutik aalanguligutait piliktut ovalo pilaaktut ikpinagutait ubluk tamaat inuuhini.

Nalunaituk Inuit aalanguktiliktut munaginuakhugit ikpinagutait hilat aalangutiligutainut kangagaaluk. Pipkaliktait Inuit avalitumik ilihalaaktainik ilangit hilakyuakatigiinut hunat kainialiktut hamunga ihumaalugiainut. Inuit nalungitainik ovalo ayongitainik aalanguligtutainik nunamini hilainut atuktaulaaktut nunani pivaktainik ihumagiainik ublumi ovalo hivunikhaini. Mamiana kihimi, hamna pilaaktait aalanguligutainut ikpinagiliktait Inuit ublumi. Hilakyuat aalanguligutait – tamamik aalatkiit – kailiktut kilamik ovlaonaunaktut kanuginiagiakhait nalungitainik Ukiuktaktumi Inuit pilaaktainik kiunahugiagani kilamiilimat.





“There are so many  
changes the older  
generations are not  
able to teach our chil-  
dren about these  
things anymore”

(Puvirnituk, Nunavik).

## HAVAKHAT NAITOLIOGAT

### (EXECUTIVE SUMMARY - INUVIALUKTUN TRANSLATION)

Okoa Okioktaktomi nunat allangoliktot. Imaililiktot, kaffin ayoitot nunalikotit elihimayaoliktot okaotigiya it onagok Okioktaktok aghot hilap kanogilipk-nialikta nuna hila nunalo allangolikmat onnaktitlikhoni. Okoa hamani nunani tonongani nuna elihimaliktot hilagok allangoktok, Inuit elihimaliktat taotokhogo, holijutiliktot nunamot ovalo kanok okaotigivaliktat.

Okoa Inuit Tapiriit Kanatami (ITK), okoa Nasivvik Centre okoalo Inuit Anniaktailitait ovalo Hilalo Allangoliktok ovani Laval University, ova okoalo Ajunnginiq Centre ovaniitok National Aboriginal Health Organization, tabkoa pikatigivlogit nunani Inuit katimayiit okoalo nunaliit ovalo allat pannatik, ehivgiokhikatiigiitot meetikhotik okao-hikaktot nunap hilanga allangoliktok ovalo kanogilitjutiliktok inukakninot ovani hitamani Inuit nunaitni ovani Kanatap Okioktaktongani. Okoa meeti-otigiya it ovani 2002-mit 2005-mot okaotigivlogit okoat International Institute havaktot Angoyakhanot Hogaat ehivigogakhath ovani Ekaahokmi, Nunatiami, ovani 2001. Ona onipkak, *Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Inuit in Canada (Unipkaakatigiit:*

*Inuit okaotait Inuknot Akoliatot Onipkagiya it Hila Allangolitok–Inuit elihimayatik Okaotigiya it Kanatamiot),* okaotigiya it okoat meetiotigivlogit.

Hamani meetikmata elihakhotik, ona havakhanik ehoakhaiyut pikatigiiktot ekayukpaktot nunani meetikit titigakhotik taotokhimayamingnik, kanogilitjutionik ovalo nunamiot kanok naonaikhimaliktait hila nunalo allangokmat ovalo kanogitot allangoktok. Okoa taotoktatit onipkaktait Inuingok elihimaliktait hila allangoktiliktok naliak nunalo allangokhoni. Elait taotoktok takovagait okoat: hilalokatainalikhoni; hikko haalivloni ovalo apotikkokhivloni; nippaloitlo hikkotikatainalikhotik; ovalo hikkinih hakogikhoni.

Meetiktot ayoikhaotita elaoyut elihimaliktot kanok taotoktatit hila nunalo allangoktok kanogilitjutiit inuknot ova inukakninotlo: hila naonakhivloni aolagiami inuit nak-tikataliktot aolaktot nunami; hikkolo allangohoni ovalo apotit naonakhivlotik ovalo hilalo naonakhivloni angoniagami nikikhakhiogomayuni, ematot, inuit kablon-aktakloani niggilihotik angoniaknik ayok-nakhikmat; hikko haalivlon hokot aolagiami naonakhivloni, kakogolo aolagomatitlonk ovalo kanogitonik aolagotikakloni; tattit kukkat allangokhotik emgiami hivog-

nakhivlotik emakligamik; ovalo amigaiyumiktot UV aolagiami ottik-nakhivloni ovalo kommingnakhivlotik.

Hamani amigaitoni, kinat okoalo inukaknitlo hila aolavigiliktat allangoktok naliak kanok aolavigiliktait allangoktot. Imatot, okoa Inuvialuit Nunataakviani Nunami (ISR), ikaluit mayoakvikhait etihiliktoktaovaliktot ematot ikaluit ikalgomi piomangitmata ekililikhotiklo ema emakakniit emailikmata mayaokvitik.

Meetitait okoat meetiktit elihimaliktaot kanogilitjutiut inuit taotoktait nunat hila0, nunat kanogilitjutiut inuknot inuhinik hamani Okioktaktomi. Onalo nipaloit nippalokalikmata hikkotikhi-makhotik nunamot ehoigotiot. Homi nunani tamaini, onipkaktait hikkotigotiot naovaktonot nunami(aomaktot-hikkoyut nipaloit), ayoknakhiot tuktunot nikigivagait. Nikikokhikmat tuktut kapaagoliktot annialikhotiklo Hamalo tuktut ahinot onggahiktonot kenikhiavaktot nikikakninot nunanot. Emailivaliavut okoat tuktut onggahikhihiktot nunanot nuullikhotik nikikaknint angoniagiami Taimailikmata tuktut angoniagiami ayoknakhiviyaktot Inukni ovalo Inuit inukaknit, angoniakpalagoiktot onggahiktomot

tuktuhiogiami. Inukakniit pitkoyut atoliklotik taimatot: okoa nikkitik allangoliktot nikkainaohoikhotik: ona eligoaktat nunani kikitteeviit nikikakloagoiktot, ovalo nunami inuit angoniaktingit angoniakloagoikhotik kanogitonik tuktunik angoniagahoat.

Tamaita honat hilap allangoktait nunat naliak hilalo onipkaktat Inuit ehoigiliktait allangoktot. Imatot, hila allangoliktok noivaliatutiut nutaanik hogaanik, elait emakak nakooyunakhiot inuknot angoniagakhat kakogomot. Okoa nutat hogat akilgit takokhaoliktot Inuvikmi, Nunatiami, okoalo Tuktuvaait ovani Labrador taggiot hinaani nutat nikikhat angoniagakhat tikikataliktot, elait angonialaitot hajja hamani nutangokmata. Hamalo, hila allangoliktok elait holilokagiami, ikalukhioknik, kilalogakhioknik ovalo nattikhioknik, kakogo angoniakniakait kangaogitomit. Kihime, ona onipkak taotoktonit ovalo kanogilitjutionik elihimaliktait Inuit, ovalo, taotoktaoyut hajja onipkaktait ehivotot kihime, elaini emaitot, nutaanik aolavikhanik piagianiktot.

Hapkoa takokhaoliktot onipkagiyaolikhhotik meetiktoni okoa Inuingok ehomaloknakhiot allangoliktomik hilami Okioktaktomi nunamilo. Imatot ahikot inuit aolakpalikhotik, angoniagiaktokhotik ahinot, ovalo onggahiktomot aolakpalikhotik angoy-

“Older people are not teaching younger ones the same information they were taught about the land, and people are taking for granted how they think the conditions are”

(Nunatsiavut).



akhakhioktot. Hamna taimailitjutiok nikikhakhioigiami noatkatinot, nikit setoamiotat akittoligaloaktitlogit, ovalo nutat aolagiat hivoganakhivlotik. Nikit amigalikhotiklo ema setoamiotat nikit akittoligaloaktitlogit. Hamna nikinikmot allangotilikhoni -- inuit emakak nikiging-gitamingnik niggivaligamik annialakilitot--nikkainaktogoknaigamik annialakivaliktot--nikkainait niggiyami anniak-naitkiyaotitlogit.

Tamaita inukaniit nunat elihimaliktot hila atolikpagagaloangat taimani angoni-agiami kihime allangokmat hajja naon-akhiok inukni. Hamna naonakhigamikl hivoganakhitiok aolaagiami, ovalo inuit aolaagangamik naktilakivaktot nunainakmi naliak hilalokmi naktitpalikhotik. Hila hilalokatainaligamilo/naon-akhiok hila kanogiliokpaligami, ema inuit elihimayagaloangat taimani hila naon-akhiok hajja, ovalo nunat hivoganakhiot piktomik hilalokmi naonakhikataligamik ovalo tamanatnik aghalutini ahigoinakhitigami. Hamani elaini, tamayat kanogilitpaliktot milveet, anniaktonot kimamioknaktot nakoongiotivaliktot. Hamalo,nunat elait hivoganakhiot ovalo hilalo naonakhigami kanogilioknia aolaagiami homit nunani ovalo tikinnahak-nakhivloni hila hilaloktitlogo. Nunat tikihtaknaigamik aolakovaktot taggiotlo emak naonaikhivloni ema inuit ehomalolakivaktot naliak ehoigoholaktivlotik(inuit onipkangat "opingaginagoktok").

Tamaita nunat onipkaktaovaliktot emmat emakligamik emigiami kovianaiktot ovalo emmat emagiktot ekililikhotik hila allangokmat, kukat, tattit nunani emakokhivlotik aoyami. Emmat ekililigamik hapkoa emmikhat Inuit halummaitonik emikpaligonakhiot emmaknik, inuit atokpaktot, emmaknik, emmainaknik. Emmat pineegamik emagiktot emmat nongolikmata emmik-taotit ehoakhilakiyukhat. Elait nunat okakpaliktot Eniknigit hivogaliktot emmiknik emigiamingni, emmat halum-maitonikmatalo. Hamalo, emmat halumapkagiami ayoknakhivlotik akitotitlogit hikko atani nunap mahaktilikhonilo.

Keoyait inuit hila allangoktikmat kanog-itlitjutiok inuknot okioktaktoni nunani allatkiinik takokhaotjutitlogit, nappaktigiot iglokpaknik nannigiaktokvikhanik (aolakatagiigianganiak nunamot inukaknimit ovalo iglot hilalokmi hilakikheevigiyangitni hila naonai-hyikatalikmat) ovalo emmaknik kat-takyuknik aolagotikalikhotik nunaliaktot ( ematot emmat hilainakmi nunani emmaklikmata emmigiami nunainani).

Kaffit onipkaktait inuit atoliktaitlo allangoktot aolayami-holioni allangokmata. Elait nunat inukaknit ovani ISR elihimaliktot inuit kinat annogaktiakpalikhotik hila naonakhikmat nunat hilanga naonakhikmat ovalo aoyami kegtogianikpalakmat. Ovalo kegtogeelitanik tupikni iglonilo eliogaivalikhotik egalaamingni ema hila aoyakokto-

higamik kegtogianikpalakhonilo. Hamalo okoa hamani ISR, emmatlo onnakiyao-likhotik hajja aoyangangat emalo ikaluit ikaluktalgamiit ootkangamik mamaikpalikmata Hamani atoliktat, ikalukhioktot kuvyaktoktot ikalukhiokatalikhotik ikalukhamingnik. Ikalukhioknagikpalikhotiklo opingami. Ovani Labradormi, oloagoleet angoyaovaktot angoyanagikpalikhogit opingami, ovalo ovani Nunavutmi, natteet nattiktaokatalikhogit aoyami ema povvalatitlogit ovalo kevioknaimata povvalayut.

Hamani aolanik allangokhonik hila mot maligiami ovalo homi angoniakpalikhotik inuit nunani onipkaktait ekayukhogit kanok angoniagamilo allangoktitlogo holilokaknik. Hamani okaotaoyuk, elait nunat okoalo inukaknit inuhitik allangoktait hila malikhogo ova homi angoniakvinikhotik kangogitonik. Hamna naonaiktok kanok inuit malilikat aolanik hilakot allangogaloaktitlogo, elaini, ehomayaovaliktot Inuit angoniaktot angoniagotait allangokhotik. Kihime, elaini allakot angoniaknakhio malikoit angohikiit hogaanot ovalo maliktakhat allangoyoititlogit, inuit angoniakata ahiani maliganik nlaiak homongagangat angoniagakhat naliak kiglinggit hogaat ahinoktiliktitlogit naliak homot aolavaliktitlogit. Elait allani homi nunani, ehoaktonik atogianiktot angoniagomayut nutaakot naliak allat hogat atoliktait nunat. Imatot, elaoiyut tonongani Labradormiot okaktot ehomalokhotik tuktuvaat takokhaovaliktot nunamingni, kihime angonialimaitait angoniagotikhait alaokmata. Hamani nuna allangoktomi, maligakhat atogianiktot nutanik

nunami ehoakhiokhaniktok angoniago-  
tinik ovalo Inuit atogomakmata  
nutaanik angoniagotinik.

Hamani atoktakhat ovalo piokhat nutaat  
angoniagotit ovalo nutaat iglokpait  
naonaiktot ema allangoktot atoligiangit-  
ni. ovani Ikpiakyukmi, Nunavutmi,  
angitkiat kayumiktot kayat atoktaovalik-  
tot taggiok maliktoknikhikmat ovalo tag-  
giok maliktoknikhikmat, ovalo nunahiotit  
atoktaovalikhotik (GPS) ematot homot  
naonaiktotit aolagiami. Kihime okoa  
atoktaogaloaktitlogit elaini angoniak-  
toni, inukakniit pinahoangitugaloat  
nutaanik atoktakhanik. Ovani Kugaaruk,  
Nunavut, ovanilo Ivujivik, Nunavik, elait  
meetiktot elihimaliktot aolaagiami ken-  
mikot hivoganaitkiyaoliktok sekiitonit,  
ovalo atokoyaolaliktot. Amigaitkiat  
inuit kinat ekayuktait atokoyait inuit  
elitikohiit ovalo nutat atoklotik hila  
nunalo allangoktomi.

Elait inuit allangoliktomot hilamot  
malitotiliktot pitkoyait inuit tohaajutikot  
naonaikhimalikhotik ovalo ehoakhiliktok  
inuit tohakataotiligamik naon-  
aikhimplotik inuit ovani inukaknini.  
Hivolikpak, inuit tohaajutinkkamik  
inukaknitlo naonaikhimakatigiiliamik  
honanik allangoktoni nunanik. Aipalo,  
elait inukaknit okakhimaliktot  
tohaakatigiikpalikhogik ekayukniaktot  
katitigilotik ovalo nalonaiyaklotik nunani  
inukaknit hilanga kanogilittok, hikko,  
nunalo onalo hila kanogiliok. Hamna  
tohakatigiiknik hivoganaitkotaolikmat

angoniaktonot oingaikhimagangamik  
angoniaktot hivoganaitkot angoniakpaktot  
aolalokaktot nunami. Kihime amigaitot  
angoniaktot atoliktot naalaotini inuit  
tohakvigikatalikhogit homeetot, ema inuit  
naalaotini ehagiativaktot naalaotini kamik  
homaahoiktok nuna hilalo allangoliktitlogo.  
Ovalo pinggahoat, elaoyut meetiktoni okak-  
tot tohakatagomaliktot hilalikionit (ajiko-  
tainik atokpagainik aosaimiot Kanatami)  
ehoakniagaloaktok.

Amigaitot atogianiktot ayoknagaloakhotik  
homi nunani naliak pitkoyaoyut  
inukanikmiot inuit manikhainik piyangitnik  
ehagianaktot. Kihime, inuit homi inukaknini  
tamamik hapkoninga atolimainmata, ovalo  
elait maniit kanogilitjutiokhat hila allango-  
liktitlogo. Imaiput elait, inukaknit elait,  
okoat nunami Oaliniikmioni ISR, elittogiot  
manikhainik nannitiaktoknimit ovalo angoni-  
aknimit ekilivaliayut. Elait inuit, kinat ova  
inukaknini akiliktogatik akitokniaktot nuna  
maligahoaklogo allangoktiktok ema manilio-  
gotitik ekilivaliatitlogit.

Okoat okaotaoyut maniktutikhanik  
okaotigiyaait hivitotitlogit ema inuit kinat  
ovalo inukakniit eliogaikumaititlogit kaffinik  
atolikipaliayakhanik oktutini akiliktogian-  
gitni atogomayatik. Elait inukaknit naon-  
aikhuyut ehagiagiyatik atogakhat akittolikt-  
tlogit oghot kasileet, hanayami sikeetot,  
ovalo neovigomatitlogit kayumiktonik naliak  
angitkianik kayaknik, kanok hila nunalo  
kanogititlogo hila atoliktaktik. Inuit akon-  
gani koakakviit atogiakaktot amigaitoni  
nunani ema koakhiiveetitlogit. Kihme,

amigaitot okaktot koakhiiveet akitoyut  
ovalo hanigait eokagalaiyagiaktotlo  
ovalo monagiyamilo. Ona hanayami iglonik  
honanik emmiktaotini halummayukhanik  
ovalo taggioplo hinaa nongotilaiyaklogo  
malikmit, inuitlo igloit atoktait hanaya-  
gianiktitlogit – holiyamik hapkoatigut  
maniktoknakhoni. Kanoklikiak mikkaoga-  
loat neovikhimayut eliogagiami kegtogeeli-  
taat iglono naliak akitoyut taggiot hinait  
nongotilaiyagiami malikmit naliak  
emmaknik halumayutini, akiit akitoyut  
elait havagiami ayoknakhotik.

Hamani makpigami naonaiktot hivitonigit  
pikatigiiklotik ovalo pannagiiklotik inuitlo  
kavamatlo piagiakaktot, kavamaongitotlo  
inuit katimayit, ovalo hivitoyuk, elaologit  
Inuinait ehoaktomik aolakatigiiktokhat  
ovalo ehoaktomik aolatjutikhainik piyangitni  
hila nunalo allangoliktitlogo Okioktaktomi.  
Okoa pannagiit hanalotik naonaktogaliknik  
elihimayakhanik kanok hila allangoktok  
Inuit elihimaliktat nunani tamaini. Ona  
elihimayaoyuk inuit tohakatigiikomik ovalo  
ehoakhitiokhat hivonik kanogilinalikmat.  
Pikatigiikhimaklotik pannagiit inuit-nunani  
elaologit maligakhanik, atoktakhanik oktu-  
tikhanik ehoaktokot aolaligiangitni hila  
allangoliktomi.

Inukaktonik inuit elaogomik meetikataklotik  
okakhimaktokhat koyagiyaait Eniknigit,  
enikneet okoalo inulgamiit meetikataokmata  
hapkononga, okaktot ovalo elittogikatigiiktot  
haffominga. Okaktot havakhimaklotik haf-  
fominga elitamingnik “kangina noikafoktok”  
hamna elihimayaoyuk inuknit. Meetiktot

“People have lost  
boats and equipment  
because of quickly  
shifting winds”

(Arctic Bay, Nunavut).

okalaktot allaniklo titiganik noit-  
tiomayut Inuit kaoyimayatokainik.

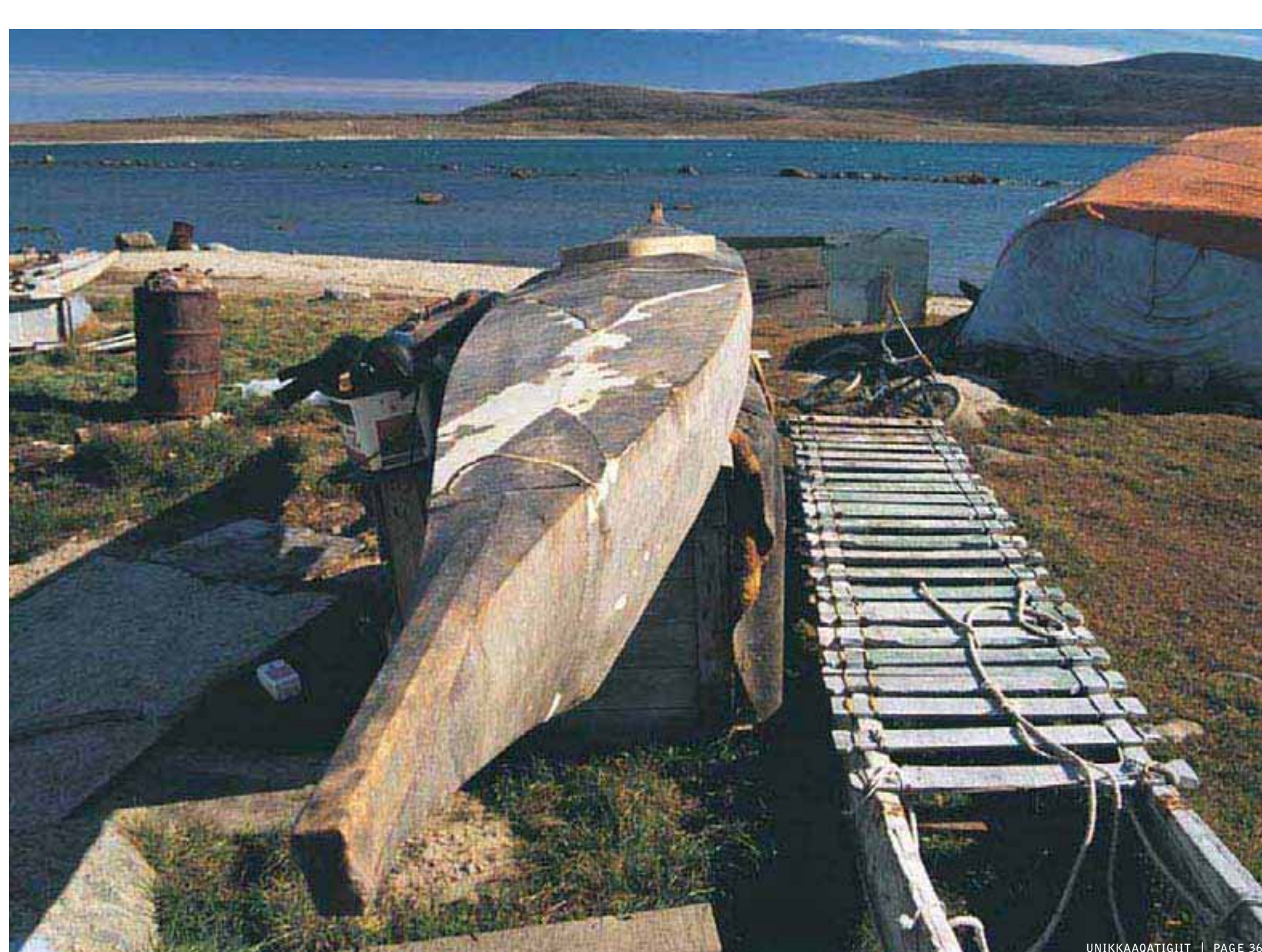
Nunani meetikataoyut inuit elittokhiot  
allatkiinik okaotainik taotokhimayait-  
niklo naonaiktamingnik meetiktoni  
hamani, okoa nunani ovalo ahini nunani-  
lo kavamat okoalo hogaalikiot katimayi-  
it okoalo ahinikyoakmiot pikatigilogit  
meetiktit, okoa Arctic Council okoalo  
United Nations. Hamani inuit angikhi-  
maliktokhat tamainit inuknit pitkoyait  
ematot “inuit tohaktitaklogit”; hamani  
okaohimi, meetiktot naonaitatik kaffit  
maligakhat ovalo atoktakhat pitkoliktait.

Okoa hivitonigit, ona pannagiiknik  
havakhanot ekayutaonahoaliktok Inuit  
ehomaalotigilikmagit, ehomagiyaitlo  
ovalo elihimayait, ovalo ekayugahoaklog-  
it okaktot inuhitik allangoliktot hilamit.  
Ona havakhak pannagiiktoni ehomayut  
inuit ehomaalogiyait tohakhaoligomik  
homiotanit ekayuktaovalianiaktot  
nunanit, kanatamit ovalo ahinikyoak-  
mionit ovalo havakviit maligakhanik  
havaktaoyangitni. Hamalo, ona naon-  
aitkot onipkaktaoyuk atoliktaoniaktok  
pivaliatjutikhanik aolayutininunaliit  
ehomalioktot-havaktot havaktokhat hila  
allangoliktomi ovalo inuheenot hila  
kanogilitjutilikmat oblotoak inuheenot.

Hamai naonaittiaktok okoa Inuit inuhi-  
tik aolaliktait hila allangoliktitlogo kan-  
gangoktomi. Hamna Inuknot kanogilitju-  
tiliktok nunani aolanigitni nunakyoat  
ahinikmiot elittogipkaliktait. Inuit

elihimattiakmata ovalo kaoyimatiakhotik  
nunamingni maliktat hila nunalo allangolik-  
tok ovalo atoliktot hila allangoktot honatlo  
kakogomot kanogilitjutiniakliktotlo.  
Ayoknaktok, maligiami honat hivitovlotik  
Inuknot oblomi. Hila nuna allangoktomi –  
tamaita honat – tikihimaliktot ayoknakhotik  
kayumikhiot ovalo kanogilitjutinialiktot  
Okioktaktomionot inuknot.







“Plants used to be  
healthier. Plants  
don’t bloom the way  
they used to”

(Kugaaruk, Nunavut).

## SOMMAIRE

### (EXECUTIVE SUMMARY - FRENCH TRANSLATION)

Le milieu arctique est présentement en évolution. En fait, nombre de modèles scientifiques donnent à penser que l’Arctique sera l’une des régions les plus sévèrement touchées par le changement du climat mondial. Alors même que de sérieux changements environnementaux s’opèrent dans cette région du Nord, les Inuits en sont d’ores et déjà témoin, en subissent les répercussions et se voient contraints d’agir.

En collaboration avec les collectivités et organismes inuits régionaux et d’autres partenaires, l’Inuit Tapiriit Kanatami (ITK), le Centre Nasivvik pour la santé des Inuits et les changements environnementaux dont l’Université Laval est l’hôte et le Centre Ajunnginiq de l’Organisation nationale de la santé autochtone (ONSA) ont réalisé une série d’ateliers axés sur les changements environnementaux et sur l’incidence de ceux-ci sur les collectivités dans les quatre régions inuites de l’Arctique canadien. Les ateliers, réalisés de 2002 à 2005, s’inscrivent dans le sillon d’une initiative de recherche réalisée en 2001 par l’Institut international du développement durable à Sachs Harbour, dans les Territoires du Nord-Ouest. Le présent rapport, intitulé *Unikkaaqatigiit*:

*Putting the Human Face on Climate Change – Perspectives from Inuit in Canada*, présente le fruit de ces ateliers.

Dans le cadre des ateliers, l’équipe de projet a aidé les membres des collectivités à consigner leurs observations et à recenser les répercussions et les adaptations locales attribuables au changement climatique et à d’autres transformations environnementales. Selon les observations recueillies, les Inuits sont conscients de l’évolution présente de leur environnement et des transformations particulières qui se sont déjà opérées dans leur milieu. À noter parmi les observations les plus fréquentes, l’augmentation du nombre de tempêtes, la réduction de la couverture de glace et de neige, la fréquence accrue de pluies verglaçantes et la progression de l’intensité du rayonnement solaire.

Les participants aux ateliers ont également signalé la manière par laquelle les changements observés influent sur les personnes et les collectivités. En raison de l’imprévisibilité des conditions météorologiques, de plus en plus de personnes se retrouvent prises au dépourvu alors qu’elles parcourent le territoire. Le changement de l’état des glaces et de la neige et l’imprévisibilité des conditions climatiques compliquent l’accès à la nourriture locale, ce qui, par conséquent, boule-

verse les habitudes alimentaires des habitants. L'amincissement de la glace a une incidence non seulement sur le choix des routes empruntées lors de déplacements, mais également le moment retenu pour effectuer ces déplacements et les véhicules utilisés. Les sources d'approvisionnement en eau potable se retrouvent diminuées en raison de la qualité moindre de l'eau des lacs et des rivières. Enfin, l'exposition accrue aux rayons UV provoque des coups de soleil et l'apparition d'éruptions cutanées.

Dans nombre de cas, les individus et les collectivités ont déjà commencé à s'adapter à ces changements ou à prendre les mesures nécessaires dans le but d'en minimiser les effets. Par exemple, des chenaux ont été dragués dans les rivières dans la région désignée des Inuvialuits afin de contrer la diminution des populations de poisson, imputable à la baisse importante du niveau des eaux.

Les participants aux ateliers ont établi des liens complexes entre leurs observations, les répercussions sur l'environnement et les incidences sur les populations du Nord. La fréquence accrue de pluies verglaçantes et des cycles de gel-dégel en est un bon exemple.

Dans presque toutes les régions, l'épaississement de la glace recouvrant le lichen en hiver (résultat des cycles de gel-dégel ou des pluies verglaçantes) entrave l'accès à cette plante, principale source d'alimentation des caribous. Comme la nourriture se fait rare, les caribous sont désormais plus petits et en moins bonne santé. Ces derniers doivent alors parcourir de plus grandes distances à la recherche de lichen et sont souvent obligés de se déplacer vers de nouveaux secteurs. Il est donc difficile pour les chasseurs de suivre les bêtes et de repérer les traces de celles-ci. La qualité moindre de la viande de caribou et la taille réduite des prises affecte la sécurité alimentaire des Inuits et celle des collectivités inuites. Afin de remédier à cette situation, les collectivités inuites ont proposé diverses solutions, notamment la substitution d'aliments, l'achat de congélateurs communautaires là où il n'y en a pas et des mesures de sensibilisation à l'intention des chasseurs, visant à inciter ces derniers à choisir leur cible de façon plus judicieuse.

Toutefois, les changements climatiques ou environnementaux observés par les Inuits ne sont pas tous néfastes. L'évolution du climat a, par exemple, favorisé l'implantation de nouvelles espèces, qui, si certaines d'entre elles étaient éventuellement récoltées, pour-



“Increased unpredictability in the weather has made it more difficult to go hunting now. We have to consider this more now”

(Ivujivik, Nunavik).

raient revêtir un intérêt pour les Inuits. L'introduction de spruce hens dans la zone d'Inuvik, dans les Territoires du Nord Ouest, et d'originaux le long de la côte du Labrador représente possiblement une nouvelle source de nourriture, bien que la chasse de certaines de ces espèces soit présentement assujettie à des restrictions. De plus, certaines activités, telles la chasse à la baleine et au phoque et la pêche peuvent être pratiquées pendant une période plus longue, compte tenu de l'évolution de la durée des saisons d'année en année. Ceci étant dit, comme ce rapport fait état des observations des Inuits et des incidences que ces derniers ont observées, il importe de souligner que la plupart des observations recueillies jusqu'à maintenant sont plutôt négatives et, dans certains cas, entraînent le recours à d'importantes mesures d'adaptation.

Les constatations présentées lors des ateliers indiquent que les Inuits sont particulièrement vulnérables aux changements qui s'opèrent dans le milieu arctique. En raison de la mutation des voies de migration et des sentiers empruntés lors de déplacements, le chasseur doit, maintenant parcourir de plus longues distances et modifier en conséquence le parcours qu'il emprunte afin de récolter les aliments traditionnels. Cette situation a des incidences non seulement sur la sécurité alimentaire de la collectivité, mais elle nécessite que les ménages dépendent davantage afin d'obtenir des

aliments locaux et menace la sécurité des chasseurs, car ceux-ci doivent emprunter des parcours différents, lesquels s'avèrent beaucoup plus risqués. L'accès limité à la nourriture traditionnelle entraîne également une dépendance accrue à l'égard de certains aliments vendus à fort prix dans les marchés d'alimentation. Ainsi les aliments traditionnels sains et nutritifs qui composaient auparavant le régime alimentaire des Inuits font de plus en plus place à des produits raffinés d'épicerie, ce qui, sans aucun doute, risque d'avoir un impact important sur la santé des Inuits et par conséquent, des incidences importantes dans les collectivités.

Selon la presque totalité des collectivités, il est de plus en plus difficile de prévoir les conditions météorologiques à l'aide de méthodes traditionnelles. Cette situation menace encore davantage la sécurité des Inuits, car ces derniers risquent vraisemblablement d'être surpris par de violentes tempêtes ou pris au dépourvu alors qu'ils parcourent le territoire. La fréquence accrue des conditions météorologiques exceptionnelles ou imprévisibles, l'impossibilité de se fier aux indicateurs traditionnels de température ou de navigation et les risques accrus que représente le paysage changeant entraînent l'augmentation des dommages causés aux infrastructures et aux véhicules voire la destruction même de ceux-ci. Combinés à la dégradation de certaines infrastructures comme les

pistes d'atterrissage pour ne nommer que celles-là, ces facteurs ont, à l'occasion, compliqué les évacuations sanitaires. En outre, les risques que représente le paysage changeant et les situations météorologiques extrêmes ou imprévisibles empêchent les habitants du Nord de parcourir le territoire aussi souvent qu'ils en ont l'habitude et prolongent les périodes entre les saisons. Les difficultés d'accès aux terres et à la mer durant ces périodes saisonnières transitoires sont telles que les personnes deviennent plus vulnérables au stress et à l'anxiété (phénomène qualifié de « fièvre du printemps » dans certaines collectivités inuites).

Toutes les régions ont signalé une réduction de la qualité de l'eau potable et du nombre de sources d'approvisionnement à la suite des changements qui ont influé sur les régimes de précipitations, les voies navigables et les niveaux d'eau de leurs régions. En raison des difficultés croissantes en matière d'approvisionnement, les Inuits sont plus susceptibles de consommer de l'eau contaminée, particulièrement ceux qui, par choix, boivent de l'eau non traitée. Étant donné la mauvaise qualité de l'eau, les infrastructures existantes d'approvisionnement en eau potable doivent être mises à jour ou de nouvelles infrastructures doivent être aménagées. Dans certaines régions, les aînés sont particulièrement vulnérables aux maladies hydriques car ils hésitent à boire de l'eau traitée. De plus, l'entretien des infrastructures d'eau potable est à la fois particulièrement difficile et coûteux dans un milieu où, en raison du réchauffement et

de la fonte de la structure fondamentale du pergélisol, des conditions changeantes ou déstabilisantes et des phénomènes extrêmes sont plus souvent observés.

Les habitants des collectivités du Nord ont recours à des solutions variées afin de composer avec les changements ou de s'y adapter. Certains ont construit de petites cabanes sur le territoire afin de minimiser les allers-retours entre la ville et les territoires de chasse et pêche, et de, par surcroît, servir d'abris sécuritaires lors d'intempéries. D'autres ont choisi d'apporter avec eux de l'eau embouteillée lorsqu'ils parcourent le territoire, compte tenu de la diminution des sources naturelles d'eau potable et de leur qualité moindre.

Un certain nombre de mesures d'adaptation retenues ont entraîné des changements de comportement de la part des Inuits. Certaines collectivités dans la région désignée des Inuvialuits ont fait savoir que les personnes s'habillent maintenant en conséquence, compte tenu des nouvelles conditions provoquées par les changements dans la population d'insectes. Ainsi, en raison du nombre accru de mouches piqueuses, ces personnes commencent à installer des moustiquaires aux fenêtres de leur maison. De plus, comme l'élévation de la température de l'eau favorise la pourriture des poissons attrapés dans des filets, les pêcheurs de la région désignée des Inuvialuits vérifient plus souvent leurs

filets afin d'en retirer les poissons. La saison de pêche commence d'ailleurs plus tôt, tout comme c'est le cas au Labrador pour la chasse aux oies. Au Nunavut, le phoque est de plus en plus chassé pendant la période estivale, alors qu'il est bien gras et moins susceptible de couler lorsqu'il est abattu.

La capacité de déplacer le moment et le lieu des activités liées à la récolte menées par une collectivité a été signalée afin d'étayer l'adaptation de celle-ci aux changements qui s'opèrent. Tel qu'il a été noté précédemment, certaines collectivités ont d'ores et déjà déplacé le moment et le lieu où elles chassent certaines bêtes. Cette adaptation se veut une réaction naturelle et elle est, dans la plupart des cas, perçue comme faisant partie du comportement instinctif du chasseur inuit. Cependant, les responsables de l'exécution de la loi en matière de gestion de la faune doivent faire preuve de souplesse dans l'exercice de leurs fonctions et dans l'application de la réglementation, car il est possible que les activités de récolte et de chasse doivent être réalisées pendant des périodes autres que celles qui sont normalement observées ou prescrites, ou encore, à l'extérieur des territoires de chasse établis soit en raison des changements dans les déplacements des animaux soit d'un décalage dans la période de migration de ceux-ci. Dans d'autres régions, une certaine souplesse sera nécessaire afin de permettre la récolte de nouvelles espèces ou d'espèces envahissantes alors qu'il est possible de profiter de l'oc-

casion présentée par le changement. Par exemple, les participants du Nord du Labrador se sont dits préoccupés que, malgré l'apparition récente d'originaux dans leur région, la réglementation pertinente leur interdit toujours d'en faire la chasse. Au fur et à mesure d'évoluent les écosystèmes, le cadre réglementaire doit être modifié afin de refléter les réalités constatées sur le territoire et les besoins des Inuits compte tenu de la relation en évolution qu'ils entretiennent avec leur milieu.

L'accès et le recours aux diverses techniques et aux nouvelles infrastructures ont été également signalés dans le cadre de l'examen des mesures d'adaptation exploitées. À Arctic Bay, au Nunavut, des bateaux plus imposants et plus rapides sont utilisés afin de composer en eaux davantage agitées et imprévisibles. Le système mondial de localisation (GPS) est mis à profit afin de faciliter la navigation. Même si la technologie moderne a, à l'occasion, joué un certain rôle, les collectivités n'ont pas unanimement réclamé le recours à des solutions modernes axées sur la technologie. À Kugaaruk, au Nunavut, et à Ivujivik, au Nunavik, certains participants ont fait remarquer qu'il fallait privilégier l'attelage de chiens à d'autres technologies modernes, comme la motoneige, compte tenu qu'il s'agit d'un moyen de déplacement plus sécuritaire. Nombre de personnes sont en faveur du recours à une combinaison des moyens traditionnels et modernes afin de composer le plus efficacement possible avec les changements environnementaux.

Certaines des mesures d'adaptation proposées par les collectivités préconisent la communication de renseignements et le renforcement de la capacité en matière de partage de renseignements entre les habitants d'une collectivité ainsi qu'entre les collectivités et les régions. Dans un premier temps, une meilleure communication entre les collectivités et les régions permettrait de faciliter le partage des renseignements pertinents au sujet des mesures d'ajustement et d'adaptation qui ont porté fruit. Dans un deuxième temps, certaines collectivités ont indiqué qu'une capacité accrue en matière de communication pourrait appuyer la collecte et la diffusion par un guichet central de bulletins sur les conditions locales, notamment en ce qui a trait à l'état des glaces et du territoire et aux conditions climatiques. Ce service permettrait de réduire les risques auxquels seraient exposés les chasseurs et les autres personnes parcourant le territoire. Même si déjà nombre de chasseurs restent en communication au moyen de la radio lorsqu'ils partent à la chasse, la nécessité accrue d'appuyer de telles communications dans un milieu de plus en plus variable a été soulignée. Enfin, les participants ont signalé qu'il serait bénéfique d'avoir davantage accès à des bulletins de prévisions météorologiques adaptés aux régions (comme les bulletins auxquels ont accès les résidents des régions du sud du Canada).

Nombre des moyens d'adaptation déjà exploités ou proposés par les habitants des collectivités exigent des ressources financières. Cependant, plus d'un ménage et plus d'une collectivité ne disposent pas des ressources financières nécessaires. Qui plus est, certaines sources de revenus sont affectées par les changements même qui s'opèrent. Par exemple, certaines collectivités, notamment dans la région désignée des Inuvialuits, ont signalé que les recettes du trappage et de la chasse ont déjà diminué. Pour certains les dépenses des ménages et des collectivités augmenteront en raison des efforts d'adaptation qui devront être déployés afin de composer avec les changements climatiques au moment même où leurs revenus diminueront.

La question des ressources financières est singulièrement importante, car la capacité qu'ont les personnes et les collectivités de mettre en œuvre un nombre de stratégies d'adaptation dépend de leur capacité à en défrayer les coûts. Certaines collectivités ont manifesté le besoin d'un soutien financier accru en raison de l'accroissement des dépenses liées à l'approvisionnement en essence, aux défraiement des réparations à effectuer sur des motoneiges et à l'achat de bateaux plus imposants ou plus rapides, toujours en fonction des changements environnementaux locaux auxquels elles sont confrontées. Les programmes d'achat de congélateurs communautaires ont été signalés comme

une mesure d'adaptation possible dans nombre de collectivités où il n'y en a pas. Toutefois, nombre de participants ont fait remarquer que les congélateurs communautaires sont coûteux à exploiter et à gérer. La construction des infrastructures nécessaires au traitement de l'eau potable et des murs de soutènement afin de prévenir l'érosion des berges, ainsi que les améliorations qu'il s'impose d'apporter aux habitations existantes sont toutes des activités qui exigent des sommes d'argent. Peu importe qu'il s'agisse d'une dépense mineure comme la pose de moustiquaires sur les fenêtres des maisons ou d'un investissement important comme la construction de murs de soutènement visant à prévenir l'érosion ou encore de l'amélioration de l'infrastructure nécessaire au traitement de l'eau, les collectivités ont reconnu que les coûts entraînés par certaines stratégies d'adaptation sont prohibitifs de sorte que ces stratégies s'avèrent en soit irréalistes et inconcevables.

Le présent livre révèle l'importance que revêtent la coopération et les partenariats entre les différents paliers de gouvernement, entre les différents ministères, avec les organismes non gouvernementaux, et plus particulièrement, avec les Inuits dans le but d'élaborer des solutions concrètes et efficaces face aux changements environnementaux qui s'opèrent dans le milieu arctique. Les partenariats élaborés dans le cadre de la présente initiative ont permis de réunir le savoir scientifique en matière de changements environnementaux et les constatations faites par les Inuits des changements

qui s'opèrent présentement au niveau local ainsi que d'en dégager les incidences pour les Inuits et leurs collectivités. Les connaissances partagées grâce à différents modes de savoir ont permis d'identifier les défis auxquels les Inuits sont aujourd'hui et seront demain confrontés, et ce, dans le but de tenter de surmonter ces défis. La collaboration continue et la participation importante des collectivités sont essentielles à l'élaboration de politiques, de programmes et de stratégies qui sauront favorablement composer avec les changements environnementaux.

Les habitants des collectivités ayant participé aux ateliers se sont dits reconnaissants que les aînés, les adultes et les jeunes ont eu l'occasion de se réunir, de discuter entre eux et de partager leur savoir au sujet de cet important enjeu. Ils ont également affirmé la nécessité de continuer le travail entrepris, compte tenu de l'abondance du savoir qui existe au sein de la collectivité et du fait que les ateliers n'ont constitué qu'une entrée en matière. Les participants ont proposé la tenue d'études approfondies afin de dégager la pleine étendue du savoir inuit.

Les participants des collectivités ont identifié divers groupes auxquels les renseignements recueillis lors des ateliers devraient être communiqués, allant des administrations locales et régionales aux responsables de la gestion de la faune aux organismes internationaux comme le

Conseil de l'Arctique et les Nations Unies. De l'avis général de tous les participants, « le message se doit d'être diffusé »; dans cette veine, les participants ont élaboré un nombre de recommandations claires en matière de politique et de service.

Plus que toute autre chose, le présent projet de partenariat a fourni un forum où les Inuits ont pu partager leurs préoccupations, leurs idées et leur savoir, et ce faisant, a apporté un certain soutien à la voix des Inuits sur une question qui touche leur quotidien. Les partenaires de ce projet espèrent que les préoccupations des collectivités pourront être portées à l'attention des administrations régionales, des gouvernements provinciaux et fédéral, et des corps et organismes internationaux habilités à entreprendre des mesures fructueuses en matière de politiques. En outre, les renseignements présentés dans le présent rapport serviront d'assises solides sur lesquelles lancer l'élaboration de mesures qui sauront permettre aux décideurs des collectivités de tenir compte de solutions en matière de changement climatique et de garder quotidiennement à l'esprit cette préoccupation.

Il est donc clair que les Inuits s'adaptent depuis un certain moment au changement climatique. Ainsi, les Inuits sont bien placés pour partager avec le reste de la collectivité mondiale leur perspective sur le changement climatique qui risque de s'opérer. L'ingéniosité et le savoir inuit en ce qui a trait aux mesures locales d'adaptation au change-

ment environnemental peuvent servir d'exemple aux collectivités qui, à moyen ou à long terme, seront confrontées à de pareils enjeux. Malheureusement, cette capacité d'adaptation n'a jamais autant revêtu une si grande importance qu'elle ne revêt aujourd'hui. La fréquence à laquelle s'opèrent les changements environnementaux, quels qu'ils soient, et l'étendue de ceux-ci risquent fort d'excéder la capacité d'adaptation des peuples de l'Arctique.





“We don’t see the old  
plants anymore.  
The plants we see  
have changed”

(Arctic Bay, Nunavut).

## EXECUTIVE SUMMARY

### (EXECUTIVE SUMMARY - RUSSIAN TRANSLATION)

Окружающая среда Арктики меняется. Определённое количество научных моделей указывают на то, что Арктика будет одним из регионов, на котором наиболее сильно отразится импакт глобальной перемены климата. В то время как в северном регионе уже проходит драматическая перемена окружающей среды, Инуиты также наблюдают этот импакт и замечают перемены, заставляющие их реагировать, на себе.

Инуит Тапириит Канатами (ИТК), Насивик центр по инуитскому здоровью и перемене климата при Лавальском университете, и Центр Аджунгиник при Национальной организации по аборигенному здоровью, совместно с региональными инуитскими организациями и общинами, и другими партнёрами, провели серии семинаров фокусирующимися на изменениях в окружающей среде, и что это означает для общин, и для Инуитских регионов Канадской Арктики. Эти семинары проводились с 2002-го до 2005-го года, следуя исследовательской инициативе Международного института по устойчивому развитию в Сакс Харборе в Северо-Западных территориях в 2001 г. Этот отчёт: *Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Inuit in Canada* «Уникаакаатигиит: Придавая человеческое лицо климатическим изменениям – взгляд Инуитов Канады», представляет результаты работы этих семинаров.

Во время семинаров, коллектив проекта помогал членам общины вести записи наблюдений, над импактами и местными изменениями, которые произошли в результате перемены климата и других форм изменений в окружающей среде. Отмеченные наблюдения указывают на то, что Инуиты сознают, что окружающая среда меняется или изменилась специфическим образом. Некоторые общины, отмеченные наблюдения включают: увеличение частоты штормов, утончение льда и снега, повышение частоты выпадения ледяных дождей, изморосей и увеличенная интенсивность солнечной радиации.

Участники семинаров также выявили, как эти отмеченные изменения отражаются на человеке и на общинах: всё чаще, в результате непредсказуемой погоды люди застревают на открытых землях. Изменения состояния льда и снега, непредсказуемость погоды задерживают доступ к традиционной пище, которая в свою очередь вызвала перемены в нормах употребления другой пищи. Утончение льда нанесло импакт на маршруты передвижения, время путешествий, и виды используемого транспорта.

Перемены в озёрах и реках отразились на источниках пресной воды, и увеличили действие ультра-фиолетовых лучей, в результате чего участились солнечные ожоги и сыпь.

Во многих случаях человек и общины, начали приспосабливаться или реагировать, для снижения

эффектов импакта. Например, в Регионе Инувилуитских Поселений, (РИП), рыбные каналы были драгированы в результате снижения рыбной популяции, произошедшей от сильного понижения уровня вод.

Участники семинаров определили комплексную взаимосвязь между наблюдениями за импактами на окружающую среду и импактами на людей, живущих на Севере. Всё более учащающиеся ледяные дожди, оттаивания после ледяных дождей и ледяных изморосей - отличный пример. Почти во всех регионах было отмечено, что увеличенное ледяное покрытие (в результате оттаивания - замерзания или ледяных дождей), уменьшило доступ к лишайнику – основному источнику питания карибу. С уменьшением количества пищи, карибу становятся тоньше и их здоровье ухудшается. Далее: эти животные должны передвигаться на более длительные расстояния в поисках лишайника, и их часто можно найти путешествующими в новые районы. Таким образом, их гораздо сложнее обнаружить или подступиться к ним во время охоты. Это в свою очередь несёт импакт на запас пищи Инуитов и инуитских общин, так как и качество мяса и доступность к карибу уменьшились. Общины рекомендовали потенциальную адаптацию к этой ситуации: знакомство с обменом пищи, установка общинных холодильников, где их пока не существует, и местное, информативное образование охотников в плане разборчивости во время охоты на карибу.

Не все перемены в окружающей среде или климате, отмеченные Инуитами, несут негативный импакт. Перемена климата привела к знакомству с новыми видами, которые могут быть полезными для Инуитов в будущем. Например, появление таёжных куропаток в Инувике и в районе Северо - Западных Территорий, также лосей вдоль побережья Лабрадора, предоставляют потенциал для новых источников пищи, хотя ограничения на охоту этих некоторых новых видов, существуют в настоящее время. Также, перемещение сезонов, означает, что некоторая деятельность, такая как, рыболовная, охота на кита и котика, может проходить позже в сезоне, чем в предыдущие годы. Однако этот отчёт отражает наблюдения и импакт, опознанные Инуитами, и соответственно, большинство отмеченных данных до настоящего времени, привели к негативному импакту, где в некоторых случаях требуются значительные адаптационные меры.

Случаи, отмеченные на семинарах, указывают на то, что Инуиты являются особенно уязвимыми в Арктической окружающей среде. В результате изменения миграционных маршрутов и маршрутов передвижения, охотники должны путешествовать гораздо дальше, или вдоль изменённых маршрутов, для сбора традиционной пищи. Это несёт импакт на гарантированный запас пищи в общине, увеличение затрат для доступа к традиционной пище и отражается на безопасности охотников, использующих новые, всё более опасные маршруты передвижения. Ограниченный доступ к традиционной



“The weather is more unpredictable these days. Elders don't give predictions anymore because of this”

(Kangiqsujaq, Nunavik).

пище также ведёт к зависимости от приобретения дорогой еды из магазинов. Без сомнения это изменение в диете – от здоровой высоко - питательной пищи к рафинированным продуктам из магазина, может существенно отразиться на здоровье Инуитов, а это в свою очередь несёт далеко идущие непредвиденные последствия для общин.

Практически все общины указали на то, что предсказание погоды, основанное на традиционных методах, становится более сложным. Это в свою очередь подвергает Инуитов ещё большему риску, поскольку они более часто будут находить себя заблудившимися вдали от дома или будут попадать в жестокие штормы. Учащающаяся экстремальная погода, непредсказуемые погодные события, и невозможность полагаться на традиционные, навигационные, погодные знаки, представляют большую опасность на земле, всё чаще приводя к повреждению инфраструктуры и транспорта. В некоторых случаях, наряду с импактом на инфраструктуры такие как, посадочные полосы, эти факторы усложнили медицинские эвакуации. В дополнение, опасность на земле и экстремальные, непредсказуемые погодные условия, препятствуют людям выходить на земли так же часто, как они выходили, и создают более продолжительные промежутки времени между сезонами. Невозможность доступа к землям и морю во время переходных сезонных периодов, делает людей более незащищенными от стресса и волнений (в некоторых общинах, называемые «весенней лихорадкой»).

Во всех регионах отметили уменьшение качества и количества источников пресной воды, в результате изменений в режиме выпадения осадков, водных путей и также уровня воды в их районах. Снижение наличия таких источников повышает возможность употребления Инуитами загрязнённой воды, особенно теми, кто по собственному выбору использует неочищенные водные запасы. Бедное качество воды налагает необходимость в улучшенной водной инфраструктуре.

Некоторые регионы отметили, что старейшины неохотно относятся к употреблению очищенной воды, что в свою очередь делает их более незащищенными от водных заболеваний. Также, содержать инфраструктуры пресной воды и сложно, и дорого, особенно в окружающей среде, в которой предполагается более частые проявления экстремальных погодных условий и перемена или дестабилизация состояния вечной мерзлоты, в связи с потеплением и таянием структурного фундамента.

Реакция на управление или привыкание к импактам, вызванным этими переменами, в северных общинах, приняли различные формы, начиная от строительства кабин в открытых землях ( для снижения необходимости путешествовать туда и обратно из города к местам добычи, и для того, чтобы обеспечить безопасное убежище для тех, кто в результате всё более непредсказуемой погоды, там оказывается), также в ходу использование бутылочной воды во время поездок на открытые земли (реакция на уменьшение наличия и снижение качества питьевой воды из натуральных источников).

Определённое количество отмеченных адаптаций имеют отношение к изменению в привычном поведении. В общинах (РИП), например, было отмечено, что некоторые люди одеваются в более подходящую одежду для новых условий, произошедших в результате изменений в популяции насекомых. Они также начинают вставлять москитные сетки в дома в ответ на учащающиеся случаи укусов комаров, мух. Также в РИП, в результате более тёплой температуры воды, рыба, пойманная сетями, загнивает гораздо быстрее. В ответ рыбаки чаще проверяют сети, и собирают рыбу гораздо чаще. Они также ловят рыбу в более раннее время года. В Лабрадоре охота на гусей происходит раньше, и в Нунавуте охота на морских котиков всё чаще происходит летом, когда котики жирнее и, скорее всего, не пойдут на дно при выстреле. Способность перемещать время и место деятельности сбора добычи общиной, было отмечено в поддержку способностей, адаптироваться в результате происходящих перемен. Как было отмечено выше, некоторые регионы и общины уже перенесли время и место, где они охотятся на определённых животных. Это произошло, как естественный способ адаптации и в большинстве случаев рассматривается, как один из аспектов быть инуитским охотником. Однако существует необходимость в повышенной гибкости со стороны регуляторов в управлении режимами диких животных, и также в самих установках, если деятельность по сбору добычи должна происходить вне регулярных, или в рамках определённых, в настоящее время, охотничьих сезонов и установленных границ, из-за изменений в передвижении животных и миграционного времени. В других регионах такая гибкость нужна для того, чтобы позволить добычу новых, вторгающихся видов, для того, чтобы использовать возможности, которые приходят с переменами. Например, участники

северного Лабрадора выразили беспокойство, что, несмотря на появление лосей в их регионе, они не могут на них охотиться из-за ограничения в охотничьих регулировках. С переменами экосистем, регулирующие сети должны адаптироваться и отражать реалии земли, нужды и перемены в отношениях между Инuitами и их окружением.

Доступ и использование различных технологий и новых форм инфраструктур были также опознаны в контексте адаптационных мер. В Арктическом Бэе, Нунавуте, используются более быстрые и крупные суда, как реакция на всё более непредсказуемые воды. Глобальная позиционная система (ГПС) используется в целях оказания помощи навигации. Хотя технологии играют роль в некоторых моментах, общины в большинстве своём, не выступают за западные технологические «поправки». В Кугааруке, Нунавуте, Ивуеивике, Нунавике, некоторые участники заметили, что езда на собачьих упряжках более безопасна, чем современные технологии, такие как, снегоходы, и таким образом должна чаще употребляться. Многие поддерживают смешанную эксплуатацию, традиционных и более современных средств для того, чтобы более эффективно справляться с переменами в окружающей среде.

Некоторые из адаптационных мер, рекомендованных общинами, включают укрепление информативных коммуникаций и способностей разделять информацию на индивидуальной основе в общинах, между общинами, и между регионами. Прежде всего, улучшенные коммуникации между общинами и регионами будут способствовать обмену

информацией об успешных адаптационных мерах и управлении. Во-вторых: некоторые общины заявили, что улучшенный коммуникационный потенциал может поддерживать сбор и распределение самых последних данных о местных условиях, о состоянии льда, земли и воды, центральным источником. Такие услуги снизят риск для охотников и путешественников в открытом пространстве. Хотя многие охотники уже используют радио для контакта пока они на открытой территории. Было отмечено, что существует сильная необходимость и поддержка для такого рода коммуникаций в окружающей среде, которая становится всё более переменчивой. И, в-третьих: участники отметили, что расширенный доступ к регионально-специфическим погодным прогнозам (таким же, которые доступны для канадских южных регионов) будет полезным.

Многие адаптации уже имеют место или рекомендованы жителями общин и нуждаются в экономических ресурсах. Однако не все хозяйства или общины имеют доступ к ресурсам, а на некоторых формах дохода импакт происходящих перемен уже отразился. В частности, некоторые общины, особенно в РИП определили, что доход от капканной и охотничьей деятельности уменьшается. Так что, для некоторых хозяйств и общин расходы будут повышаться, в попытке адаптироваться к импакту, связанному с климатическими изменениями в то время, как их доход будет уменьшаться.

Вопрос финансовых ресурсов особенно важен, потому, что способность отдельных лиц и общин внедрять определённое количество адаптационных стратегий, зависит от способности нести расходы. Некоторые общины выразили необходимость в поддержке, в результате повышающихся расходов

на топливо, починку снегоходов, и приобретение более быстрых и крупных лодок, как результат зависимости от вынужденных обстоятельств, в которых они себя обнаружили. Программы общинных холодильников, как одна из адаптационных мер, были отмечены в большинстве общин, где их пока нет. Однако многие также отметили, что содержание и управление холодильниками накладно. Строительство инфраструктуры для очищения питьевой воды и «остановки водяной стены», в плане предупреждения эрозий береговой полосы, вместе с улучшением существующей жилплощади – все эти мероприятия стоят деньги. Либо это малая инвестиция, такая, как установление москитной сетки в домах, либо большой расход, как в проектах предупреждения эрозий береговой полосы, или улучшение водной инфраструктуры, в любом случае, общины отметили, что высокий расход, связанный с некоторыми адаптационными стратегиями, делает даже рассмотрение этих вопросов невозможным.

Эта книга раскрывает важность сотрудничества и партнёрства между различными правительственными департаментами, на различных уровнях, между неправительственными организациями, и указывает на важность включения Инuitов для обеспечения значимого и эффективного разрешения изменений окружающей среды Арктики. Партнёрство, развитое в этой попытке, соединило научное понимание изменений окружающей среды с инuitским пониманием тех перемен, которые происходят на местном уровне, и что эти перемены означают для Инuitов. Знания, полученные посредством обмена различных источников, помогают определить и побороть те серьёзные вызовы, которые стоят перед Инuitами как сегодня, так и в будущем. Продолжаемое партнёрство и сильное на уровне общин участие – очень важно в развитие

направлений, программ, стратегий, которые будут успешно справляться с переменами в окружающей среде.

Жители общин, принимавшие участие в этой работе, высоко оценили тот факт, что старейшины, взрослое население и молодёжь, получили возможность вместе собраться для обсуждений, и также получить друг от друга знания в этом важном вопросе. Они также подчеркнули необходимость продолжения работы в этой области, так как, семинар просто «приоткрыл завесу» над уже существующими знаниями в общинах. Участники предложили, что можно будет предпринять дальнейшее детальное изучение для документирования полного спектра Инуитских знаний.

Участники общин определили различные группы, которые должны получить информацию из семинаров, начиная от местных и региональных правительственных организаций по управлению дикими животными, до международных организаций, таких как, Арктический Совет и Организация Объединённых Наций. Участники согласились в необходимости «дать широкую огласку». В этом контексте они определили ясный план действий и рекомендаций.

Самое главное, этот проект предоставил способ для Инуитов выразить их беспокойство, высказать идеи и поделиться знаниями. Также предоставил возможность поддержать голос Инуитов в вопросах, которые ежедневно влияют на их жизнь. Партнёры проекта надеются, что беспокойство, выраженное общинами, привлечёт внимание региональных, национальных и международных правительств и институтов,

где может быть достигнуто изменение курса.

Далее: информация в этом отчёте обеспечивает крепкую платформу для начала развития инструментов, которые позволят лицам, принимающим решения в общинах, включать сценарии климатических изменений и их потенциальный импакт в повседневную жизнь.

Совершенно ясно, что Инуиты подстраиваются к эффектам климатических изменений уже некоторое время. Это ставит Инуитов в редкое положение: рассказать всему миру о том, что может произойти. Инуитская смекалка и знания в адаптации к климатическим изменениям на местном уровне, может являться примером для других общин, перед которыми могут возникнуть эти вопросы в близком, или далёком будущем. К сожалению, это качество адаптироваться никогда не было таким важным для Инуитов, как сегодня. Перемены окружающей среды, любые перемены, наступают с такой скоростью, которая может превзойти предел терпения народов Арктики и их потенциал ответить должным образом.





# INTRODUCTION

Inuit living in Canada have growing concerns about the impacts to their environment, health and culture stemming from various forms of environmental change, particularly climate change. To date, the focus on this subject has been primarily oriented towards understanding the biophysical changes and their impacts on the environment, with little attention given to the potential impacts on communities and the health of individuals living in the North. Consequently, insufficient work has been conducted on identifying and discussing how communities are currently adapting or may adapt to these environmental changes in the future. Similarly, little attention has been given to Inuit needs with regard to supporting the development and maintenance of successful adaptation strategies to minimize negative impacts and take advantage of any opportunities these changes may create. In response to interest by Inuit communities and organizations in Canada, a project involving a series of community workshops was initiated to investigate environmental change, its potential impacts at the community level and strategies for adaptation.

This project, called *Unikkaaqatigiit: Putting the Human Face on Climate Change*, is a partnership between Inuit Tapiriit Kanatami (ITK), the Nasivvik Centre for Inuit Health and Changing Environments at Laval University, and the Ajunnginiq Centre at the National Aboriginal Health Organization, with participation of Inuit land claim organizations. Residents from 17 communities across all four Inuit regions in the Canadian North (see Figure 1 and Table 3) attended these workshops. For a list of the research teams who facilitated the community workshops, see Table 2 (page 4).

These workshops provided a forum in which Arctic community residents—those closest to and most affected by these changes—could relay their experiences, express their concern and transfer their incredible knowledge of the land, sea, sky, and wildlife. All dialogue was recorded as a way of documenting the observations, understandings and effects of climate-related changes in participants’ local areas, and identifying existing or potential strategies to cope with and adapt to these impacts.

**Table 3. Communities Involved in Workshops**

| Inuvialuit Settlement Region (ISR) | Nunavut     | Nunavik (Northern Quebec) | Nunatsiavut (Labrador) |
|------------------------------------|-------------|---------------------------|------------------------|
| Tuktoyaktuk                        | Arctic Bay  | Kangiqsujaq               | Nain                   |
| Aklavik                            | Kugaaruk    | Ivujivik                  | Northwest River        |
| Inuvik                             | Repulse Bay | Puvirnituk                | Happy Valley–Goose Bay |
| Holman Island                      |             |                           | Rigolet                |
| Paulatuk                           |             |                           | Makkovik               |
|                                    |             |                           | Postville              |

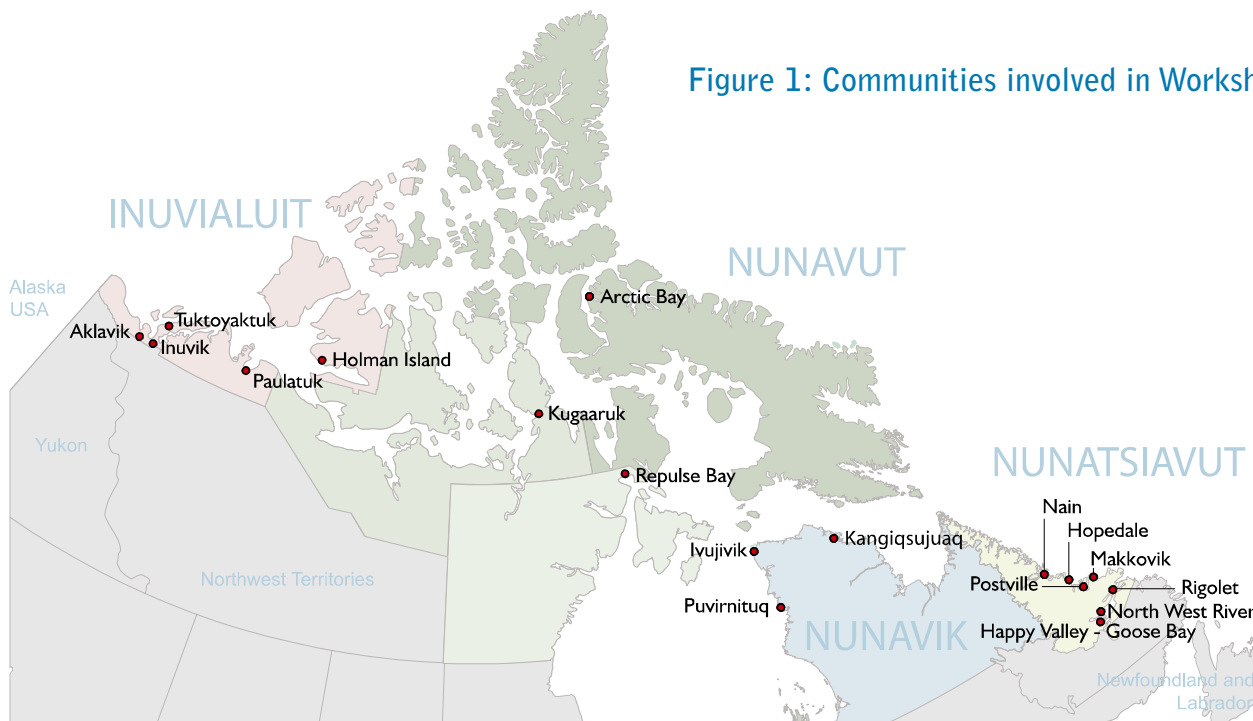
It is important to note that the workshops focused on Inuit-observed changes in the Arctic environment, and thus changes of all types in local environments were recorded. This book, as a result, presents the breadth of changes workshop participants have observed. However, where possible, the sections highlight the reported environmental changes and impacts most associated with climate change in the Arctic regions.

In addition to collecting these data, the purpose of these workshops was to share community perspectives on the changes taking place and to influence local, regional, national and international processes on environmental change, especially in the area of responses to these impacts—both existing and potential. The workshops also served to bring a “human face” to the issue of climate change in the Arctic. The perspectives of community

residents and their unique observations, based on rich and valuable local knowledge, have been documented in a series of community and regional reports. These have formed the foundation of the development of this national Inuit synthesis report, *Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Inuit in Canada* which is comprised of the following sections:

- “Observations” provides a brief overview of the changes observed by Inuit to set the context for the following section.
- “Impacts” contains a discussion of the effects the Inuit are experiencing, as reported from an Inuit perspective. The effects have been grouped according to human dimensions.
- “Adaptations” presents Inuit-identified existing or potential coping and adaptation strategies as

Figure 1: Communities involved in Workshops



discussed during workshops with members of communities from across the Arctic.

- “Conclusions” highlights a number of recommendations for both policy and further research that were identified by workshop participants and the research team. Implementing these would represent a move forward in addressing the issues raised in this book.

This book does not focus solely on Inuit observations, as they appear in detail in the community reports and will be the exclusive subject of one of a series of reports emerging from this project. Rather, the intent here is to present how climate change is linked to Inuit communities and lives, how these changes are affecting Inuit and how they are already coping with these changes today.

Although there is great interest in environmental change in the Arctic from governments and scientists alike, there has been little interest in engaging the people of the Arctic in meaningful discussions about environmental change and its impacts on the people who live in the circumpolar regions of the world. Learning about changes in the Arctic environment from the long-time residents of this region—those who actually experience the changes—contributes to the broader body of knowledge about environmental change in the North. It improves our understandings of how these changes translate into real impacts in the lives of Arctic peoples and communities.

There is no doubt that the Arctic is changing. How do these changes in the land affect Inuit, and what can be done to minimize the impacts of these changes and take advantage of opportunities they may create? It is these gaps in information that we have attempted to fill through the writing of this book.

Furthermore, this book emphasizes the need to conduct climate change research at the local and regional levels. Observations and impacts vary across the North, and even within localized geographic regions, as shown in the following sections. Only by listening to the people who live in these communities, separated by distance and biophysical and social differences, can this level of cross-scale detail be accomplished.

Extending the boundaries to include discussion of adaptation strategies, both existing and potential will help Inuit cope with the effects of change. Although it is the northern regions that will feel the impacts of climate change the earliest and perhaps the greatest, it is these regions that have the least capacity to deal with this change. We believe that the information in this book will help bring a human face to the issue of environmental change in the circumpolar Arctic regions, and will enhance a North-to-South and North-to-North dialogue on issues dealing with climate and environmental change.

The workshops and their findings represent an important initial stage in the development of regional and local understanding and the development of processes to address the concerns and questions raised by participants. For each workshop, a community report has been completed and presented to the residents, and regional summaries have been developed to communicate these concerns and issues to a larger audience. As stated, this national synthesis report purports to take the documented statements a step further by bringing the impacts and resulting adaptations to the forefront of policy level discussions—essentially giving a voice to Inuit communities in this process.

The information gathered through the workshops also lays the foundation for more in-depth research to be

conducted on key issues raised in this book. In fact, this research partnership process has provided the impetus to engage in further community and regional work on several subjects in more detail related to observations, impacts and adaptations. Further, through this project, the need for the development of local monitoring programs and community adaptation strategies have been identified, in fact some of which are being pursued already.

### Methods

In approaching each workshop, the research team began by conducting training sessions with representatives from the regional Inuit organizations so that regional representatives were engaged in leading the process as much as possible. By building capacity at the community and regional levels, the project team hopes to eventually transfer the research process to the regional organizations.

The workshops made use of a range of participatory exercises that had been utilized and tested during a similar International Institute for Sustainable Development (IISD) climate change study conducted in Sachs Harbour in 1999–2000. These exercises drew on participatory planning and analysis techniques including Participatory Rural Appraisal (PRA) and Objectives Oriented Project Planning (ZOPP).

Each workshop was separated into a series of discussions and documentation exercises on each of the following topics: goals and expectations of the workshop; observations of environmental change in the local area; impacts of these changes; current changes taking place in the community in reaction to these changes and their impacts; identification of potential strategies that could

be used to adapt to changes and minimize negative impacts in the future; identification of organizations and individuals that should be made aware of these community concerns; and actions at the community, regional, national and international levels on climate change.

### History

The key to the success of this project has been in the fact that more than one individual or organization was involved in conducting it. *The Unikkaaqtigiit—Putting the Human Face on Climate Change* project was set in motion back in 1998 when the International Institute for Sustainable Development (IISD) began a two-year project with the community of Sachs Harbour to document and share local observations of climate change through the production of a professional video and a series of scientific papers. The subsequent findings generated considerable interest with scientists and policy makers, while the video received international attention and has become an important resource for educational curricula on climate change in the Arctic.

The success of the Sachs Harbour work led ITK and its growing partnership to adapt the workshop methods. In partnership with researchers from the Nasivvik Centre who are conducting a project in the Eastern Arctic, ITK and its partners conducted the workshops for this project.

### Partnerships

The three consistent partners in this project—ITK, Nasivvik, and the Ajunnginiq Centre—each brought a different perspective and skill set to the workshop team. The partnership was successful in bringing together scientists, community development experts and local residents. This helped to ensure that broad perspectives, experiences and knowledge came together to push the

boundaries of our understanding of these issues in Inuit communities.

Perhaps the most important partnerships established were those made at the regional and local Inuit-organization levels. Without the support and interest of the communities to engage in this process, a project of this size and scope would not have been possible. As part of the research process, regional and community representatives were trained to conduct this research, and in the Inuvialuit Settlement Region (ISR), the subsequent workshops in Holman Island and Paulatuk were initiated and led solely by regional representatives.

### Context

To understand the impacts that environmental change is having on Inuit in Canada, it is important to recognize the unique geographical, cultural and historical environment in which Inuit live.

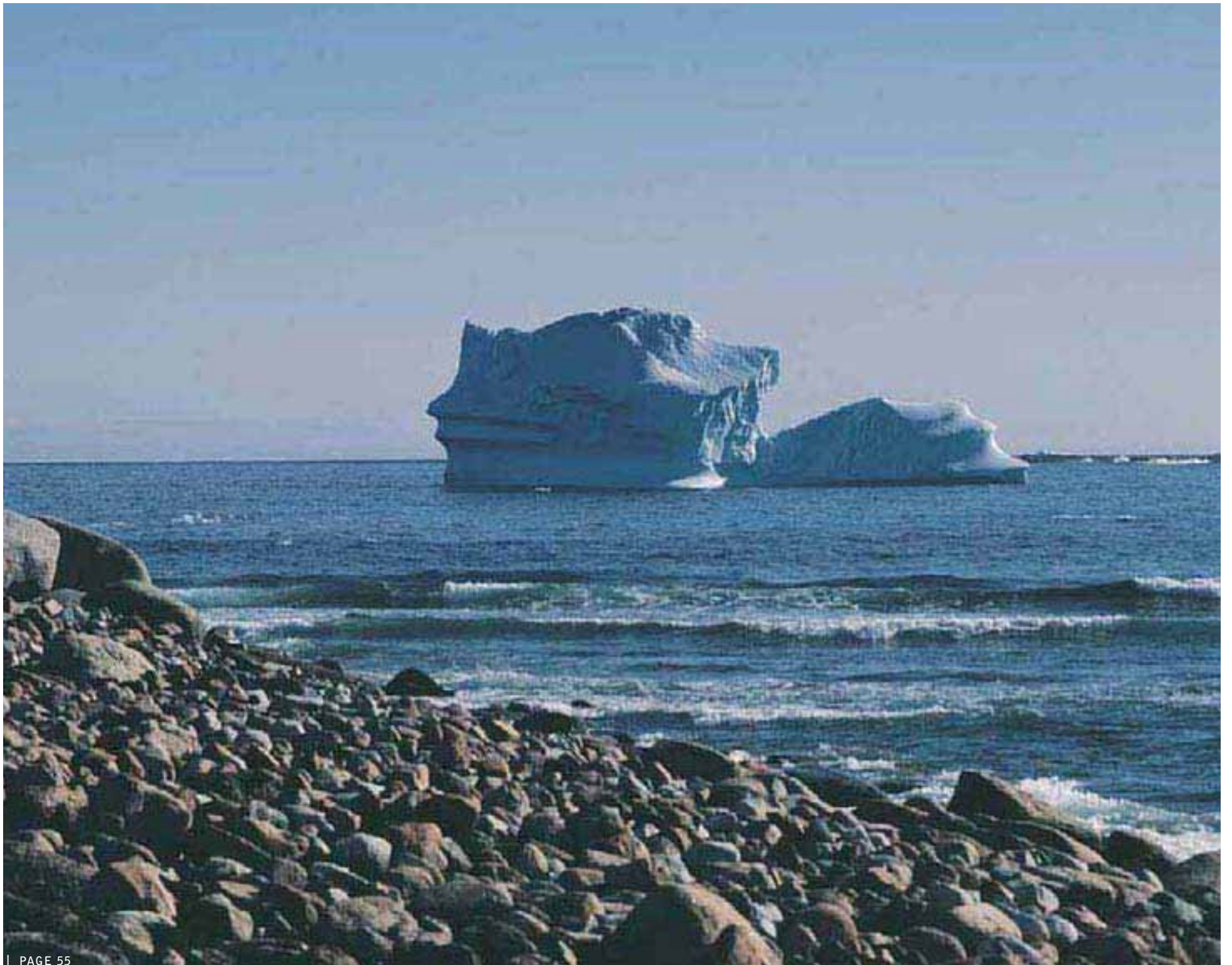
Inuit are a circumpolar people, inhabiting regions in Russia, Alaska, Canada and Greenland, united by a common culture and language. There are approximately 45,000 Inuit living in Canada spread across 53 communities. Four Inuit regions in Canada encompass more than 40 per cent of the entire landmass of the country: Nunatsiavut (Labrador), Nunavik (northern Quebec), Nunavut, and the Inuvialuit Settlement Region (ISR) (northern Northwest Territories). Such a small population spread across such a large region makes the Canadian Arctic a remote and sparsely populated area.

Many of the world's leading scientists agree that it is the polar regions—the home of the Inuit and other indigenous peoples—that will be the first and most severely affected by climate change. Information gathered about what is

happening in these areas in the global context may well shed light on what is to come in other parts of the world. Carrying out this research on the Arctic is especially critical, as the environment is sensitive and the relationship between Inuit and the land is inseparable. Inuit culture and daily life are therefore greatly affected by any changes that take place in their local surroundings.

The environment affects every aspect of Inuit life. The land provides sustenance and shelter, and is the foundation of culture and knowledge. Such a close relationship with the land has yielded and necessitated a very detailed knowledge about the local environment, and has made Inuit especially sensitive and attuned to recognizing environmental change. Although most have now adopted a more southern style of life, a significant proportion of Inuit still hunt and fish for part of their diet. Inuit have valuable knowledge that can help researchers and policy makers to understand and address environmental change issues in the North. Clearly, the most important and reliable source of information in the Arctic is Inuit themselves.

Climate change may be a major threat to the Inuit way of life, however as a people, they have lived through periods of major change. Some of these changes have been measured over geological time, and some have been measured over decades—such as contact with European culture. Throughout, Inuit have adapted and survived as they must continue to do now.



# UNDERSTANDING INUIT OBSERVATIONS, IMPACTS AND ADAPTATIONS

Inuit observations of environmental change are not discussed as distinct, unique changes unto themselves. Rather, they are viewed and reported as changes in the weather and environment that are linked to other changes, and in some cases, one is viewed as having caused the other. The interrelated nature of these changes in environment and weather conditions are then often reported to have resulted in impacts to Inuit in a variety of ways. Presented in this way, it is difficult to distinguish between an observation and an impact as described by Inuit.

For example, one such chain was presented by a hunter in the workshops. It involved changes in the environment that affected the diet of caribou, which in turn affected the traditional food security of Inuit. As explained by the hunter, ice layers formed by mid-winter thawing or rare winter freezing rain events—now becoming more common—make it very difficult for caribou to access lichen growing beneath the snow and ice. As a result, caribou are broadening their diet and feeding on a new variety of items in new places, including the community garbage dump. Caribou are reported to be skinnier and less healthy in all regions, and the quality of meat is said to be lower than in the past. Inuit are experiencing more difficulties in accessing the animals as a result of altered migration patterns and travel routes. In this one example, there are several issues: the changes in weather; inability of caribou to find lichen; caribou feeding in garbage dumps; less healthy caribou; poorer quality of meat; difficulty accessing animals; altered travel routes. This example illustrates the complexity of the relationship between two changes in environmental conditions (increased freeze–thaw events and the frequency of

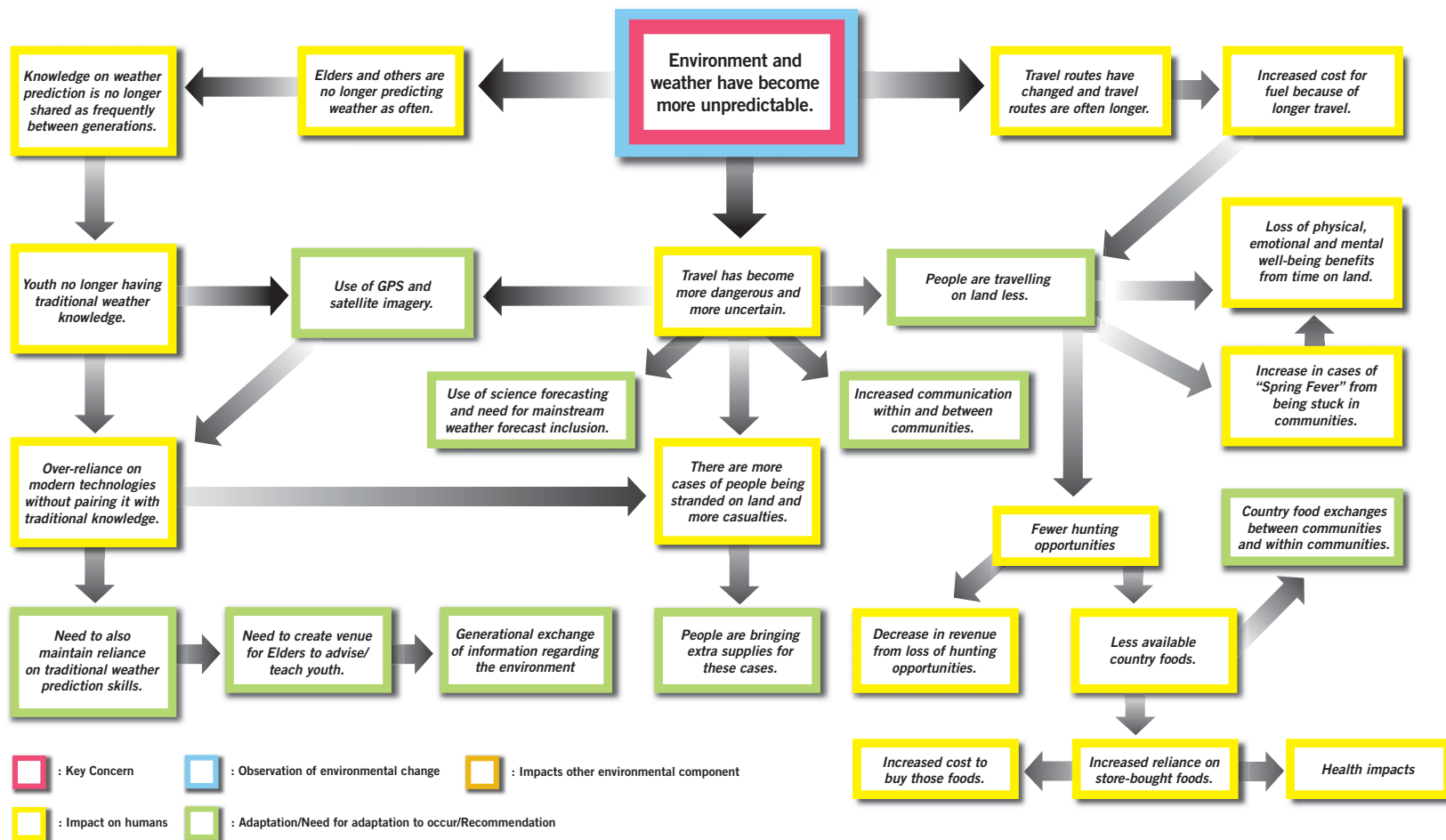


“The entire ecosystem in  
the North is changing”

(Repulse Bay, Nunavut).

Figure 2: Observation, Impact and Adaptation Diagram for All Regions.

## OBSERVATION, IMPACT & ADAPTATION DIAGRAM FOR ALL REGIONS - UNPREDICTABLE WEATHER



freezing rain during winter months) and several changes in habitat and behaviour for one species, and a key impact on Inuit food security.

The complexity continues in that, for example, another participant might start off his or her observation with an issue already mentioned in the previous list, but it would have its own set of cause-and-effect impacts: difficulty accessing animals due to inaccessible food (mentioned above) leads to altered travel routes, making for more dangerous travel, which causes residents to purchase more store-bought items and to purchase ATVs, but these vehicles damage the terrain; it also causes hunters to stay off the land for longer periods of time, which itself leads to “spring fever” and feelings of isolation.

The definitions of an observation and an impact depend upon the end point being discussed. A change in an environmental condition may have an impact on caribou, which in turn has an impact on Inuit. For the purposes of our discussion, the ultimate interest is the impact to Inuit and aspects of Inuit livelihoods, traditions, culture, general health and well-being. However, as these relationships are usually not simple and linear in nature, and the first order impacts of climate and environmental change to animals and other organisms in the environment are quite often indirectly important to Inuit, some of the changes discussed as observations in the next sections are expanded upon as they relate to impacts and adaptations reported by Inuit in workshops.

This complex nature of relationships between environmental changes and impacts to Inuit demonstrates the richness of Inuit knowledge and observations of the Arctic environment. The linked nature of changes and impacts was frequently reported in workshops. Figures 2,

5, 6, 7 and 8 provide examples of these relationships and have been inserted into the chapter entitled Impacts of Environmental Change. Please see Figure 2 as an example. Each of these diagrams shows how Inuit relate one key environmental change with one or many interrelated changes and impacts in the environment, which are then eventually associated with one or more interconnected impacts on Inuit. Clearly, impacts to Inuit are the result of many indirect relationships and the combination of a number of changes in the environment, wildlife and plants, and not a simple, single order, linear cause and effect relation.

Similarly, one can see in these figures that there is a lot of overlap. For example, one observation may relate to many impacts and then to one or more adaptation strategies, and the same pattern in reverse from adaptation to observation. This means that any one adaptive strategy developed to respond to a change is the same strategy employed to adapt to many impacts. Some overlap or repetition is therefore necessary when presenting observations, impacts and adaptations in the following sections in a categorical fashion.



# OBSERVATIONS OF ENVIRONMENTAL CHANGE IN THE ARCTIC: GENERAL TRENDS ACROSS REGIONS

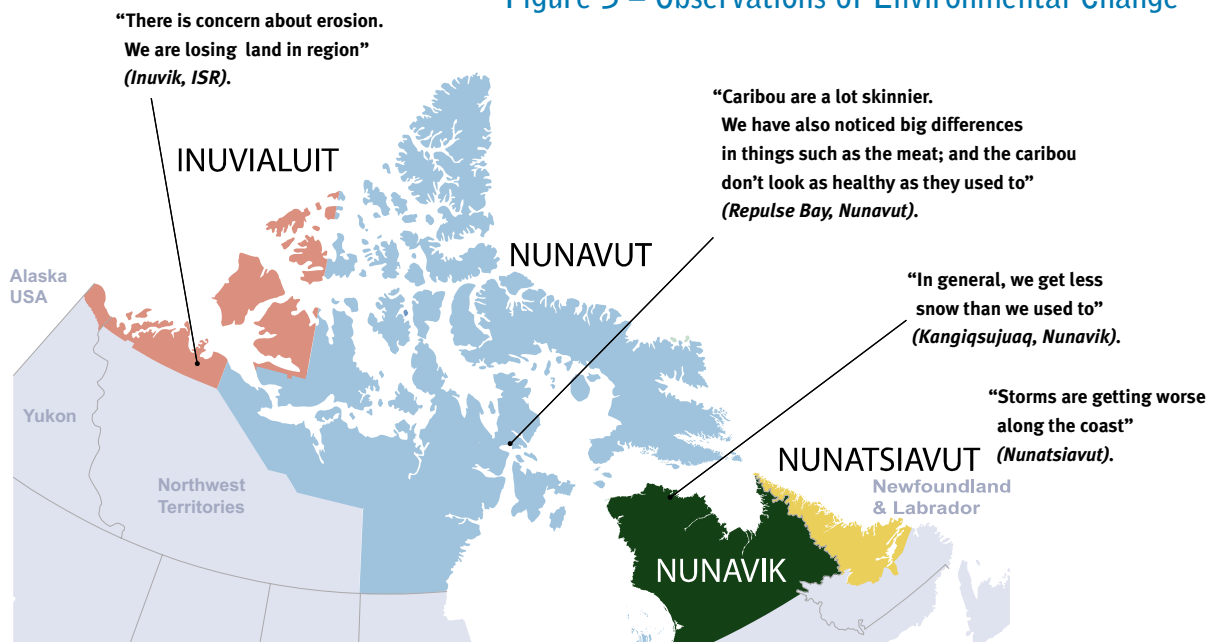
## Introduction

Before we can understand how environmental changes are affecting Inuit in the Canadian North and how they can respond accordingly, we must first know what those changes are. This chapter presents an overview of some of the changes Inuit have reported in their local environment. In the interest of brevity, only the most common observations made by Inuit living in communities across the Canadian Arctic appear here. They also have been grouped by category: wind and storms, temperature, sky (sun, stars and moon), precipitation (rain and snow), ice, land, water, and vegetation and wildlife.

Please see Figure 3 which depicts observations of environmental change by region and Table 4 at the end of this chapter for a summary of these observations.

Often, workshop participant knowledge was reported in the form of cause-and-effect chains that linked observations to impacts to adaptations. The diagrams presented throughout the book illustrate these complex relationships between key changes and the adaptations or responses taking place in communities as a result (Figures 2, 5, 6, 7 and 8).

Figure 3 – Observations of Environmental Change





It is important to note that not all observations of changes in the environment were reported uniformly across the North. In fact, differences among regions and even among communities in the same region were often reported. Regardless, based on the discussions with the many residents throughout the North, it is clear that Inuit are observing unprecedented changes in the Arctic environment.

#### Weather (Wind and Storms)

All communities reported that the weather is changing, although the types of changes observed varied among communities and regions. The weather in all four regions was consistently reported as becoming more unstable, and all communities independently spoke of the weather being much more unpredictable today than ever before. This has resulted in difficulties for Inuit to predict the weather using traditional methods, such as reliable weather cues that have been passed down from generation to generation. For example, in Arctic Bay, residents used to observe a relationship between the pattern of the moon and the wind: a half-moon indicated the start of a period of three days of wind. This relationship is said to no longer exist today. These changes to weather cues were mentioned regularly in Nunavik, Nunavut and Nunatsiavut communities and in more general terms in Inuvialuit communities.

Stronger winds were reported to be occurring in certain areas, while a change in the prevailing wind direction is occurring in others. Residents of communities in Nunavik and Nunatsiavut, and in Repulse Bay, Nunavut, reported that they are experiencing changes in the strength and patterns of winds, including more windy days throughout the year. In Puvirnituq, Nunavik, winds gusting to 100 km/h have been experienced, and winds strong enough

to break trees were reported as being not uncommon by one Nunatsiavut resident. In the eastern communities of the ISR, winds were reported as being more unpredictable. In the western ISR, seasonal shifts in wind have been observed—communities have experienced less wind in winter and more in summer. In fact, during the summer before the workshop was conducted in Aklavik, a rare funnel cloud was observed and captured on film by a local resident (see photo of whirlwind). Residents had never heard of such a funnel cloud occurring in the region before—at any time of year.

A general shift in the prevailing wind direction has been experienced in several communities throughout the Canadian Arctic, including Arctic Bay, Kugaaruk, Holman Island, Aklavik, and in communities along the north coast of Nunatsiavut.

Some communities are experiencing more frequent thunderstorms while a number of others have observed fewer of these events. Still others have witnessed changes in the severity and timing of thunderstorms. In Nunavik, thunderstorms are occurring generally during spring but also later than usual in the fall. In Nunatsiavut, thunder and lightning were reported to occur less in summer now than before and more often over the winter period—a very rare event for these communities in the past.

#### Temperature

In the Arctic, ice and snow are critical to Inuit tradition and culture, as well as to individual and community well-being. Workshop participants from across the North reported a seasonal shift in average temperature—either warmer or cooler, depending on the location of the community.

In discussion with Inuit about changes related to temperature, workshop residents often linked their observations to the seasons. For example, the winter season on average has been observed as being warmer than in the past in all four regions. In Nunavut and Nunatsiavut, however, there was some disagreement as to whether the winter, on average, is getting warmer or cooler. Observations of more temperature fluctuations, both day-to-day and even within a few hours' time, were observed to be occurring quite consistently across Nunavut, which may have influenced the observations regarding seasonal variability of temperature in this region.

The autumn season, on average, has been observed as becoming warmer and longer in Nunavut, Nunavik and Nunatsiavut. Nunatsiavut and the western communities of the ISR have observed that the summers, for the most part, are getting warmer. Nunavik and the eastern communities of the ISR reported that the summers are generally getting cooler.

On review of residents' observations, patterns of changes in extreme warm temperatures vary across the North. Many Inuit say that specific summer days have recorded unusually high temperatures in recent years, much higher than ever before. In all regions, with the exception of the eastern ISR, residents are commonly experiencing summer heat that is much more intense than what they remember from summers gone by. As well, residents in all four regions have observed that extreme cold days in the winter are occurring less frequently.

### **Sky (Sun, Stars and Moon)**

Not only have Inuit noticed changes in the intensity of the sun's heat over the past few decades—in Tuktoyaktuk, for example, Inuit are experiencing

sunburns for the first time in their cultural history—but a variety of other changes in the sun and the sky are being seen as well.

Interestingly, in two Nunavik communities and one community in each of Nunavut and the ISR, residents suggested that the Earth's position has shifted or tilted on its axis, or that the rotation of the Earth is slowing down. In both Nunavut and Nunavik, Inuit have noticed a slight shift in the location of the sun, stars and moon in the sky. According to some residents of Nunavut communities, the moon is now said to travel higher in the sky, while Inuit in both Nunavik and Nunavut reported that the sun travels higher in the sky and sets in a slightly different location on the horizon than it used to.

In Kugaaruk, Nunavut, people have observed a "brighter sky and environment" and reported that the sun sets faster in the evening than it used to. Inuit also suggest that the colour of the Arctic sky is different today than in the past—hazier and less often the dark blue that they remember. Participants used adjectives like "dirtier," "whiter" and "less clear" to describe these changes in the Arctic sky.

### **Precipitation (Rain and Snow)**

Inuit have noticed profound changes in some fundamental components of the weather. Communities reported changes in the quality and quantity of rain and snow, and the timing of precipitation throughout the year.

Changes to the amount of rainfall across the North vary from region to region. More rain has been observed falling in some Nunavut, Nunatsiavut and ISR communities, while less rain has been seen in one ISR community and throughout the three Nunavik communities partici-

pating in workshops. More forceful rainfall has been experienced in Ivujivik, Repulse Bay, Holman Island, and Aklavik and more frequent freezing rain events were reported to be occurring only in three communities in the ISR. These were not mentioned in any other region.

All four regions have observed decreased amounts of snow; however, residents in one community, Kugaaruk, Nunavut, noted that the amount has actually increased in recent years. Several communities have observed that the snow is arriving later in the fall and melting earlier in spring. This was not mentioned in the ISR, nor in Kugaaruk, where snow is reported to arrive earlier in the fall—even before the time when ice forms in the area of this community.

Hunters, Elders and community residents alike have noticed a change in the quality and type of snow that falls in their regions. Residents in Nunatsiavut and Nunavut today more frequently see snow that has a top layer of ice—commonly referred to as “glitter” by Nunatsiavumiut—as a result of freeze-thaw events in the winter. Other communities have started to notice that snow has become drier, more grainy and of a different consistency. While snow seems to be getting drier and less sticky in Nunavik and Nunatsiavut, it is getting harder around Repulse Bay and heavier in Inuvik.

### Ice

For much of the year, Inuit life is directly tied to the ice on the lakes and sea around communities. Ice and snow provide easy access to many inland and offshore areas for hunting and fishing. Knowledge of ice and ice conditions are critical for Inuit survival.

All of the communities that participated in workshops over the past four years observed significant changes in the lake and sea ice in their region. Ice is much thinner

today than it used to be, forms later in the fall and breaks up earlier in the spring. In the past, in the community of Repulse Bay, Nunavut, ice was normally safe to travel on by the first week of June; in 2004, because of an uncommonly early break-up, it was not safe to travel by ice at that time of the year. The timing of freeze-up and break-up is reported to have shifted up to one month in some communities.

Later fall freeze-ups are also causing difficulties with travel. For example, in the Nunavik region, the communities of Kangiqsujuaq and Ivujivik have found that the timing of ice formation has moved from November to December. Residents in Puvirnituq, in this same region, expressed concern that freeze-up is sometimes not completed until early January. In the ISR community of Aklavik, residents reported that they used to gather at the river’s edge as a community during the height of the spring ice break-up to watch and listen to this remarkable spectacle. For several years now, because the break-up has been less dramatic, community members no longer observe this ritual.

Ice has been reported to be changing in other ways throughout the Arctic, although not consistently across regions and communities. A number of communities have observed that in addition to the ice becoming thinner, it has also become rougher to travel over.

### Land

Inuit reported that the humidity of the soil, the stability of permafrost and the security of shorelines are all beginning to change. The land is becoming drier in Nunavut, Nunavik and Nunatsiavut. Nunavut residents and residents of the community of Aklavik have observed landslides and mudslides recently and attribute it to warmer temperatures, melting permafrost and heavy rain events.

In Kugaaruk, the ground is said to be both “dropping” in areas, caused by a melting of the ground below, as well as rising in areas where it is “forced up from underneath.” In Aklavik and Tuktoyaktuk, the ground was also said to be dropping. In one community in each of Nunavik and Nunavut, it is said to be growing, expanding and rising in areas. As a result, Inuit described larger and even new islands in Nunavik, Nunavut and the ISR.

In all regions, residents spoke of melting permafrost or permafrost becoming thinner and more active. In Kugaaruk, Aklavik and Tuktoyaktuk, people have noticed an increase in the amount of exposed or visible permafrost. They made connections between melting permafrost and the sinking of the grounds’ surface; some Aklavik residents were particularly focused on Shingle Point, an important cultural area of the ISR, which is said to be dropping due to permafrost melt. While this area is said to be decreasing in terms of relief, residents say that increased siltation and deposition are causing the point to grow, and at a rapid rate—approximately four feet per year since 1990.

In the communities of Kugaaruk and Repulse Bay, Inuit have observed that along with a drop in sea level, the coastlines seem to be rising, which has resulted in the exposure of new rocks and shallower beaches and harbours. Scientists have also observed this phenomenon and call it “isostatic rebound.”

Erosion is a major concern in the Inuvialuit region. All communities but one are preoccupied with what this loss of soil and earth means for their coastline and riverbanks. A number of homes and buildings have already been moved because of shoreline erosion. In fact, residents of Tuktoyaktuk and Aklavik are concerned that



“We need ideas for erosion in the community because it is happening now”

(Tuktoyaktuk, ISR).

these communities may have to be moved due to collapsing infrastructure and a shrinking municipal land area. Residents of Nunatsiavut share these sorts of concerns as they have observed significant erosion in the Webb's Bay area north of the community of Nain.

### Water

Changes in the quality and quantity of freshwater have been observed in all four regions. It was also observed that the level of the ocean has changed in a number of regions. In some Nunavut communities, Inuit have observed a drop in sea levels; residents in Kugaaruk are also observing land rise, which, together with water-level drop, exacerbates the impact for this community. In contrast, in the communities of Arctic Bay, Paulatuk and Holman Island, the sea and the tides are reported to be higher than ever before.

Freshwater levels across the North were reported to be lower than in years past. For example, residents of Holman Island said that after the initial rise in water levels that accompanies the spring thaw each year, levels then quickly fall and have in fact become noticeably lower in some rivers and ponds in the area than what is regarded as normal for this location. Shallower rivers, lakes, creeks and ponds have been observed and some communities expressed concern that many bodies of water have dried up altogether.

Higher rates of sedimentation and changes in the appearance or size of some sandbars are having further impacts on these reported falling water levels. Increased sedimentation has also changed the water's quality. According to some Inuit, it has negatively affected the taste of fresh water. Increased freshwater temperature, algal growth and increased salinity were also reported and were said to be negatively affecting the water's quality and taste.

### Vegetation and Wildlife

Workshop participants from all regions reported that the general condition of vegetation appears to be poorer today than in the past. Vegetation species common to the Arctic have been observed growing in new locations while new species of vegetation have also been observed moving into local areas. In some areas, residents believe that plants are growing taller and more abundantly than before.

Commonly, discussions about vegetation in the regions focused on reports that the growth of berries has been impacted negatively by environmental change. Factors negatively affecting the condition and growth of berries varied across regions but included changes in rainfall levels, more intense heat from the sun, colder summer conditions, drier land conditions and increased erosion. In Nunavik and Nunavut, berry-producing plants were discussed in conversations about vegetation, although it was also mentioned that the overall appearance of the health of other plants has decreased. In the majority of cases in the four regions, it was reported that berries are less plentiful and less healthy now. For example, in Nunatsiavut, the hot sun causes bakeapples (or cloudberry) to ripen earlier and spoil faster.

Some of the same factors affecting berries also affect other vegetation and have caused the range, number and size of plants in the ISR to expand and increase. More specifically, willows, spruce and grasses have been observed to be more numerous, and their range has expanded considerably, according to residents in this region.

In all communities, changes to moss and lichen were mentioned but usually only in relation to their availability and to the health of caribou. In areas where increased freezing rain events have been reported, caribou have less access to lichen and moss, which has an impact on

the health of the animals. In several communities of Nunatsiavut, residents wondered whether the lichen and moss had been affected by contaminants from the exhaust of low-level military flights in that region.

Discussions regarding wildlife brought forth a great number of specific observations of changes in the health, behaviour and distribution of animals in the Arctic. Changes have been noticed with marine wildlife, terrestrial wildlife, birds, fish and insects. General observations/trends common to all regions include: an increased number of abnormalities and decreased level of health among marine and terrestrial wildlife as well as various species of fish; changes in the migration and distribution patterns of marine and terrestrial wildlife and birds; and the appearance of new species of marine and terrestrial wildlife, birds, fish and insects, as well as the movement of certain species further north than ever before.

### Conclusion: Patterns and Discrepancies

A large number of observed environmental changes were documented from the community-based knowledge discussed over the course of the workshops. Analysis of these observations shows great scope of local Inuit knowledge of the environment (see Table 4). Residents from many communities, living in different regions, possess a depth of locally specific knowledge that is difficult to convey in a written format. It is for this reason that Figures 2-6 have been included to highlight the complexity and richness that can be behind one single observation of environmental change. It is a challenging task, at best, to relate the rich, local observational details that accompanied each community-specific observation of environmental change. This level of contextual detail will become more evident as we move through the next two chapters and begin to relate how these observations

affect local residents and, finally, how communities and individuals are already starting to adapt to these impacts.

From reading these observations, we can see basic similarities and differences existing between communities within a region, and between regions. They also demonstrate the value of local knowledge as a source of data for environmental change, and thus confirm the need to involve local people in future research and monitoring processes. Indeed, current scientific climate model scenarios that attempt to illustrate or project environmental change do not account for the fine-tuned inter- and intra-regional differences that are outlined in the accounts presented by community residents here.

The observations presented during the workshops and appearing in this book attest to the abundance of local expertise in relating both historical and current observations. Residents were often able to identify when many of the changes related to various environmental components (e.g., weather, seasons, erosion, permafrost, sea and lake ice, etc.) first began occurring in their region and to recall the number, extent, frequency and types of changes that were occurring with each passing year.

This chapter illustrates how closely Inuit knowledge is tied to the history of land use, occupancy and daily activities. The environmental changes Inuit speak of are inextricably linked to their daily lives, and so they must change accordingly. These impacts and resulting adaptations form the subject of the next chapter.

**Table 4. Summary of Observations of Environmental Change in the Canadian Arctic**  
*(as discussed in community workshops)*

| Region                                                          | Inuvialuit Settlement Region |               |         |             |        | Nunavut     |          |            | Nunavik    |            |          | Nunatsiavut |
|-----------------------------------------------------------------|------------------------------|---------------|---------|-------------|--------|-------------|----------|------------|------------|------------|----------|-------------|
| Community                                                       | Paulatuk                     | Holman Island | Aklavik | Tuktoyaktuk | Inuvik | Repulse Bay | Kugaaruk | Arctic Bay | Puvimittuq | Kangiqsuaq | Ivujivik | Nunatsiavut |
| OBSERVATIONS                                                    |                              |               |         |             |        |             |          |            |            |            |          |             |
| WEATHER                                                         |                              |               |         |             |        |             |          |            |            |            |          |             |
| Weather is increasingly variable and unpredictable.             | ●                            | ●             | ●       | ●           | ●      | ●           | ●        | ●          | ●          | ●          | ●        | ●           |
| Winds not as strong / it is not as windy.                       |                              |               | Winter  | Winter      | ●      |             |          |            |            |            |          |             |
| Winds are stronger / windy days occur more often.               | ●                            | ●             | Summer  | Summer      |        | ●           |          | ●          | ●          |            | ●        | ●           |
| Prevailing winds have shifted.                                  | ●                            | ●             | ●       |             |        |             | ●        | ●          |            |            | ●        | ●           |
| More "whirlwinds" in summer.                                    |                              |               | ●       |             |        |             |          |            |            | ●          |          |             |
| STORMS                                                          |                              |               |         |             |        |             |          |            |            |            |          |             |
| Thunderstorms / lightning events are less frequent.             |                              |               |         |             |        |             |          |            | ●          | ●          |          |             |
| Thunderstorms more frequent / more extreme.                     |                              |               | ●       | ●           | ●      | ●           |          |            |            |            |          | ●           |
| Thunderstorms / lightning occurring at different times of year. |                              |               |         |             |        |             |          |            | ●          | ●          | ●        | ●           |
| TEMPERATURE                                                     |                              |               |         |             |        |             |          |            |            |            |          |             |
| Winters are warmer.                                             |                              | ●             |         | ●           | ●      |             |          |            | ●          |            | ●        | ●           |
| Fewer winter extreme cold temperatures.                         | ●                            | ●             | ●       |             | ●      | ●           | ●        |            | ●          |            |          | ●           |
| Summers are cooler.                                             | ●                            | ●             |         |             |        | ●           |          |            | ●          |            | ●        |             |
| Summers are warmer.                                             |                              |               |         |             |        |             |          |            |            |            |          |             |
| More summer extreme warm temperatures.                          |                              |               | ●       | ●           | ●      | ●           |          |            |            |            |          | ●           |

| Region                                  | Inuvialuit Settlement Region |               |         |             |        | Nunavut     |          |            | Nunavik    |             |          | Nunatsiavut |
|-----------------------------------------|------------------------------|---------------|---------|-------------|--------|-------------|----------|------------|------------|-------------|----------|-------------|
| Community                               | Paulatuk                     | Holman Island | Aklavik | Tuktoyaktuk | Inuvik | Repulse Bay | Kugaaruk | Arctic Bay | Puvimittuq | Kangiqsujaq | Ivujivik | Nunatsiavut |
| <b>OBSERVATIONS</b>                     |                              |               |         |             |        |             |          |            |            |             |          |             |
| <b>TEMPERATURE</b>                      |                              |               |         |             |        |             |          |            |            |             |          |             |
| Warmer and longer autumns.              |                              |               |         |             |        |             | ●        | ●          |            | ●           |          | ●           |
| Increase in temperature fluctuations.   |                              | ●             |         |             |        | ●           | ●        |            |            |             |          |             |
| <b>SKY / SUN</b>                        |                              |               |         |             |        |             |          |            |            |             |          |             |
| Sky is less clear / more hazy.          |                              |               |         |             |        | ●           | ●        | ●          | ●          |             | ●        |             |
| Sun's heat is more intense today.       |                              |               |         | ●           | ●      | ●           | ●        | ●          | ●          |             | ●        | ●           |
| Stars have shifted in the sky.          |                              |               |         |             |        |             | ●        | ●          |            |             | ●        |             |
| Moon seems higher in sky.               |                              |               |         |             |        | ●           | ●        |            |            |             | ●        |             |
| Sun seems higher in the sky.            |                              |               |         |             |        |             | ●        | ●          |            |             | ●        |             |
| <b>PRECIPITATION</b>                    |                              |               |         |             |        |             |          |            |            |             |          |             |
| Increase in rainfall.                   | ●                            | ●             |         | ●           |        | ●           |          | ●          |            |             |          | ●           |
| Decrease in rainfall.                   |                              |               |         |             | ●      |             |          |            | ●          | ●           | ●        |             |
| Force of rain has increased.            |                              | ●             | ●       |             |        | ●           |          |            |            |             | ●        |             |
| Increase in freezing rain.              | ●                            |               |         | ●           | ●      |             |          |            |            |             |          |             |
| Decrease in snowfall / snow on land.    | ●                            | ●             | ●       | ●           | ●      |             |          | ●          | ●          | ●           | ●        | ●           |
| Changes in snow type / characteristics. |                              |               |         |             | ●      | ●           | ●        |            | ●          | ●           |          | ●           |



| Region                                                             | Inuvialuit Settlement Region     |                                  |                                  |                                  |                                  | Nunavut                          |                                  |                                  | Nunavik                          |                                  |                                  | Nunatsiavut                      |
|--------------------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Community                                                          | Paulatuk                         | Holman Island                    | Aklavik                          | Tuktoyaktuk                      | Inuvik                           | Repulse Bay                      | Kugaaruk                         | Arctic Bay                       | Puvimittuq                       | Kangiqsujaq                      | Ivujivik                         | Nunatsiavut                      |
| <b>OBSERVATIONS</b>                                                |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |
| <b>ICE</b>                                                         |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |
| Ice is thinner now.                                                | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| Earlier break up of ice.                                           | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| Later freeze up of ice.                                            | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| Permanent snowpacks / icepacks are melting / glaciers are melting. |                                  |                                  |                                  |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  |
| <b>LAND</b>                                                        |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |
| Permafrost is melting / thinner permafrost / less of it.           |                                  |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> |                                  |                                  | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> |
| Ground is dropping.                                                |                                  |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  |                                  | <input checked="" type="radio"/> |                                  |                                  |                                  |                                  |                                  |
| Land is growing / expanding / rising.                              |                                  |                                  |                                  |                                  |                                  | <input checked="" type="radio"/> |                                  |                                  | <input checked="" type="radio"/> |                                  |                                  |                                  |
| Land is drier.                                                     |                                  |                                  |                                  |                                  |                                  | <input checked="" type="radio"/> |                                  |                                  |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| Increased erosion.                                                 | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> |                                  |                                  | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> |
| Landslides / mudslides.                                            |                                  |                                  | <input checked="" type="radio"/> |                                  |                                  |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  |                                  |                                  |                                  |
| Islands are bigger / new islands.                                  | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> |                                  |                                  | <input checked="" type="radio"/> |                                  |                                  |                                  |                                  |                                  |                                  |
| <b>WATER</b>                                                       |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |
| Freshwater levels are lower.                                       |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| Sea level is higher.                                               | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  |                                  |                                  |                                  |                                  | <input checked="" type="radio"/> |                                  |                                  |                                  |                                  |
| Sea level is lower.                                                |                                  |                                  |                                  |                                  |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  |                                  |                                  |                                  |                                  |
| Sedimentation in water bodies has increased.                       | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> | <input checked="" type="radio"/> |                                  |                                  |                                  |                                  |                                  |                                  |
| Sandbars are larger / higher.                                      |                                  |                                  | <input checked="" type="radio"/> |                                  | <input checked="" type="radio"/> |                                  |                                  |                                  |                                  |                                  |                                  |                                  |
| <b>VEGETATION &amp; WILDLIFE</b>                                   |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |                                  |
| New species of wildlife or insects or fish or birds or vegetation. | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |
| Decrease in health among marine or terrestrial wildlife or fish.   | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> |



# IMPACTS OF ENVIRONMENTAL CHANGE

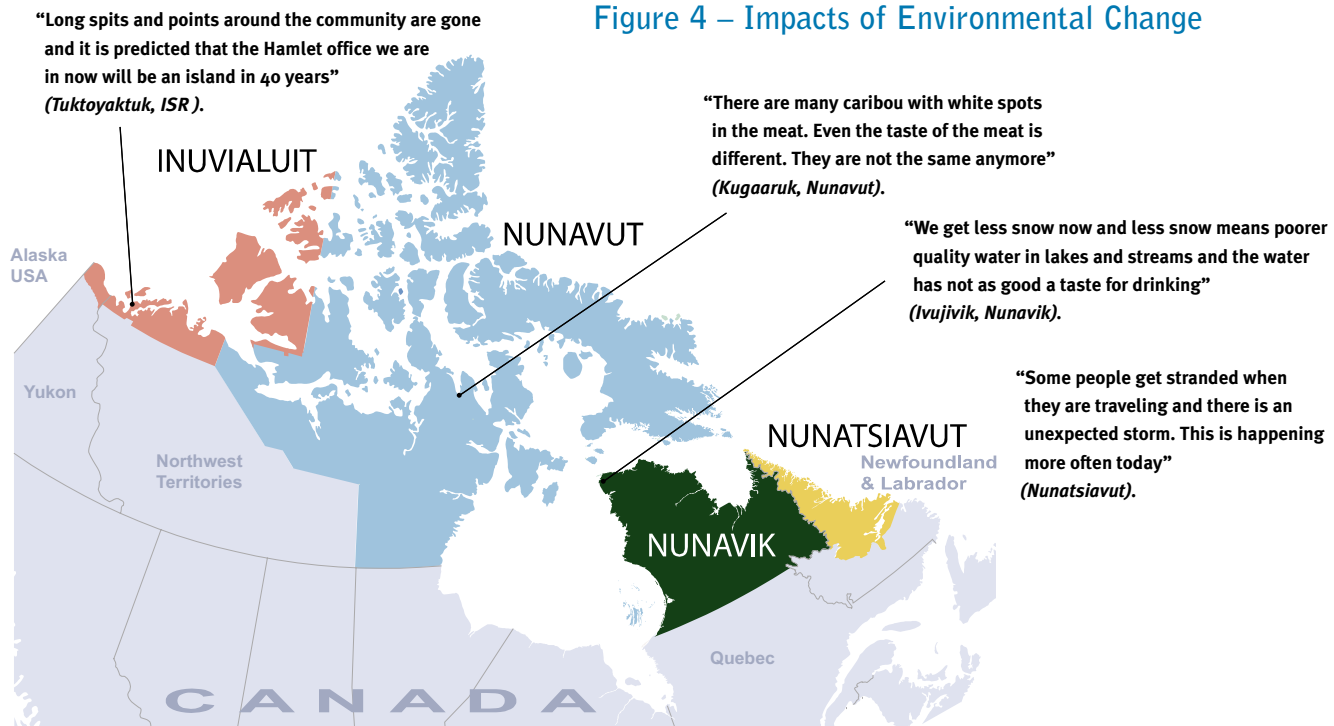
## Introduction

The reported impacts of the changes observed to date are far reaching, affecting everything from aspects of Inuit culture and knowledge to local economies and health. Additionally, in their reports of impacts of climate and environmental change on their daily lives, some communities expressed their concerns with regard to the impacts of development and pollution in the North. Although Inuit see these issues all as part of change and the impacts of change on communities, we present here only a summary of the impacts reported by Inuit in workshops that can be attributed to the climate and

environmental changes discussed in the earlier section. Please see Figure 4 for a depiction of impacts of environmental change by region and Table 5 at the end of this chapter for a summary of impacts of environmental change by region.

## Culture & Knowledge

Environmental changes have had a direct impact on aspects of Inuit knowledge and culture. Impacts to intergeneration knowledge sharing, the role of knowledge holders in the community, and concern over the loss of knowledge that was based on traditional land activities



that can no longer be practiced were discussed (Table 5). For example, the ability to predict fluctuations in the environment is a skill passed between generations in Inuit families. This knowledge was critical when Inuit lived solely on the land and day-to-day survival depended on the ability to predict safe travel routes and good hunting conditions. Though many Inuit have now permanently settled in communities, the ability to read the weather is still important, as individuals still live on the land for periods throughout the year, and in some cases, permanently.

This close relationship with the land is reported to promote physical and emotional well-being. A diet that includes country food is an important part of this relationship. Hunting and harvesting practices are, in part, dependent on one's abilities to predict and read the weather. However, the increasingly variable environmental conditions in all Canadian Arctic regions have made it much more difficult for Inuit to do so. Elders, in particular, feel much more hesitant to provide weather predictions to others, for fear of providing inaccurate information. The lack of confidence in weather prediction abilities has meant that knowledge sharing among generations regarding weather and the environment has decreased. Inuit in all regions are concerned for their youth who they feel are particularly disadvantaged by this loss of traditional sharing of cultural knowledge (Figure 2).

As presented in Figure 2, the inability of Elders to predict the weather for others degrades the social conditions for passing on knowledge of this type to youth, who find themselves stuck out on the land in dangerous conditions without the required knowledge and skills. Weather unpredictability and other changes in environmental conditions have affected the generational exchange of other forms of Inuit knowledge. Hunters in all regions say they are no longer hunting as much or spending as much time

on the land. In Nunavik, the decreased time spent on the land was reported to be limiting the time that youth could spend learning about the environment and the Inuit way of life. Decreases in some species, such as capelin in Nunatsiavut, have led to reduced harvests of this fish species and increased concern that these skills could be lost in future generations. Similarly, Inuit are concerned that the skills and knowledge required to build an igloo will be lost as fewer and fewer are being built today because of a lack of snow or changes in the type of snow falling in recent years. Finally, in the ISR, residents are afraid for the loss of culturally important sites, such as graveyards, old whaling beaches and lookouts that are already threatened by melting permafrost, increased erosion and loss of land in the region (Table 5).

“We need to inform  
people about the changes  
that are going on and the  
impacts these changes  
have and could have”

(Nunatsiavut).

### Harvesting & Land-Based Activities

Restrictions or challenges to travel, changes in animal health and distribution, and timing of migrations have negatively influenced Inuit hunting, fishing and activities such as berry collecting (Table 5).

In all Arctic regions, travel and hunting conditions have become more difficult and unpredictable throughout the year, with the spring season being particularly affected. Earlier spring break-up and later fall freeze-up, thinner ice conditions and increasing unpredictability have made it more difficult to predict when ice is safe for travel. Higher winds and more numerous sudden changes to weather systems have made travel, especially by boat, increasingly dangerous. Earlier melting of snow, and less snow in general have made travel by snowmobile more difficult in all regions. As a result of these many changes, hunting and travel have become more risky and consequently less frequent in many communities.

“We need to be more careful when pursuing animals because of thinner ice and changing ice conditions”

(Arctic Bay, Nunavut).

Travel distances have become longer as some traditional routes are no longer accessible, and some northern residents reported not wanting to travel as far away from the community for fear of getting stranded in unpredictable or dangerous conditions. In Nunavik communities, these changes have meant that many residents are less active on the land than they used to be and are changing their harvesting behaviours. This decreased hunter mobility often results in higher concentrations of hunters and fishers using a smaller area. Residents in Nunatsiavut fear that this concentration will place undo pressure on local animal and fish populations (Figure 5).

Changes in animal populations, such as shifts in distribution and migration patterns, have also influenced harvesting practices. Changes in geese migration have led to changes in hunting times in all regions, though the specific impacts vary. In Nunatsiavut, geese now arrive in April, where they used to arrive in May, and now leave earlier in the fall. Earlier arrival has made hunting of this animal easier because it is now safer to travel on ice in April than in May when conditions have become more unpredictable. In some cases, methods to hunt species have required modification because of changes in animal numbers and their distribution. In Repulse Bay, for example, decreases in the beluga population have required hunters to use greater effort and faster boats and to involve more people to acquire the same number of animals.

Changes in the health and condition of animals related to changes in climate and other environmental factors have similarly affected harvesting practices. In Repulse Bay and Holman Island, seals now tend to be thinner. Hunting practices have therefore been altered in both of these communities to increase the success of the hunt

and retrieval of animals. In Repulse Bay, for example, seals are sinking faster after being shot (as a result of having less fat), so hunters need to drive their boats faster, which increases fuel consumption in order to catch the seals before they sink. Also hunters have shifted the times they go seal hunting in an attempt to avoid periods when seals are thinnest. Similar changes to hunting practices have been made in Holman Island in the ISR, where residents reported that thinner sea ice has led to a shorter nursing period for seal pups, which is contributing to a decrease in the amount of fat seen on seals. Also in this region, Inuit state that the priming of the fur of most land mammals has been negatively affected by warming temperatures. Fur quality has decreased because of the lack of extreme cold temperatures, resulting in a drop in fur prices and a decrease in income generated by hunting and trapping activities.

A reduction in the overall condition and numbers of berries in all four regions has meant that the activity of berry picking has decreased. In Inuvik, an increase in the number of insects and community residents' reluctance to deal with them has also contributed to this trend. Similar reports were mentioned in Nunatsiavut, with increases in sandfly and mosquito populations believed to be associated with warmer temperatures. A decrease in snow in this region was reported to be negatively impacting opportunities for snow shoeing, resulting in a reduction in participation in this outdoor winter livelihood activity.

The combination of these impacts has led to reported changes or challenges to aspects of Inuit traditional food security, local economies, traditional and cultural practices and general well-being.

“Our lifestyle has changed  
because we are not out on  
the land as much anymore”

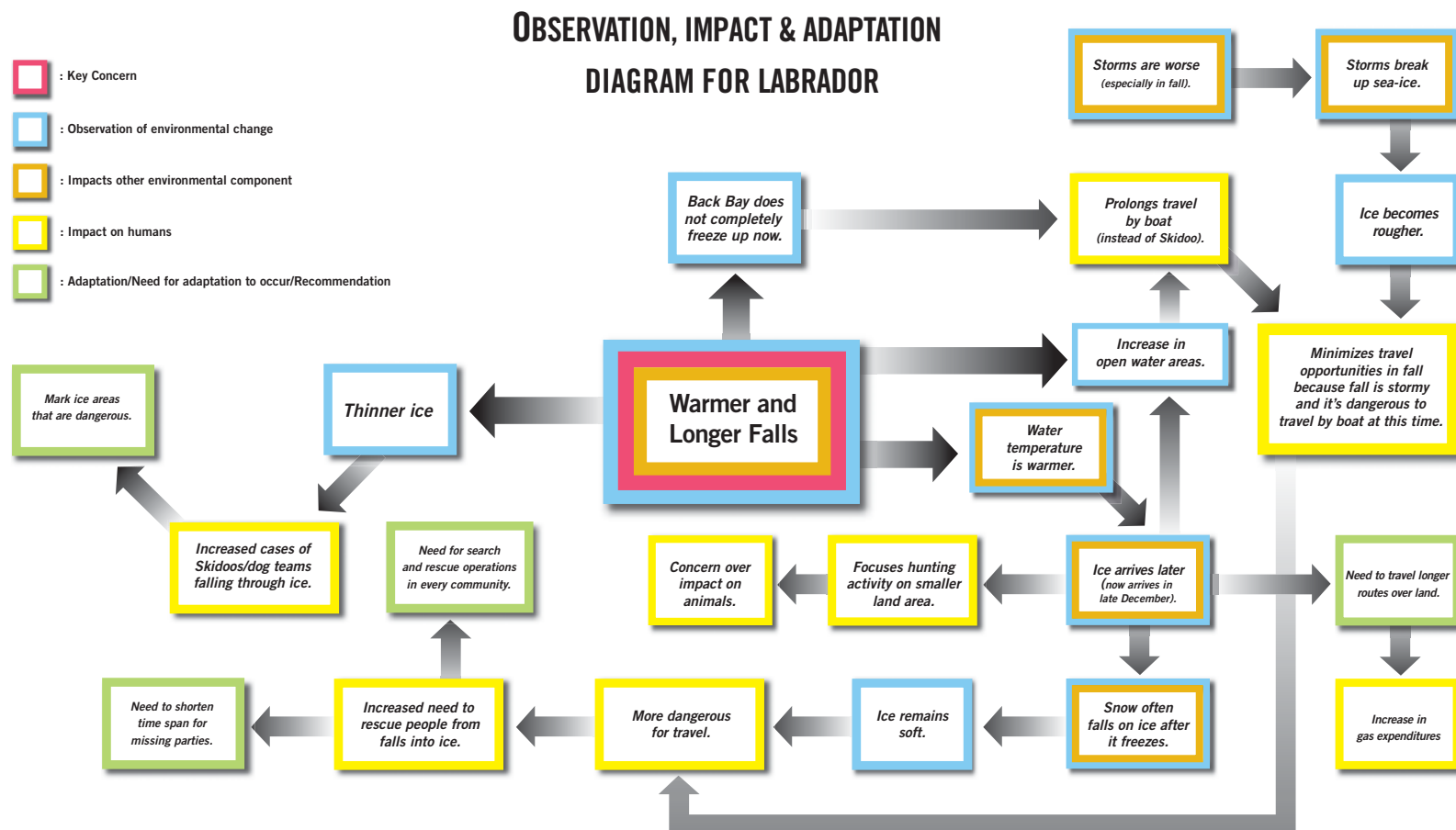
(Ivujivik, Nunavik).

In a few cases, environmental changes were reported to represent positive changes. In Nunavik, for example, residents mentioned that the earlier ice break-up and later fall freeze-up has lengthened the boating season; a positive for those that have boats and enjoy hunting during the open water season. Earlier ice break-up in Tuktoyaktuk, coupled with warmer temperatures, has permitted swimming earlier in the summer (Table 5).

### Travel

Inuit are a highly mobile people who view travel as being extremely important for hunting and fishing, recreation and visiting relatives in neighbouring communities. As such, it is a significant feature of Inuit health and well-being. Changes in the northern environment have influenced how and when Inuit can travel today as never before (Table 5). Some traditional travel routes are no longer as accessible as they once were; in a number of communities, some travel routes have had to change completely. As a result, travel distances often increase, adding to the probability of being out on the land in risky condi-

Figure 5: Observation, Impact and Adaptation Diagram - Nunatsiavut



tions. Increased unpredictability of weather and travel conditions have made it more difficult for Inuit to prepare and plan for travel and hunting trips. In some communities, residents reported that travel has decreased in general—people are less willing to face risks associated with unsafe conditions on the land and sea.

Also due to changes in the land and sea, certain locations must now be avoided when travelling and certain travel equipment has required adjustment in the way it is used. In Kugaaruk, residents discussed how an increased number of mudslides coupled with changes in the condition of the land (melting permafrost and lack of stability) have led to unsafe travel conditions for ATVs. Decreased amounts of snow have had an impact on the ability to travel by snow machine in all regions. As a result of lower water levels in Aklavik, residents have begun to use lighter and more shallow draft boats to access traditional waterways.

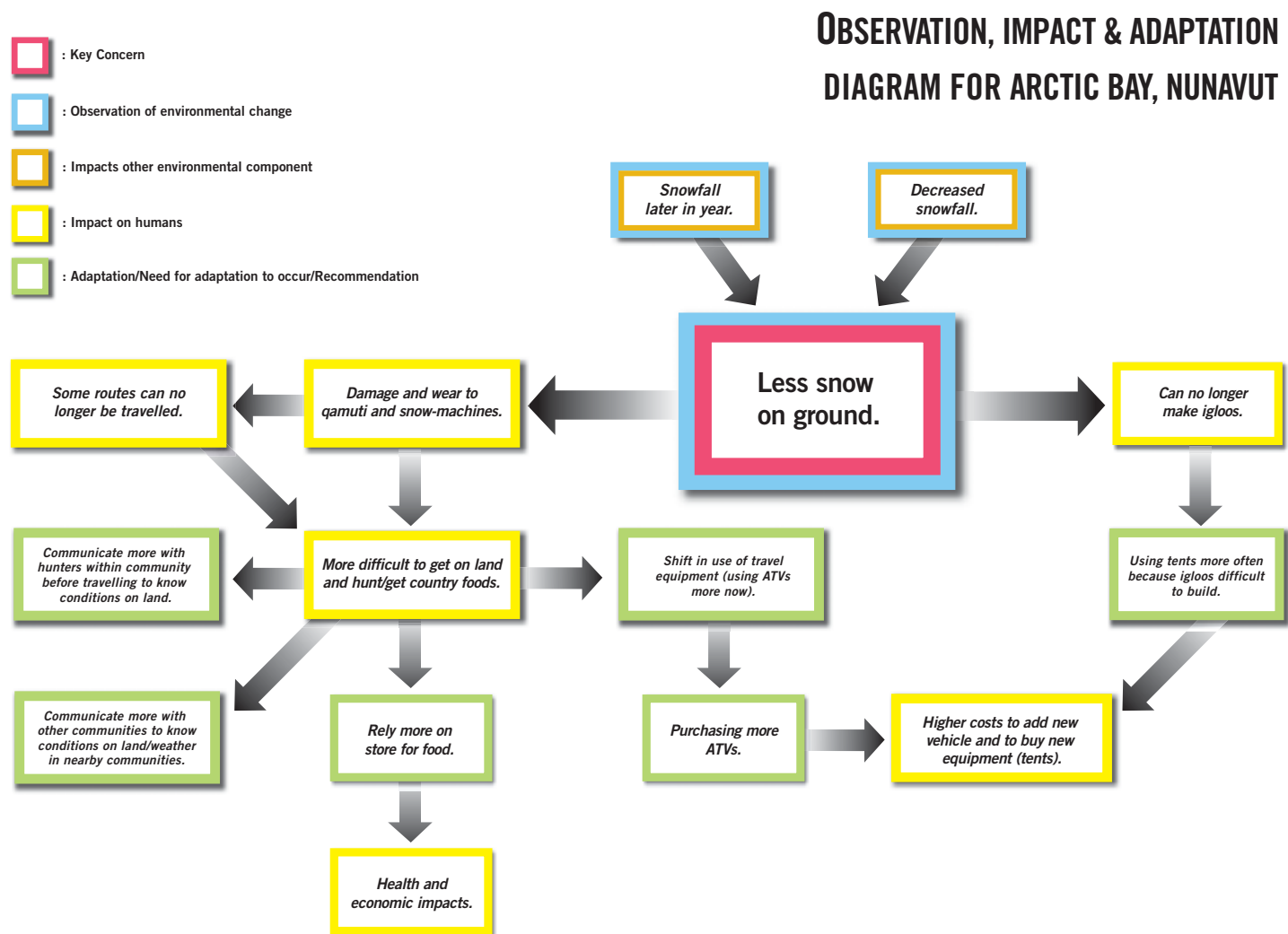
Some routes used for travel have changed. Residents of Repulse Bay discussed the inaccessibility of the traditional travel route to Igloolik due to changes in the snow and ice conditions. This has resulted in a decrease in the amount of travel between these two communities (now considered long-distance travel). Similarly, in Paulatuk and Tuktoyaktuk, the duration of trips on the land has tended to be shortened over the years due to safety. However, in response to changes in animal distributions and migration routes, distances travelled to hunt key species has had to increase. In many cases, the need to travel longer distances has meant an increase in expenditures for gasoline, the need for better equipment and increased wear on vehicles (see Figure 6).

The increasingly unpredictable conditions discussed earlier have made travel much more difficult and are

complicating the use of traditional landforms as navigational markers. In Kugaaruk, travellers in the dark winter months often used snow drifts and banks (indicating the direction of prevailing winds) as navigational markers. However, in Nunatsiavut, Nunavut and the ISR, where prevailing wind directions were reported to have shifted in recent years, the orientation of snowdrifts and banks has changed so they are no longer useful as navigational aids. Similarly, as a result of changes in the land, pingos, traditionally used as navigational markers on the land and from the sea in the Inuvialuit region, were reported to be disappearing and therefore no longer valuable in this respect.

Overall, the combination of changes—such as decreased amounts of snow around Arctic Bay, stronger winds and rougher ice conditions near Paulatuk, and earlier break-up and later freeze-up in all regions—has meant that travel has become more dangerous, less predictable and consequently less frequent. Spring travel, in particular, has become much more risky than ever before (Table 5). Despite these reports, some individuals reported positive changes with regard to travel in their region. In Kangiqsujuaq, for example, weaker water currents have made crossing rivers by boat easier. Similarly, in Nunatsiavut, lower levels of snow have made it easier to walk around communities in the winter.

Figure 6: Observation, Impact and Adaptation Diagram - Arctic Bay, Nunavut



## Food

Much of the Inuit diet still comes from the land, sea and rivers. These traditional or country foods provide significant amounts of protein and nutrients, and strengthen social connections between family and community members via sharing practices. They are an important part of Inuit identity and culture, and the activities used to collect them represent important forms of physical activity among northern residents. In the last 20 years, there have been observed declines in the overall amount of country food consumed in communities. This trend has both economic and health implications. Workshop participants expressed concern about increased food spoilage, changes to berries and other edible plants, increased contamination levels in meat, and decreases in the health of animals and humans related to the suite of environmental changes reported to be taking place (Table 5).

Communities reported a general decrease in access to country foods. Changes in weather, snow, ice and water conditions, access to traditional hunting areas and shifts in some animal migration routes and timing have all negatively affected Inuit access to some country food species. However, in some workshops, residents also spoke of increased access in some locations; in those cases, however, the health or quality of the animal was still a reported concern. As discussed in Paulatuk, when the population of caribou moves far away from the community, residents rely more on other animals that are more immediately (locally) accessible. Several communities in the ISR have made the switch from caribou to musk ox, which for most residents is considered a downgrade.

All regions expressed concerns about the consumption of caribou. The diet of caribou has been affected by changes in the quality of snow cover and increased icing events that restrict winter access to lichen, the primary food for

this species. This has led to more unhealthy and thin animals being taken by Inuit hunters. In addition to changes in the diet of caribou, other factors—the increased number of abnormalities reported in the meat, the increased number of flies around the herds and the concern that some caribou may be infected by parasites—contribute to an increased vigilance and concern about consumption of this country food item. As a result of changes in the condition of animals and meat, more care is being taken when selecting animals to consume. All regions also reported that much more meat is being thrown out.

Vegetation and berries have also been affected by environmental change. Due to the decrease in size, number and condition of berries, they are not as available and are therefore not eaten as much. Despite the slow decline in the quality of edible berries reported by many communities, some Inuit reported that there is

“We can’t make dry fish as the heat spoils it. The sun makes it too hot and we need to put a tarp over top now to protect the fish from the sun”

(Inuvik, ISR).

annual variation such that some years still provide good berries. They are enjoyed by themselves, made into jams or are made into a type of “ice cream” when mixed with brain from caribou. Since there are not very many sweet tastes in the country food diet, a decline in berries represents a significant change.

Changes in temperature have influenced country food preparation processes, such as the drying of meat and fish. Ivujivik residents claimed that the hotter sun is burning meat when it’s left out to dry (see Figure 7). In Kangiqsujaq, cooler summer temperatures are resulting in slower drying of meat. In Inuvik, more caution is taken today when muktuk is left out to dry. Residents said that it used to take one to two days to dry, but today the meat dries between morning and afternoon of the same day. Not only have food preparation times changed, but also the condition or quality of the food in some cases. Warmer temperatures and lower water levels reported in Nunatsiavut and the ISR, for example, were linked to changes in the texture of fish flesh, rendering it “softer” or “more gelatinous.” The difference in texture has led to subsequent difficulties with drying the fish, as reported by Inuvik residents.

Related to observed increases in summer temperatures, country food meats are seen to be spoiling faster while out on the land, and fish are observed to be dying and spoiling quicker in nets than ever before as a result of increased water temperatures. The storage of meat is also more challenging, and participants reported that more meat is spoiling. The combined impacts on storage, preparation, access and availability have caused communities that do have community freezer programs to depend on these systems more and more today. However, these observations and reports were not ubiquitous.

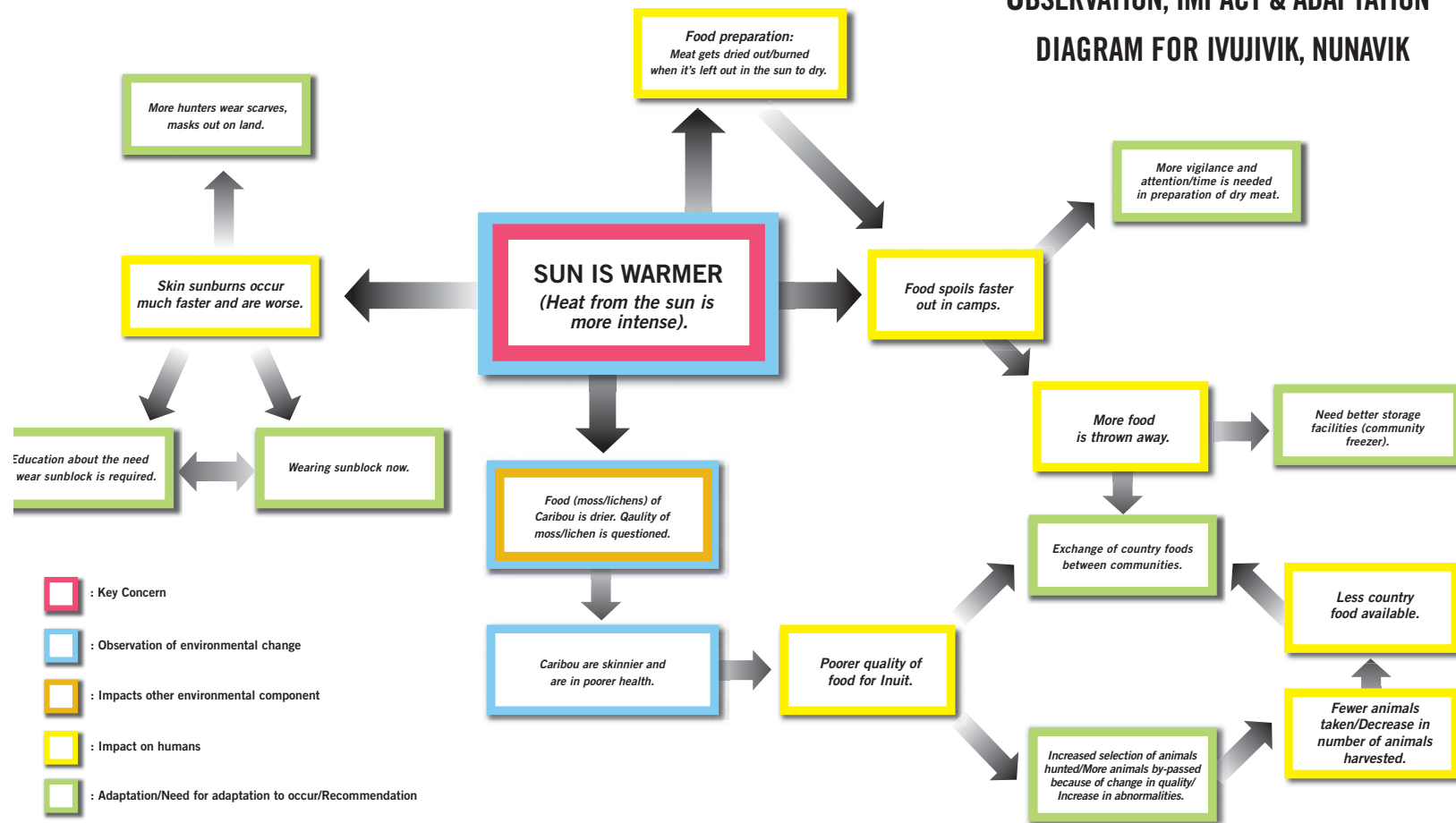
Communities such as Kangiqsujaq reported cooler temperatures and didn’t express issues with spoilage and storage of traditional foods.

The combination of observed decreases in the health of some animal species, changes in distribution of animals and vegetation, and the challenges in accessing quality food items throughout the year culminated in residents expressing concern that there will be a significant loss of country foods for future generations. Most residents feel store-bought food is inferior in nutritive value than country food and an over-reliance on store-bought food will lead to decreases in human health. Further, if a dependency on store-bought food is created, there is a worry that less country food will be sought altogether.

Similarly, access to and consumption of store foods have been affected as well. Warmer temperatures in the ISR have caused ice roads to close for longer periods throughout the winter, and less snow and thinner ice conditions have made the roads more dangerous. Residents have come to depend on fresh food, such as milk, eggs, fruit and vegetables that arrive to the community via ice roads in the winter. With the decrease in the reliability of the roads, fresh food must be brought in by plane or sea barge, which increases both the delivery time and the price of items. As a result, these food items are higher priced, of lower quality, or, in times of poor weather, not available.

Figure 7: Observation, Impact and Adaptation Diagram - Ivujivik, Nunavik

## OBSERVATION, IMPACT & ADAPTATION DIAGRAM FOR IVUJIVIK, NUNAVIK



## Water

Drinking water is a tenuous resource in northern communities. Despite infrastructure to capture, treat and distribute clean water, many individual still prefer to use natural sources around their community. Access to and availability of good, clean and safe water is said to be poorer in all regions due to the environmental changes reported by Inuit (Table 5).

Lower water levels in freshwater bodies were reported in every region and in almost every community. Many of the explanations for this change were linked to declines in the amounts of snow and rain, increased sedimentation in waterways, and warmer average air and water temperatures. These variations have also led to increased algae, and plant growth in fresh waters. Lower water levels in rivers have also been linked to more sedimentation and the appearance of larger sandbars, particularly in the ISR where this change was related to increased erosion. Natural source drinking water was reported to have a different/worse taste and smell than in the past in Nunatsiavut, Nunavik and the ISR. In Nunavut, however, changes to water quality were reported in connection with the decreased clarity of water that is used when preparing tea.

In Nunavik, Nunatsiavut and the ISR, residents were worried not only about their natural sources of water but also about the water supplied by the municipality. Increased algae and sedimentation linked to low water levels have resulted in increased costs to the maintenance of the water treatment system in Aklavik, as the system has become clogged more frequently. In both Nunatsiavut and Nunavik, there has been an increase in warnings from authorities to boil water, and in some Nunatsiavut communities, water from town supplies was said to taste rustier than before, staining kettles and giving eggs a rust colour.

General changes in municipal water supplies were perceived as being linked to an increase in some illnesses in Nunatsiavut. As Elders are not used to boiling water for safety, and do not like the taste of the municipal chlorinated water, they are still taking most of their water from natural sources. They do not always comply with boil-water advisories and, as a result, are suffering increasing health impacts.

Changes to freshwater quantity and quality have also had a reported effect on the migration routes of fish and other animals, and on the quality of fish consumed. Lower water levels have been reported to impact fish migration up many streams and rivers, which leads to harvesting difficulties and less fish brought back to communities.

## Vehicles & Equipment

Travel today in the Arctic is typically done by snowmobile, boat or all-terrain vehicle (ATV). Environmental changes have reportedly disrupted these means of travel. Higher winds, rougher ice conditions and more numerous storms have damaged or destroyed vehicles. In some areas, the traditional means and equipment for travel have been adapted to meet the changes in environmental conditions (Table 5).

“The water from some rivers and ponds smells and tastes bad, particularly when it does not rain for quite some time. We do not want to drink this water”

(Nunatsiavut).

In the ISR, for example, ice roads connect communities and allow for travel by truck or car during the winter. However, less snow is making the roads more slippery, which is resulting in an increased number of vehicle accidents. Warmer temperatures have made road maintenance more difficult, and trucks, especially heavy construction trucks, have fallen through or been damaged on the thin ice. As the ice is freezing later in the fall and breaking up earlier in the spring, the ice road season has shortened. As a result, residents must use other means of transportation to bring goods into the community during these months. This factor influences decisions regarding the purchase, timing and use of vehicles suited for the snow and ice (snowmobile versus ATV) and water (outboard motors). Understandably, not all households have the economic means to purchase the required equipment (see “Adaptations” chapter for further discussion on this topic).

With increasingly unpredictable weather systems reported in all regions, travel has become more dangerous. The length of the boating season is longer in all regions because the ice break-up is occurring earlier and the freeze-up is typically occurring much later in the fall. In Nunatsiavut, residents spoke of how a later freeze-up, coupled with increasingly unpredictable weather, makes travel by speedboat more difficult at that time of the year (Figure 2). Ivujvik hunters spoke of the lengthened boating season as a positive change as it was good for some hunting and fishing activities dependent upon open water. Damage to boats was a concern in Repulse Bay, as lower water levels and higher winds have led to increasingly larger amounts of floating seaweed getting caught in the outboard propellers. Similarly, high winds, not experienced before in the past, are causing damage or loss of equipment (e.g., boats) in Arctic Bay.

Less snow has resulted in damage to snowmobiles and other equipment. In Nunavik, more hunters are reporting wear on the runners of their snowmobiles and expressed concern about the costs for repairs. Also, an earlier spring snowmelt has triggered a shorter season in which snowmobiles are useful. When out on the land for spring hunts, hunters must return home by snowmobile before snow has melted or risk being stranded. In addition, Nunatsiavut, Nunavik and Nunavut have experienced quick melt-freeze events that leave a new ice-layer on the surface of the snow, making snowmobiling more difficult due to reduced traction. An observed change in the consistency of snow in Nunatsiavut and Nunavut has caused snow machines to sink in the snow, leaving hunters stuck out on the land more often. Changing ice conditions are reported to make travel by snowmobile more difficult than before. Thinner and more unpredictable and strange ice conditions have resulted in a reported increase in the number of cases of snowmobiles falling through the ice.

As a result of many changes in snow conditions, ATV use has increased in a number of communities. In Kugaaruk, the type of vehicle used for travel changed because the land has become softer and more difficult to pass in some areas. Residents of Holman Island discussed this problem, as well as the fact that an increased number of ATVs get stuck because of soft and unstable trail conditions. As a result, more ATV riders have had to be rescued.

In general, search and rescue operations have been more active across the North as more people are getting stranded when travelling, regardless of their mode of transportation.

Because of the changes taking place with land and sea travel routes, air travel in the North is reported to have

increased. However, residents expressed concern about relying on this mode of transportation as it is heavily dependent upon good weather. In Nunatsiavut, residents were concerned about medivac planes or planes carrying supplies having difficulties getting into communities during an increasingly stormy fall season. Air travel was also seen as potentially becoming more and more expensive because of environmental changes.

#### Infrastructure & Housing

The construction of stable and long-lasting infrastructure in Arctic communities is a challenging task. It must be based on a solid understanding of permafrost dynamics, weather extremes and average Arctic temperatures. Inuit reported many ways in which environmental change has come to affect community and outpost camp infrastructure to date (Table 5).

Some observed environmental changes were reported to have had positive impacts, particularly related to housing and infrastructure. Residents of Tuktoyaktuk, for example, discussed the fact that with warmer winters, less fuel is required for heating homes. However, despite some positive changes, most residents spoke of how changes in the environment have caused an increase in damage to homes and increased the costs of living.

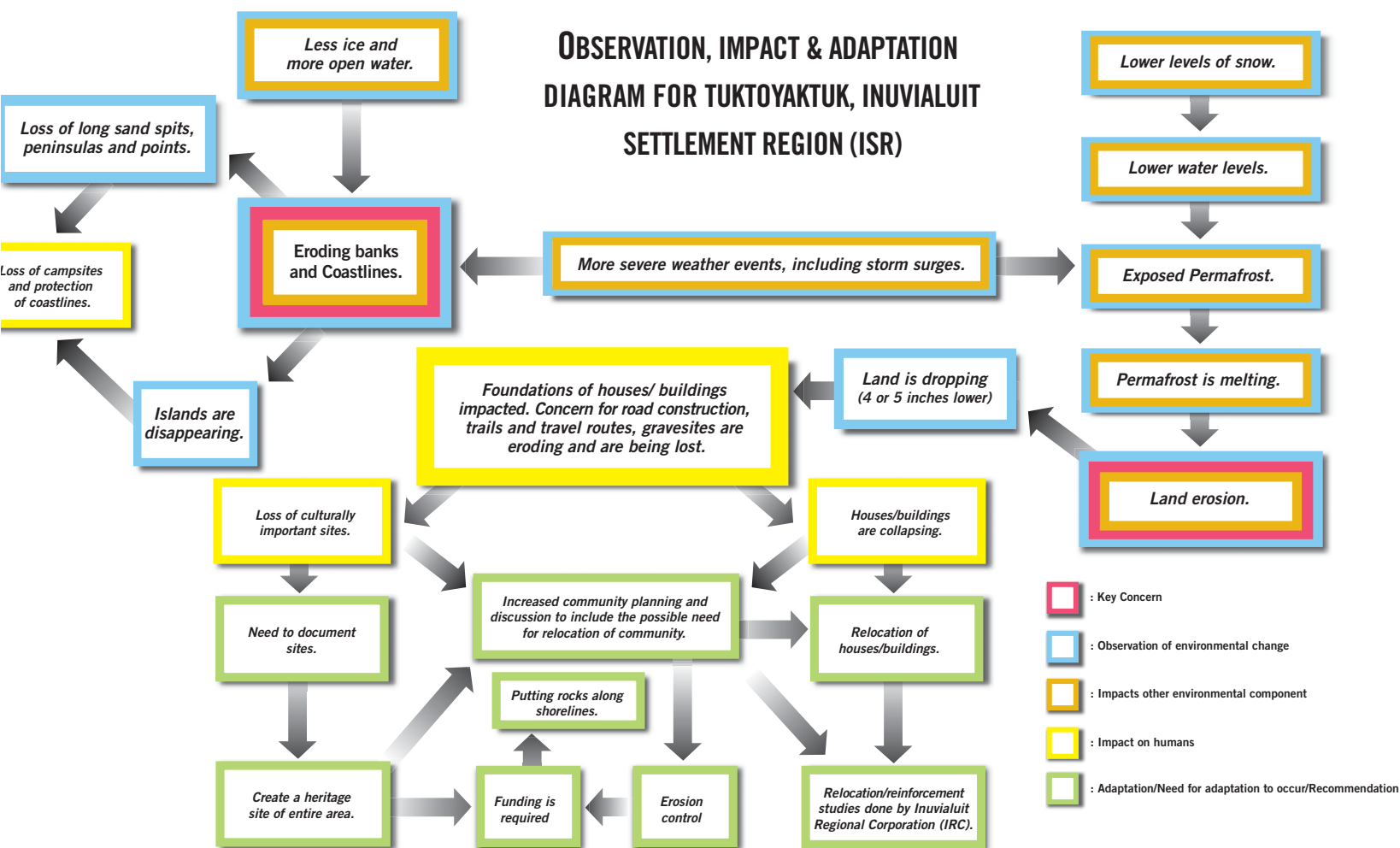
Ivujivik residents reported that increased high winds and more frequent storms throughout the year are causing more power outages in that community. In Nunatsiavut, less snow has meant that houses are not as well insulated in the winter and, as a result, more heating is required. Some residents made the connection between this and an increase in the incidents of freezing and breaking pipes during the winter months. Additionally, stronger winds in Nunatsiavut were reported to be damaging housing and raising concerns in Repulse Bay for the need to anchor houses to the ground.

Erosion and melting permafrost are reported to already be having significant impacts on Inuit communities, particularly in the western Arctic (Figure 8). The locations of houses and buildings in both the ISR and Nunatsiavut have been threatened by increased shoreline erosion and melting permafrost. In Nunatsiavut, concern was expressed for buildings in Webb's Bay, and residents discussed how they have tried to slow erosion by putting down wood and boards along the shore, with little success. In the ISR, four of the five communities reported concern that the coasts and riverbanks in this region have been falling into the water at an alarming rate. Homes and buildings in Tuktoyaktuk and Aklavik have already been relocated as a result, and the communities are concerned about the possibility of the need for complete community relocation in the future. Additionally, transportation infrastructures (e.g., newly constructed roads) are of further concern in Tuktoyaktuk because of melting permafrost. In general, residents felt that with a lack of outside interest or even acknowledgement of these problems, they would be unable to secure the required funds to combat the problems. They are worried that these changes will continue to impact their communities in the future.

“The land is dropping at Shingle Point. We may have to move the houses and it could be expensive”

(Aklavik, ISR).

Figure 8: Observation, Impact and Adaptation Diagram - Tuktoyaktuk, Inuvialuit Settlement Region



### Economy

Impacts of environmental change on local and regional economies were reported by Inuit in all four regions, but nowhere more frequently than in the ISR. Residents of Nunatsiavut, Nunavut and Nunavik focused their discussions primarily on the economic impacts of changes related to travel and travel equipment. Residents of the ISR, although experiencing similar types of difficulties, shared their perspectives about the economic impacts of shifts in livelihoods, changes to the tourism industry and increased costs associated with infrastructure damage in their communities. In some cases, economic impacts discussed were associated with the costs of responding to changes and impacts. The costs of these responses have been included here as they were viewed as a necessity, rather than as an option for adaptation by communities (Table 5).

“For hunters it costs in gasoline  
too because places we could  
reach before cannot be reached  
because of melting snow and  
thinning ice in the winter with  
this warm weather”

(Kangiqtujuaq, Nunavik).

The changes to travel conditions discussed earlier (e.g., thinner ice and more dangerous conditions) that have resulted in lengthening of routes or the selection of other travel paths have increased the costs of travel, as reported in Nunatsiavut, Nunavik and the ISR. Residents in the ISR, Nunavut and Nunatsiavut discussed how air travel is being considered more often for long trips (e.g., between communities) because of these increased costs and the growing danger associated with land and sea travel.

In Nunavik and Nunavut communities, residents suspect that there are direct links between environmental changes (e.g., increased and more unpredictable winds and lower amounts of snow) and damage or increased wear to transportation equipment. Nunavimmiut participants, for example, reported damaged travel and hunting equipment as a result of increased summer whirlwinds. This has increased repair, maintenance or in some cases replacement costs of critical equipment for Inuit households.

In addition, the need to purchase new equipment not previously needed was expressed in some regions. With the prevalence of new and different types of insects in the Arctic, residents, particularly in the ISR, reported that protective clothing and insect repellents are now required more than ever before. Residents are installing screens in house windows and doors to increase ventilation during the hotter summer months while keeping out these biting insects. Inuit across the North discussed the need to buy and wear protective sunscreen lotion more often because of the increased incidence of more frequent and harsh sunburns, blisters and rashes (see Health section, below).

The drop in freshwater levels in all regions and its impact on the quality and quantity of drinking water available from area creeks, ponds, lakes and rivers, together with the fact that many residents dislike the taste of treated water, has resulted in some Inuit now taking store-bought

bottled water with them when travelling on the land. Residents of the ISR, Nunavik and Nunatsiavut reported these increased costs as being associated with environmental changes.

The impacts to food availability, accessibility and quality related to increasing accounts of wildlife abnormalities, changes in migration and distribution patterns of animals and weather and other challenges to access were reported as resulting in an increase in consumption of some store-bought foods as replacements. This shift is economically significant, as a resident from Nunatsiavut stated that one caribou is worth the equivalent of \$600–\$800 in store-bought foods. Communities identified the need for maintenance and better upkeep of community freezer facilities and programs to ensure a more secure and consistent supply of country foods throughout the year. However, the operation and maintenance of community freezers is quite costly, being reported in Inuvik as between \$10,000 and \$12,000 per month.

However, some changes may create economic opportunities for Inuit. In the ISR, an increase in the musk ox population over the past 25 years has meant new and different opportunities in the sport-hunting industry as well as in the sale of musk ox meat and hair. Musk ox hair, or qiviut, is used to make mitts and sweaters, and some skins are bought for use in arts and crafts.

Aside from the above potential gain, Inuit have experienced a number of negative impacts to the fur industry from reported environmental changes. Residents of the ISR communities explained that warmer temperatures occurring later in the fall have decreased the quality of the fur of terrestrial mammals (rabbits, hares, foxes, wolves and wolverines), as they are not priming as they used to. Fur is now shorter, thinner, with less guard hair

and of lower overall quality. Inuvik residents reported that wolf, fox and rabbit fur that used to change colour and turn white in the fall, now looks more yellow at this time. These changes have impacted the selling price of furs. Residents also reported that many people are not trapping as much as they used to as a result and need to find ways to replace this income. Seamstresses who typically used furs from trappers for making clothing now have to buy them from the stores at a higher price. One resident from Inuvik said that the trim for parkas can now cost upwards of \$400–\$500.00 per fur.

The seal pelt industry in the ISR has also been affected by environmental changes, according to residents of Holman Island. In this community, fewer seal pelts are harvested now because the animals tend to be thinner. Also, less fat on these animals means they are less healthy, and therefore yield poorer quality pelts. In Repulse Bay, similar reports emerged, as did those concerning changes in ice conditions affecting the opportunities for seal hunting, further decreasing the potential revenue gained from the sale of seal pelts. However, an increase of harp seals reported in Nunatsiavut represents a potentially positive economic change, as the market for these pelts has returned despite the fact that there is a general decrease in the number of seal products worn in the community.

Tourism is a very important economic activity in many Arctic regions. Environmental change in the ISR is reported to have had an effect on this industry. In Tuktoyaktuk, residents are concerned that a lack of good snow to make igloos may negatively affect the flow of tourists, particularly from Europe. However, in the same community, an increase in tourism was thought to be possible if the trend towards a decrease in the number and severity of winter storms continues. Inuvik residents fore-

see positive impacts on tourism as well: an increase in the number of bald eagles seen today could increase the number of people interested in bird-watching in this northern community.

Finally, some environmental changes represent economic impacts to important community infrastructure. Residents of Aklavik reported a trend of increasing expenses for general maintenance and upkeep of the community water plant related to decreased water quality around the community. In Nunatsiavut, a decrease in snow has driven up heating costs because there is less snow on the ground to insulate houses during the winter. Meanwhile, in the west, less heat is required because of winter warming. It is clear that costs of energy are determined by a number of factors so the net energy costs vary and can be difficult to foresee and therefore plan for.

“The sun gives us a tan and it goes deeper in children now. We are getting sunburns, and our lips get cracked. We have to go to the health centre to get treatment for these burns”

(Repulse Bay, Nunavut).

## Health

Inuit across the Canadian Arctic reported that changes they observe in the environment are directly and indirectly affecting their health. Many of the impacts reported earlier all come to affect health in one way or another. Whether concerns about increased heat from the sun, more extreme hot days, the presence of new and different insects in their region or changes in the quality of drinking water, it is clear that changes in the environment are influencing aspects of Inuit health today (Table 5).

Inuit in many communities across the North reported an increase in both the number and the severity of sunburns due to the increased heat and intensity of the sun's rays. In Repulse Bay, residents are concerned about the ozone layer causing an increase in UV exposure and how this may be related to an increased incidence in cancers in their community. Nunatsiavut and Inuvik residents are experiencing more headaches and cases of dehydration, respectively, as a result of reported increased heat and hot days during summertime in their regions.

Increases in existing and new insect populations are being observed in the ISR. Residents in many of the communities in that region discussed the need for better protection against insects, including mosquito screens for windows and the need to wear insect repellents. Insect bite infections are a growing concern across the Arctic, but unease was especially evident in Nunavik and the ISR. Fear exists regarding possible diseases that new insects may carry (e.g., West Nile).

Warming water temperatures and increased algae growth, a decrease in quality freshwater sources, and past events related to some chemical spills in water (e.g., chlorine in Nunatsiavut) were reported as concerns with both drinking water from municipal and natural sources that may be negatively influencing Inuit health.

Concerns expressed by community residents were particularly focused on the impacts that these changes to water quality are having on the health of Elders in their communities (because Elders access much of their drinking water from natural sources because they are not used to boiling water for safety and do not like the taste of chlorinated water).

Environmental changes leading to shifts in animal numbers, health, availability and accessibility were reported to be associated with the shift in diet away from country foods and towards store-bought foods in many communities. Decreased accessibility to the land because of weather unpredictability, changes in ice and snow regimes, changes in migration and distribution routes of animals, as well as apprehension regarding the increasingly poor health of animals and increased contamination levels and the number of abnormalities in wild meat were all reported as impacts of environmental change on animals that, in turn, impact Inuit food security and health. It was believed that this shift has led to a decrease in the overall health status of Inuit, potentially leading to increased cases of disease, such as heart disease and diabetes.

In Puvirnituq, concern for the health of youth focused on the fact that this younger cohort is moving away from a country food diet and relying more on store-bought foods. Although people are aware that not all contamination issues mean that country food is not safe for consumption, fears arise when new abnormalities are observed or when allergic reactions to some foods are reported. For example, some residents in Nunatsiavut and Repulse Bay are concerned as to why some individuals are now showing an allergic reaction to the consumption of Arctic char for the first time.

Changes in regular seasonal behaviour of people in communities, other than diet, were also reported as having negative impacts on people's health. For example, Nunatsiavut residents highlighted cases of "spring fever" or anxiety from waiting to get out on the land and feeling "trapped" in the community more often since an earlier spring causes unstable travel conditions (i.e., people are having to wait longer to travel out on the land). The mental and physical well-being gained from being on the land has been limited and it is apparent—there are increased cases of people feeling frustrated and anxious. In Tuktoyaktuk, residents also identified this problem, explaining that there is a sense of physical, mental and cultural loss when a season on the land is missed or shortened.

“People are healthier out on the land”

(Nunatsiavut).

Finally, general concerns about the impacts of environmental pollution on health were expressed, often with accompanying questions about what may be causing these changes. For example, residents in Nunatsiavut worry about levels of air pollution in their communities. The links between pollution in the environment and human health has been a concern in Inuit communities for some time. Worry was expressed about how uses of modern technologies are affecting Inuit health. People discussed this in terms of living in closer proximity to sources of pollution, such as the increased use of travel equipment operating on fossil fuels. As well, pollution was discussed in a global sense—Arctic residents expressed concern about pollution from other locations around the world, with a particular emphasis placed on the impacts this pollution may be having on their health.

### Conclusion

As reported, the changes taking place in the Arctic environment have far-reaching impacts on many aspects of Inuit life. Key changes in the environment, such as an increase in the unpredictability of weather and weather systems, is seen as influencing such diverse components of daily life as travel, the generation and exchange of knowledge, human safety and security, food security, local economies, and individual health (Figure 2). Similarly, warmer and longer fall seasons in Nunatsiavut were reported as impacting aspects of travel, hunting behaviour, human safety, wildlife populations, and individual economic resources (Figure 5). The interconnected nature of Inuit and their environment implies indirect and cumulative impacts of many changes in weather and the environment on the people. The diverse impacts have been reported here.

Of the changes that are negatively affecting Inuit across all regions, some are more significant in one region or community than others. In the ISR, residents placed particular significance on the economic impacts of environmental change whereas this same focus was not as evident in the other three regions. To some degree, each region or community is experiencing unique impacts as each community's perspective is based on their own particular history, social economy and relationship to the land. Please see Table 5 for a summary of impacts of environmental change.

It is important to note that not all environmental changes were reported to be affecting communities and individuals negatively. In fact, some opportunities have been associated with changes, such as the increase in musk ox and the opportunities for sport hunting and sale of skins and musk ox hair products. Additionally, in Nunavik, earlier ice break-up and later fall freeze-up was seen to represent a positive lengthening of the boating season. However, as generally reported by Inuit, the majority of changes are currently seen to be affecting communities and individuals negatively and in ways that require significant efforts, and in some cases, investments, to respond. These responses are presented and discussed in the following section.

**Table 5. Impacts of Environmental Change in the Canadian Arctic**  
*(as reported during the community workshops)*

| Inuvialuit Settlement Region (ISR)                                                                                                                                                                                                                                                                                                                       | Nunavut                                                                                                                                                                                                                                                                                               | Nunavik                                                                                                                                                                                                                                                                                                                                                                                                                                              | Nunatsiavut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CULTURE & KNOWLEDGE                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <ul style="list-style-type: none"> <li>Impacts to the trapping / hunting lifestyle have led to concern over the potential loss of cultural knowledge on ways of hunting and way of life on the land.</li> <li>Potential loss of culturally important sites (e.g., graveyards) due to erosion.</li> </ul>                                                 | <ul style="list-style-type: none"> <li>Elders feel hesitant providing weather predictions and are making fewer predictions.</li> <li>Knowledge of weather prediction is no longer shared as frequently between generations.</li> </ul>                                                                | <ul style="list-style-type: none"> <li>Elders feel hesitant providing weather predictions and are making fewer predictions.</li> <li>Knowledge of weather prediction is no longer shared as frequently between generations.</li> <li>Because people are travelling on land less, there is concern over potential loss of cultural knowledge on ways of hunting and way of life on the land.</li> </ul>                                               | <ul style="list-style-type: none"> <li>Elders feel hesitant providing weather predictions and are making fewer predictions.</li> <li>Knowledge of weather prediction is no longer shared as frequently between generations.</li> <li>With the decrease in number of certain species (e.g., capelin, cod), residents are concerned about potential loss of cultural knowledge on ways of hunting and way of life on land.</li> </ul>                                                                                                             |
| HARVESTING & LAND-BASED ACTIVITIES                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <ul style="list-style-type: none"> <li>Change in quality of fur of land mammals — trapping and hunting lifestyle / revenue impacted.</li> <li>Activities on land (e.g., berry-picking; picnics) affected by the increase in number of insects.</li> </ul>                                                                                                | <ul style="list-style-type: none"> <li>Stronger winds have decreased the opportunity for travelling and hunting during summer months.</li> <li>Certain hunting methods have had to change because of changes in number / distribution of certain species of animals (e.g., beluga, seals).</li> </ul> | <ul style="list-style-type: none"> <li>Changes in timing of ice break-up and ice freeze-up have made it more difficult to travel to islands (near Kangiqsujaq) to collect eggs before embryos develop.</li> <li>Due to changes in timing of ice break-up and freeze-up, the period for travel by snow machine is shorter and residents are less active on land.</li> <li>Stronger winds are causing more hunters to stay home more often.</li> </ul> | <ul style="list-style-type: none"> <li>Concentration of hunters in smaller area when waiting for ice to freeze-up in the fall to travel out further from communities.</li> <li>Changes in water clarity (linked to lower water levels) have made swimming in certain rivers less safe.</li> <li>Activities on land impacted by the increase in number of insects.</li> <li>People are snowshoeing less because there is less snow.</li> <li>Decreases in certain species (e.g., capelin, cod) have reduced harvesting opportunities.</li> </ul> |
| TRAVEL                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <ul style="list-style-type: none"> <li>Increased cost of gasoline for travelling longer distances (Aklavik).</li> <li>Unpredictable weather / rougher ice / stronger winds all increase the danger of travel.</li> <li>Earlier break-up of ice in the spring and later freeze-up of ice in the fall increases the unpredictability of travel.</li> </ul> | <ul style="list-style-type: none"> <li>Earlier break-up of ice in the spring and later freeze-up in the fall affects the predictability of travel.</li> <li>Unpredictable weather increases the danger of travel.</li> <li>Less snow has made travel by snow machine more difficult.</li> </ul>       | <ul style="list-style-type: none"> <li>Unpredictable weather increases the danger of travel.</li> <li>Earlier break-up of ice in the spring and later freeze-up in the fall makes the timing of travel more unpredictable.</li> </ul>                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Unpredictable weather increases the danger of travel.</li> <li>Earlier break-up of ice in the spring and later freeze-up in the fall makes the timing of travel more unpredictable.</li> <li>Changes in prevailing wind direction preclude the use of snowdrifts as navigational markers.</li> </ul>                                                                                                                                                                                                     |

| Inuvialuit Settlement Region (ISR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Nunavut                                                                                                                                                                                                                                                                                                                                                                                                            | Nunavik                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Nunatsiavut                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Changes in prevailing wind direction cause the loss of snowdrifts as navigational markers.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>Changes in prevailing wind direction preclude the use of snowdrifts as navigational markers.</li> <li>Stronger winds have reduced the opportunities for travelling and hunting during summer months.</li> <li>Increase in seaweed growth / floating seaweed affects boat travel in Repulse Bay.</li> <li>Mudslides have led to unsafe travel by ATV in Kugaaruk.</li> </ul> | <ul style="list-style-type: none"> <li>Changes in timing of ice break-up and ice freeze-up have shortened the time available for travelling by snow machine.</li> <li>Changes in the placement of stars in the sky have caused people to stop using stars as navigational markers.</li> <li>Changes in the quantity of permanent snow means this navigational marker can no longer be used.</li> </ul>                                                   | <ul style="list-style-type: none"> <li>Less snow has made travel by snow machine more difficult.</li> </ul>                                                                                                                                                                                                                                                                                                                |
| FOOD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ul style="list-style-type: none"> <li>Warmer temperatures coupled with lower water levels change the texture of fish flesh / quality of this food.</li> <li>Ice road is open for shorter time period; impacts the availability / price of fresh food.</li> <li>Warmer temperatures shorten drying times of meat.</li> <li>Changes in migration / distribution of wildlife cause people to rely more on store-bought food.</li> <li>Access to caribou has decreased, which has led to more residents hunting muskox (less preferred meat).</li> <li>People are more selective of meat and more meat is discarded.</li> <li>Fewer berries means there are less to go around; Elders especially used to enjoy them as a delicacy.</li> </ul> | <ul style="list-style-type: none"> <li>People are more selective of meat and more meat is discarded.</li> <li>Since travel by snow machine is more difficult, people are relying more on store-bought food.</li> </ul>                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Drying times for meat have been affected by warmer and cooler temperatures occurring in areas.</li> <li>People are more selective of meat and more meat is discarded.</li> <li>Berries do not taste as good and are not eaten as much as in the past.</li> <li>Since hunters are travelling less often on land, there is less country food available and people are relying more on store-bought food.</li> </ul> | <ul style="list-style-type: none"> <li>Warmer temperatures coupled with lower water levels change the texture of fish flesh / quality of this food.</li> <li>Due to changes in quality and quantity of country food, people are relying more on store-bought food.</li> <li>People are more selective of meat and more meat is discarded.</li> <li>There are fewer berries to eat and use in traditional foods.</li> </ul> |
| WATER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ul style="list-style-type: none"> <li>Increase in algae growth impacts water quality.</li> <li>Fewer useable sources of water on land.</li> <li>Need to take bottled water more often when travelling on land.</li> <li>Water plant needs maintenance more often because of increase in algae growth (Aklavik).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Lower freshwater levels coupled with stronger winds cause damage to boats / boat motors.</li> <li>Changes to the quality of freshwater (dust in water) were observed in Kugaaruk.</li> <li>There are fewer useable sources of water on land.</li> </ul>                                                                                                                     | <ul style="list-style-type: none"> <li>Less snow impacts the quality and quantity of freshwater in lakes and rivers.</li> </ul>                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>There are fewer useable sources of water on land.</li> <li>Need to take bottled water more often when travelling on land.</li> <li>Increased costs associated with water treatment.</li> <li>Concern, in particular for Elders, who are not used to practices of boiling water for safety.</li> </ul>                                                                               |

| Inuvialuit Settlement Region (ISR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Nunavut                                                                                                                                                                                                                | Nunavik                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Nunatsiavut                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FOOD</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ul style="list-style-type: none"> <li>Warmer temperatures coupled with lower water levels change the texture of fish flesh / quality of this food.</li> <li>Ice road is open for shorter time period; impacts the availability / price of fresh food.</li> <li>Warmer temperatures shorten drying times of meat.</li> <li>Changes in migration / distribution of wildlife cause people to rely more on store-bought food.</li> <li>Access to caribou has decreased, which has led to more residents hunting muskox (less preferred meat).</li> <li>People are more selective of meat and more meat is discarded.</li> <li>Fewer berries means there are less to go around; Elders especially used to enjoy them as a delicacy.</li> </ul> | <ul style="list-style-type: none"> <li>People are more selective of meat and more meat is discarded.</li> <li>Since travel by snow machine is more difficult, people are relying more on store-bought food.</li> </ul> | <ul style="list-style-type: none"> <li>Drying times for meat have been affected by warmer and cooler temperatures occurring in areas.</li> <li>People are more selective of meat and more meat is discarded.</li> <li>Berries do not taste as good and are not eaten as much as in the past.</li> <li>Since hunters are travelling less often on land, there is less country food available and people are relying more on store-bought food.</li> </ul> | <ul style="list-style-type: none"> <li>Warmer temperatures coupled with lower water levels change the texture of fish flesh / quality of this food.</li> <li>Due to changes in quality and quantity of country food, people are relying more on store-bought food.</li> <li>People are more selective of meat and more meat is discarded.</li> <li>There are fewer berries to eat and use in traditional foods.</li> </ul> |
| <b>VEHICLES &amp; EQUIPMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ul style="list-style-type: none"> <li>Need new equipment (e.g., screens, bug sprays) to protect against increased number of insects.</li> <li>Due to changes in water level, lighter and shallow draft boats are being used (Aklavik).</li> <li>Changes to ice quality have led to cases of heavy construction trucks falling through on ice road.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Lower freshwater levels coupled with stronger winds cause damage to boats / boat motors.</li> <li>Less snow has made travel by snowmobile more difficult.</li> </ul>            | <ul style="list-style-type: none"> <li>Lower water levels have led to damage of ice augers.</li> <li>Less snow has caused more wear to runners of snow machines.</li> <li>Less snow has made travel by snow-mobile more difficult.</li> </ul>                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Less snow has made travel by snowmobile more difficult.</li> </ul>                                                                                                                                                                                                                                                                                                                  |
| <b>INFRASTRUCTURE &amp; HOUSING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <ul style="list-style-type: none"> <li>Cabins, houses, buildings, perhaps even communities (Aklavik and Tuktoyaktuk) need to be relocated.</li> <li>Potential loss of culturally important sites (e.g., graveyards).</li> <li>Igloos are no longer built.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>Igloos are no longer built (tents are used instead).</li> <li>May need to chain houses to ground in Repulse Bay because of high winds.</li> </ul>                               | <ul style="list-style-type: none"> <li>Igloos are no longer built.</li> <li>More storms and high winds cause an increased number of power outages.</li> </ul>                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Igloos are no longer built.</li> <li>Houses are not well insulated leading to higher heating bill costs and more pipes freezing in winter.</li> <li>Possibility that buildings in Webb's Bay would need to be moved due to erosion.</li> <li>Stronger winds have increased the incidence of damage to residential roofs.</li> </ul>                                                 |

| Inuvialuit Settlement Region (ISR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Nunavut                                                                                                                                                            | Nunavik                                                                                                                                                                                                                                                                                                                                                                                                                           | Nunatsiavut                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ECONOMY</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>• Cost of using bottled water more often than natural-sourced water.</li> <li>• Thinner ice has forced residents to find new and longer travel routes, which has resulted in increased amounts of money spent on fuel for travel.</li> <li>• Cost of buying equipment to protect against insects (sprays, screens, clothing).</li> <li>• Loss of potential tourist economy with changes in migration / distribution of certain wildlife and decrease in opportunities to build igloos (less snow).</li> <li>• More money being spent on store-bought food.</li> <li>• Change in quality of fur of land mammals – trapping and hunting lifestyle / revenue impacted.</li> <li>• Potential economic gain from new opportunities in muskox sport hunting / sale of muskox meat and hair.</li> </ul> | <ul style="list-style-type: none"> <li>• Increase in money spent on store-bought food.</li> </ul>                                                                  | <ul style="list-style-type: none"> <li>• Thinner ice has forced residents to find new and longer travel routes, which has resulted in increased amounts of money spent on fuel for travel.</li> <li>• More money is required for damage / wear to equipment caused by less snow.</li> <li>• More money being spent on store-bought food.</li> <li>• Cost of using bottled water more often than natural-sourced water.</li> </ul> | <ul style="list-style-type: none"> <li>• Cost of using bottled water more often than natural-sourced water.</li> <li>• Changes in migration and distribution of animals have forced residents to travel new and longer routes, resulting in an increased amount of money spent on fuel for travel.</li> <li>• Increase in money spent on store-bought food.</li> </ul> |
| <b>HEALTH</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>• More sunburns and skin rashes from increased heat from the sun.</li> <li>• Increase in number of insect bites and concern about diseases insects may be carrying.</li> <li>• A sense of physical, mental and cultural loss when a season is missed or shortened, especially as it relates to spending time out on the land.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• More sunburns and cracked lips from increased heat from the sun.</li> <li>• Concern about cancer from UV rays.</li> </ul> | <ul style="list-style-type: none"> <li>• Increase in number of insect bites and concern about diseases insects may be carrying.</li> <li>• Sunburns are occurring more often.</li> <li>• Increased fear and uncertainty regarding allergic reaction to Arctic char.</li> </ul>                                                                                                                                                    | <ul style="list-style-type: none"> <li>• More sunburns and skin rashes.</li> <li>• Increased fear and uncertainty regarding allergic reaction to Arctic char.</li> <li>• A sense of physical, mental and cultural loss when a season is missed or shortened, especially as it relates to spending time out on the land.</li> </ul>                                     |



# COMMUNITY RESPONSE AND ADAPTATION TO ENVIRONMENTAL CHANGE

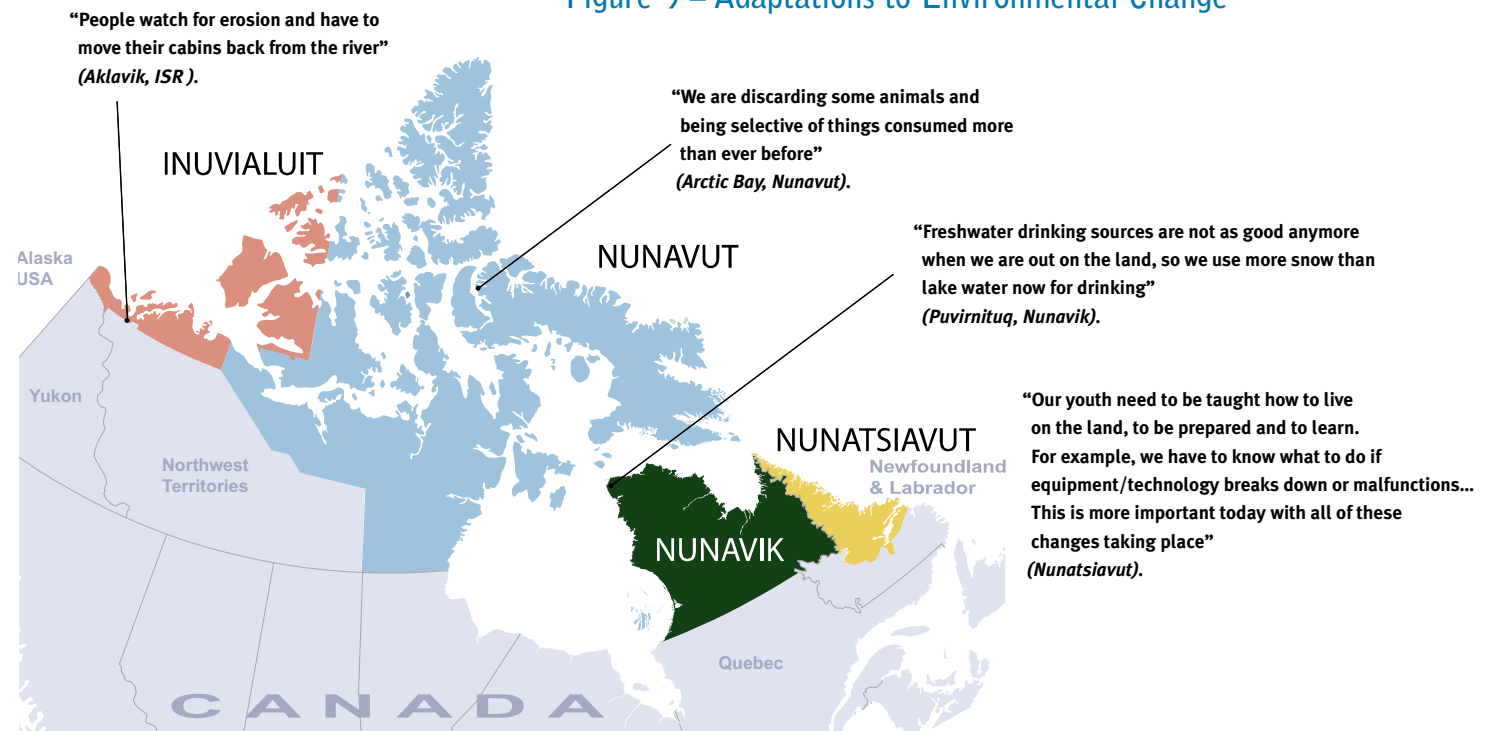
## Introduction

Increasingly unpredictable weather and changes in the environment have had a significant impact on Inuit communities and individuals. Responses to environmental change have been as various as the changes observed and the impacts experienced. In some cases, residents emphasized that all that is needed is a change in attitude towards the weather or even increased patience. For example, in Kangiqsujuaq where water levels in some rivers have lowered to the point of having an impact on char migration routes and water quality, one resident stressed that a response is simply to wait for more rain:

“It is just a matter of not getting enough rain. You have to wait for more rain, I guess.” (Kangiqsujuaq, Nunavik). Nunatsiavut residents expressed similar sentiments, stating that a more flexible position is needed when faced with unpredictable weather conditions—one simply needs to “be more flexible,” and people have to “take more time when planning” or just learn to cope with the changes (Nunatsiavut).

In most cases, however, environmental change has required shifts or adjustments in common activities and behaviours and certain adaptations. It is recognized that

Figure 9 – Adaptations to Environmental Change



dealing with some changes and their associated impacts require more than a fatalistic attitude; they require clear solutions and action. Many of these adaptations require modifications in the use of equipment and technologies, while others encompass smaller details such as shifts in the use of supplies taken on trips or slight behavioural shifts in the timing of a hunt. Some proposed adaptations involve action at the community level, such as educating residents and distributing information about the changes taking place. Other ideas for adaptation focused on the need for regional or national level strategies, such as increasing the capacity in research and traditional weather-predicting abilities.

Many of the responses recommended by Inuit, and identified here, are already being used while others remain to be implemented. Some residents see a clear need for outside help to better understand environmental change and to help cope with the impacts. Requests for increased information or assistance were often directed at researchers and policy-makers. Discussions around adaptive measures elicited community recommendations or suggestions for future action at the local, national and international levels. Activities and adaptive measures recommended by Inuit, and those already taking place in their community, are included in this section. Please see Table 6 at the end of this chapter for a summary of adaptations and recommendations. The following figure (Figure 9) highlights regional adaptations to environmental change.

#### Hunting and Travelling

An increase in unpredictable weather has made it difficult to plan trips and has made travel more dangerous in Arctic communities. Residents across the North strive to make travel safer. Search and rescue operations are more active than ever before, and the need for improve-

ment of these services was discussed in three regions: There is a need to “open [the] lines [of communication] between the Coast Guard and communities to find the best alternatives to make travel safe for Northerners” (ISR, Nunatsiavut and Nunavut). According to Inuit, in a search for travellers in trouble, each passing hour decreases the chances of making a successful rescue. The normal procedure for police and Coast Guard search and rescue operations is to wait a 24- to 48-hour period before commencing the search. Inuit feel that this is a practice that may be appropriate in southern Canada, but is one that needs adjustment in the Arctic. Waiting this length of time before beginning a rescue can “determine life or death” (Aklavik, ISR).

The construction of cabins out on the land along common travel routes and near population hunting and fishing areas is another way that Inuit are dealing with environmental changes that make travel unsafe. This provides safe shelter for people who get caught outside when sudden bad weather comes. “[We] build cabins around

“We need to find a way to  
live comfortably with these  
changes because we can’t  
change the weather”

(Nunatsiavut)

hunting areas now because of unpredictable weather and machines that break down, leaving people stranded” (Ivujivik, Nunavik).

Residents in some communities have even gone so far as to change traditional times of the year for certain trips and activities to better accommodate increasingly unpredictable weather. Today, Nunatsiavut residents find themselves travelling to collect their winter wood supply more often in the spring, when they used to do this activity in the fall exclusively. Why? An increasingly later fall freeze-up creates more dangerous travel conditions. The decreased number of trips possible for wood collection in the fall has made it more difficult to secure sufficient supplies of wood for the oncoming winter. Today, therefore, many people try to collect enough wood in the spring for the full year. This represents a significant change in their traditional schedule of activities.

“People are getting faster  
boats to help cope with  
difficulties brought on by  
unpredictable travel”

(Repulse Bay, Nunavut).

Decreased accessibility to the land or irregular and more dangerous land conditions have led, in some cases, to direct adaptive responses through adjustments in travel. In some regions, residents are cutting travel short to avoid being on the land during periods of the year when conditions are most dangerous. “Some places where we used to travel are now too dangerous in the spring. Sometimes we have to return back home because travel is too dangerous” (Kugaaruk, Nunavut). There is also a growing need for residents in many communities to travel longer distances in order to avoid dangerous spots, and to find new travel routes because the old ones are no longer accessible. “Access to some hunting areas is more difficult. We are now travelling further to get some species” (Puvirnituq, Nunavik).

Lower water levels, increased seaweed growth and higher winds have all combined to make travel by boat more difficult around the community of Repulse Bay. Floating seaweed creates hazardous and time-consuming conditions for boat travel because the vegetation gets caught in the propeller of the boats, which causes damage and/or the need for frequent stops to clear them. Residents have responded by simply adjusting boat travel routes, where possible, to avoid locations with growing amounts of floating seaweed.

Similarly, in Inuvik, residents have found new travel routes to avoid the dangerous ice conditions (thin ice) that now exist on previously safe, traditional routes travelled in the winter. Residents say they are now more careful when travelling because they feel less confident with the safety of all travel routes. [We] have to be more careful because of thin ice; [we have to] change travel routes” (Inuvik, ISR).

Further, increased sedimentation has affected the setting of nets to catch fish in the community of Repulse Bay and

nets now have to be set in new locations where sedimentation levels do not impede the success of this activity.

Adjustments in hunting timing, methods and management regimes have been used to help adapt to environmental impacts that cause changes in country food accessibility. For example, adjustments to the timing of hunting seasons have been made in Kugaaruk. There, during the months that residents traditionally hunted seals out on the ice, they now fish for char on the shores of the rivers. Why? Dangerous ice conditions now prevent residents from seal hunting during the traditional times that they used to.

In Repulse Bay, adjustments have been made in the methods of hunting for beluga whale and fish. A decrease in the beluga population near this community has meant that hunters must expend more time and effort on the water and use larger and faster boats to better the chances of success. Increased sedimentation has affected the setting of nets to catch fish, so nets now have to be set in new locations where higher levels of sedimentation are not a problem. In Inuvik, residents have adjusted their method of net fishing. They now pull their nets out at night, otherwise fish may die by morning because of a warmer sea surface temperature. Five to 10 years ago, nets could be left overnight and the fish caught in the nets would still be alive in the morning.

In Nunatsiavut, the quota of fish caught per family is not always sufficient anymore, so some residents are more conscious of sharing and giving portions of their fish quota to those that are lacking fresh country foods, such as Elders and disabled people.

In some regions, the management strategy for a resource has been adjusted in response to shifting environmental

conditions. In Arctic Bay, for example, the narwhal is a critical species, providing traditionally, culturally and nutritionally valuable mattaaq (whale fat) and whale meat along with economically valuable ivory tusks. Each spring, herds of narwhal migrate into Admiralty Inlet at the north end of Baffin Island as the ice breaks up, and hunters spend days on the ice hunting whales along the opening leads. The portion of the total community quota of this species not taken during this spring hunt is then hunted in the open water during the summer months. Although it does not control the total number of whales that can be taken each year, the community does control in which season it would like to allocate portions of its total quota. Recently, however, the community has chosen to “shift some narwhal numbers from [the] spring to summer hunt quota to adapt to worsening ice conditions in spring [that make for] more difficult conditions for [a] successful hunt” (Arctic Bay, Nunavut).

### Resources, Equipment and Infrastructure

Many communities have shifted and made adjustments in their use of different types of travel equipment, machinery, technologies, supplies and infrastructure. Some of these forms of responses have already taken place at the local level, while some communities identified the need for increased resources, equipment or support to respond to certain changes they are experiencing.

Many communities discussed at length adaptations involving vehicles used for travel. Kangiqsujuaq residents mentioned how ATV use is damaging vegetation on the land, and that some areas on the land are becoming too dangerous to use as a result of erosion. Individuals in this community suggested erecting signs to warn people that areas may be sensitive to or too dangerous for ATV use. “We have to make sure no one drives through vegetation with Hondas as this damages plants and vegeta-



tion. Perhaps we could put up some signs so people know where these areas are, as they don't grow back after being driven over" (Kangiqtujuaq, Nunavik).

In the communities of Arctic Bay and Repulse Bay, where winds are now stronger and tend to be more unpredictable than in the past, residents are buying larger and more powerful boats to compensate for changing conditions. This adaptation has required investment in equipment in some cases, which has potentially significant economic ramifications for households and communities relying on traditional activities for much of their livelihood.

Residents in Arctic Bay have also adjusted the time of year when using certain types of equipment, buying more ATVs and using them throughout the year now rather than just in the summer and fall months. However, in Nunatsiavut, residents expressed the financial challenges of adapting or responding in this way. Due to economic realities, communities might not always be able to purchase and maintain the most appropriate equipment for changing environmental conditions.

Concerns about unreliable travel equipment and the increased costs associated with travelling longer distances initiated discussion in communities about the possibility of bringing back more traditional methods of travel. Some Inuit in Ivujivik and Kugaaruk consider dog teams to be a far more reliable form of travel. Other residents in this and other communities emphasized how new technologies are useful in facilitating safer travel. For example, personal GPS units can be used to ensure you are travelling the best route and to find your coordinates when lost or stranded in bad weather. Similarly, the Internet provides access to satellite imagery, which can be useful before going out on the ice. These technologies were discussed in Nunavut as possible responses that would reduce the risks for hunters and travellers and, therefore, the need for search and rescue efforts.

However, in Repulse Bay, it was mentioned that risk in travel is not completely eliminated through the use of these technologies so people must rely on more traditional tools and skills for travel on the land. "Satellite phones and GPS receivers are useful tools for hunters. They can help reduce risk for searchers and lost people. This reduces [the] need for search and rescue, but technology doesn't completely eliminate risk" (Repulse Bay, Nunavut).

Some communities focused on the need for responses involving better planning and provisioning of safety supplies, specifically for trips on the land and protection from the elements. Residents in Repulse Bay discussed at length the need today for better preparation prior to trips going out on the land and sea, as well as the need to bring ample safety supplies and equipment to cover a larger scope of potential conditions. Being prepared for all conditions is crucial; instances of being stranded out on the land for prolonged periods of time are occurring more frequently.

Nunatsiavut and Nunavik residents focused on the need to protect people against the sun, as its intensity is reported to be much stronger today than ever before. Residents in these regions highlighted the increased need to wear hats, sunscreen and proper eye protection. In Ivujivik, hunters are now wearing masks more often in the spring when travelling on the land to protect themselves from the sun. Residents in Repulse Bay also mentioned that they have built boxes on their kamotik (sleds) to help protect children, especially from increased heat from the sun and also from high winds. In Arctic Bay, as with most communities in Nunavut, homemade wooden cabins are being built on the majority of boats to protect and shelter people from high winds and the sun when travelling.

With changing environmental conditions, animal distribution and in some cases human–animal contact has increased. For example, workshop participants in the ISR and Nunatsiavut reported increased numbers of bears and more bear–human interactions. The use of fencing to protect individuals from a growing bear population has been implemented in both Aklavik and Nunatsiavut. In Aklavik, residents have erected electric fencing around cabins on the land because of increasing problems caused by bears. Residents discussed the fact that this is a costly adaptation measure, and that fencing is not a permanent solution nor is it foolproof; in fact, the bears often gain access to the camps if the fencing is not tended. The loss of equipment and repairs to camps are all costly to residents, as is the danger created by increasing human–bear encounters. To avoid these problems altogether, attempts are being made to keep camps cleaner and to solve the garbage problem around the camps.

All four regions reported that changes in housing and other community infrastructure were taking place in

response to climate and other environmental changes. Overall, igloos are no longer built as often when out on the land because of decreased snowfall and changing snow consistency. Inuit in Arctic Bay now use tents as an alternative when staying out on the land. Other Nunavut residents and Inuit in Nunavik mentioned that cabins on the land offer much needed shelter. However, it was stressed in the ISR region that residents have to be careful to avoid locations where erosion is becoming a problem along shorelines. In this region, some cabins have had to be moved because the land has slumped or been heavily eroded. “[We] have to move cabins because of erosion” (Inuvik, ISR). Attempts to control the problem along shorelines have been made in Nunatsiavut and the ISR. Nunatsiavut residents have put down wood and boards to try and limit erosion, but this solution does not last for long. In Tuktoyaktuk, residents stated that erosion has slowed because the community has constructed a rock barrier along the point—a significant cost for the community.

In Repulse Bay, low water levels, coupled with stronger winds, have caused an increase in boat and dock damage in the harbour. A suggestion from this community was that docking facilities should be improved or moved to avoid this damage, which is having economic impacts on individuals as well as negatively impacting their ability to get out and hunt and fish in the places they frequent.

Lower water levels in Kangiqsujuaq and in Nunatsiavut communities pose a concern for char/fish migration. In some cases, fisheries staff are already working on this problem, dredging and diverting rivers and removing large rocks from shallow riverbeds to increase water depth and allow for better channels. However, not all communities have the capacity to make these changes. The community of Kangiqsujuaq, for example, has

requested more resources and equipment to help with this problem in their area.

### Communication and Information Dissemination

With changing and more unpredictable weather conditions, communicating information about weather and travel conditions is occurring more often within and between communities across the Arctic. Arctic Bay hunters share information about conditions on the land and sea, and have found that this is particularly important for travel near the floe edge, where conditions are often unpredictable—and becoming more so. In a number of communities, residents stressed the need to maintain this type of information sharing, within and between communities, to ensure safer travel for all. In Kangiqsujuaq, it was stressed that whenever people go out hunting or fishing, they should always share their plans with another member of the community in case that they run into travel difficulties. “Whenever someone is going hunting, fishing, etc. they should always tell their mother, father, an Elder where and when they are travelling” (Kangiqsujuaq, Nunavik). In this community, where more and more dangerous travel conditions were being noted, it was suggested that a program be started to place signs on the land to identify hazards and prevent travel over dangerous areas.

Communication about weather within communities is also already well served in many regions through the use of community radios, satellite phones, geographical information systems and other communication technologies. Nunatsiavut and Arctic Bay residents reported that calling ahead when travelling to other communities (to find out about the existing snow and ice conditions there) helps provide vital information upon which to make better travel decisions. Community radios are often used to facilitate the transfer of knowledge community-wide. In Ivujivik and Kangiqsujuaq, residents use the FM radio

network to exchange information about dangerous conditions on the land. The community radio program is also well used in Inuvik, as residents in this community find that other communications technologies are somewhat inadequate. For example, cell-phones work only in certain areas and are very expensive. Repulse Bay hunters use radio communications to help warn other hunters about bad weather and to communicate with other communities. Satellite phones are another method of communication used in this community; however, not many can afford these technologies. Residents in Repulse Bay emphasized that even with the use of communication technologies, it is often difficult to respond in time because the weather can change so quickly now.

“We should add Nunavik to weather systems news and make forecasts available to the community” (Kangiqsujuaq, Nunavik). Other communities echoed this sentiment, requesting that Arctic regions be added to mainstream local weather forecasting so that Inuit communities could benefit from local scientific forecasts. It is not helpful to residents to see the weather conditions in all parts of Canada. Individuals in the ISR discussed the need for better access to local weather forecasts in general. “If we had access to weather information from weather stations (from Herschel Island, Yukon government, Inuvik) we would know if a storm was coming and be better able to predict weather for travel” (Aklavik, ISR).

It should be noted that some Arctic residents expressed concern about placing too much weight on scientific forecasts. Though Repulse Bay participants highlighted the importance of new technologies for weather prediction and safe travel, they were also quick to point out that it is easy to rely too much on scientific weather forecasts, and that there should be an equal emphasis placed on learning more traditional weather prediction skills that have been used for generations. Similar sentiments were

expressed in Nunatsiavut with regard to the need for local forecasts in combination with a strengthening of traditional survival and other skills. This region went further to propose that traditional prediction skills could be used in television and radio forecasts to add depth and local information to existing weather programs.

Individuals in Aklavik expressed concern about communications between the Coast Guard and communities. They felt that improved communications were imperative because of the often-critical nature of the situations involved: travellers are missing or are stranded out on the land.

In Kugaaruk, residents recommended that increased communication with the scientific community would address a number of their climate change-related concerns. It was suggested that a central office be created to facilitate this communication for the North as well as to collect community concerns in one central location. "If we had a central office to report to, if we can have a dialogue with those who know... if we can have a dialogue with [the] scientific community, we would be more than willing to help" (Kugaaruk, Nunavut).

## Health

Some communities discussed adaptation measures or changes in personal behaviours that have been adopted in the face of environmental change in their area.

In many communities of all four regions, lower water levels have had an impact on the quality of drinking water. In Puvirnituq, for example, residents have responded recently by melting snow more often instead of using lake water for drinking water. Changes in the quality of freshwater in the community of Aklavik are reported to have altered the effectiveness of the water

treatment system there, which has made some residents so concerned they have suggested that people stop drinking municipally supplied water altogether. "Town water is an issue. [We] should stop drinking town water" (Aklavik, ISR). In Nunatsiavut, residents responded to similar changes in the quality of freshwater by having both water from the municipality and water from natural sources tested more often. Use of bottled water as an alternative to both natural and municipally supplied water was reported in Nunatsiavut and other regions. Inuit now have water filters in their home, and some report bringing bottled water on trips on the land because they are not assured that they will always find good sources of fresh water along certain travel routes. This has never been done before. Although effective, these adaptations represent an expense to the household.

Discussions occurred in Nunavik, Nunatsiavut and the ISR about the need to protect against insect bites as a result of the increasing numbers of insects and the appearance of new insect species in the region. In Iqviq, people have found that mosquito repellants do not always work well, and they are now buying bug nets to better protect themselves. Residents of the ISR mentioned the need for all houses in the communities to have insect screens installed in windows (not previously existing) to keep insects out when it is warm enough to open windows, and for mosquito repellants to be used more often. Previously, when average summer temperatures were not as warm as they are today, this was not an issue, as many residents did not feel the need to open their windows. However, today, with warmer summer temperatures and new insects appearing in the community, the need for screens in all windows is crucial. Many residents suggested that the municipal councils should furnish houses with them.

Inuit in the community of Tuktoyaktuk also stressed that Elders need housing with cool areas and a better flow of fresh air in the building. Some Elders have experienced difficulties with the heat now seen in this region during the summer months, so residents reported the need to consider such things as cool areas in the construction of the new Elders' Centre in the community.

### Food Security

Changes in the health of animals and hence in the potential quality and safety of meat, changes in migration and distribution patterns of animals, as well as decreased accessibility to the land at certain times of the year have meant that several communities no longer have safe and consistent access to preferred country foods for periods throughout the year. Different adaptations have been made in the face of these challenges.

Food exchanges between communities and across regions ensure communities have sufficient quantities and selection of country foods throughout the year. In Ivujivik, where a system of community food exchange has already been established, residents stressed that the need for this type of program is growing every year.

Based on several observations, climate-related changes in most regions of the Arctic are affecting the number of wildlife and their general health. Residents state that changes in the environment have led to an increase in the number of abnormalities and unhealthy conditions in wildlife. There has been a steady decrease in residents' confidence levels about the quality and safety of wild meat, and this has raised concern about the potential impact it may have on human health. Because Inuit depend significantly on certain wildlife species as a main component of their diet, the effects of climate change in this regard have impacted these people greatly. Residents

have responded directly by being increasingly selective as to which animals they kill, which meat they consume and which cuts of meat they discard. Animals that look sick are commonly avoided. This raised level of doubt in all regions has led to fewer animals being hunted and more meat being discarded.

The coordination of community freezer programs was discussed in many regions as a potential or existing adaptation to an increasingly unpredictable country food supply. In Nunavik, Ivujivik residents discussed the importance of their community freezer program—ensuring country food availability to the community. In Tuktoyaktuk, use of the community freezer is already helping alleviate some of the food security issues being reported there. In Nunatsiavut, residents use personal freezers to stock traditional foods; these are being relied on more and more as the distribution of wildlife and access to them change. “[We are] stocking more traditional foods in personal freezers because they [the animals] are hard to get at some times of the year” (Nunatsiavut).

Similarly, in both Inuvik and Aklavik of the Inuvialuit region, the need for freezers in order to adapt to a shortage of fresh country foods at some times of the year was clearly stated. Recently, however, some freezers in this region had been shut down due to the high maintenance costs. Further, it was emphasized that one freezer per community is often not enough, especially in summer when country foods are most plentiful and freezers become overfull, leading to inefficient functioning.

The use of freezers means that hunters must travel back and forth from the land to the community quickly to ensure that the meat is refrigerated or frozen as rapidly as possible to preserve its quality. Such travel requires faster vehicles, which consume more gas and result in higher costs to the hunter. Residents suggested

two ways to deal with this: keep freezers out at distant hunting camps, where meat can be kept frozen before the long journey to the community; and dig ice houses into the ground and permafrost layer to store meat. Unfortunately, the success of this latter alternative is becoming less feasible as warmer temperatures continually melt permafrost layers in the Inuvialuit region and residents report the decreased effectiveness of their ice houses.

### Traditional Skills, Education and Research

The changes in their local environments threaten not only Inuit access to good, safe and nutritious foods from the land and sea, but also those things that hunters and community members learn while being out on the land—their traditional knowledge and skills, which have been cultivated over long periods of time spent on the land and passed from generation to generation. Many communities emphasized how environmental changes are impacting aspects of Inuit culture and lifestyle, which are based on subsistence hunting and life on the land. Commonly, these discussions focused on the loss of weather prediction abilities and the overall decrease in the confidence in weather interpretation by people that were previously experts in this ability. This loss, coupled with a strong sense of loss associated with a decrease in the time spent on the land and a shift away from the subsistence lifestyle and livelihood, has been a recognized result of the suite of environmental changes being experienced by Arctic communities today. Inuit suggested ways that culture and Inuit knowledge could be better preserved in these circumstances.

When discussing the need for more education about the changing conditions, many communities focused on the increasingly dangerous nature of travel because of the decrease in abilities to read the land and judge weather



conditions among residents today. A number of communities discussed how a return to the use of more traditional skills could help alleviate some of these dangers as well as regain the skills being lost to an over-reliance on scientific weather-forecasting methods. Ivujivik and Kugaaruk residents, for example, both mentioned how dog teams are actually safer and often more reliable than vehicular travel. Furthermore, individuals from Repulse Bay discussed the value of Inuit knowledge as an adaptive strategy, emphasizing the importance of using Inuit Qaujimagatuqangit (IQ) more often and in a more consistent manner to reduce hunters' vulnerability to sudden weather changes.

Reports of the potential future loss of Inuit culture related to environmental change focus on how this change will impact Inuit youth. "Parents don't always show kids the traditional ways/knowledge as much as before. This needs to be done, especially now with all these changes"



(Nunatsiavut). Residents in Nunatsiavut felt that educating youth about weather forecasting knowledge and abilities to understand the land could help decrease the number of people being stranded and injured while away from the community. Ways to help youth learn more about Inuit culture and to better understand environmental changes that are occurring were proposed. The community of Ivujivik discussed how, with increased settlement into communities, children are now in school for much of the year, leaving little time to learn about life on the land and the environment. They suggested that spending more time in cabins out on the land could better facilitate youth education about the environment and how it is changing, and about newly developed indicators for better weather prediction. Aklavik, Tuktoyaktuk and Inuvik residents suggested that the schools could help facilitate this education of youth by getting them involved in appropriate projects, research and employment that deal with the environment. It was further suggested in Inuvik that a video be created depicting environmental change at the community level as a tool to show in schools. Strong emphasis was also placed on the importance of youth involvement in Aklavik as well so that young Inuit have direct experiences allowing them to make more informed choices in the future.

Basic community and individual capacity was raised as an issue when discussing shifts away from subsistence-based livelihoods because of changes in the environment and in relation to the long-standing history of research being conducted in the Arctic. Inuit expressed the need to reinforce the value and importance of local knowledge in all aspects of daily life, and in particular in all learning that was taking place with regard to the challenges they face today.

Participants stressed the fundamental need for inclusion of Inuit and Inuit knowledge in all research and action. They emphasized the need for community involvement in

future research opportunities on this and other topics, and a number of suggestions for beneficial partnerships were provided. In Nunatsiavut, residents suggested that local people could keep weather diaries to contribute to the overall knowledge about changes in weather and the environment. Aklavik residents stated that all research projects should be done with community involvement and should occur at an appropriate time for the community to ensure their ability to participate. This community offered its involvement as a way to thoroughly assess what has to be done. Residents of Inuvik concurred with this method, suggesting that researchers should involve community members by “get[ting] locals to record observations” (Inuvik, ISR). Paulatuk residents discussed the hope that the documentation of environmental changes started at this workshop could be maintained at the community level afterwards.

Nunatsiavut participants raised the issue of the need for increased public education on search and rescue operations. Residents across the North discussed the need for more public education from medical and health staff on water quality and safety issues. Ivujivik residents stressed that there is a need for public education on the importance of wearing sunblock.

### Community Recommendations and Needs

In the final stages of the community workshops, the research team discussed the link between these workshops and processes taking place at the regional, national and international scales on climate change, with particular emphasis on those processes focusing on the circumpolar North. The project team felt it was important to inform participants that by taking part in their local workshop, they were involved in these larger processes addressing climate change. The research team wanted to assure participants that the community workshops, in fact, added to the “process” of

responding to climate change at various levels—that they were about more than just collecting information.

At the local level, participants identified several community and regional organizations and groups that should be made aware of the discussions and concerns raised through the workshops, as they felt these individuals and organizations had a role to play in helping the community address their concerns. Making these identified links through discussion with community participants was the first step in enhancing the links within and between communities on climate and environmental change. The follow-up and response by these organizations will be critical in ensuring community input and mobilization in the region in the future.

### Erosion and Land Protection

A number of groups recommended changes at the community level that need to occur in order to help residents better cope with the impacts of environmental change. For example, Tuktoyaktuk residents would like to see large areas around this community made into heritage sites so that the Hamlet Council can provide appropriate protection (in the form of fortification) against future erosion. Many residents fear that without the heritage designation, insufficient motivation and legislated funding will result in irreparable erosion along the coastline, which protects the community and these sacred sites.

### Continued Observation/Documentation

All communities felt that communicating the information gathered during the workshops to all members of the community would promote a sense of caring for the community and the land. Paulatuk residents stressed the need for community members to continue discussions on the subject of environmental change. They suggested a committee be formed to continue documentation of envi-

ronmental changes in their area. Residents of Kugaaruk proposed the formation of a central coordinating office to act as the official communication body with the scientific community.

### Financial Support

To successfully conduct local initiatives, communities require various forms of support and the involvement of government at many levels. Holman Island residents expressed frustration at how funds are often not available when required to respond to issues such as this. They suggested that residents work effectively to secure funds for future research and action. Inuit in Paulatuk discussed how funds would need to be accessed for the formation of a committee dedicated to documenting environmental changes while, in Tuktoyaktuk, a number of residents discussed how funding is required for annual erosion control. One resident in that community stated that funding for erosion control is currently inadequate. The issue is becoming increasingly important in this community because of the amount of land lost already.

Representatives from the communities of Kangiqsuaq, Tuktoyaktuk and Happy Valley–Goose Bay expressed concern and a need to investigate the effectiveness of their water and sewage treatment systems, while the community of Inuvik requested better waste disposal.

### Taking Local Responsibility

Kugaaruk residents also suggested the need to acknowledge the role that Arctic communities play in the global environment. “Today, most of us want to help the environment, but convenience and comfort always comes first. Sometimes we blame other cultures for pollution. But we have to take responsibility. We, living in a small community, have to take responsibility” (Kugaaruk, Nunavut). Some Kugaaruk residents suggested that the



use of harmful technologies such as local diesel generators, two-stroke engines in snowmobiles and the idling of vehicles for long periods in the winter should be reduced and alternatives should be found.

### Supporting International Activities

A number of communities discussed the importance of raising national and international awareness of climate change in the Arctic and requested help in minimizing potential impacts. Individuals from Kugaaruk emphasized the importance of national and international environmental strategies and action for Arctic communities. Tuktoyaktuk residents stressed how raising public awareness at the local level right up to the international level can lead to action. Individuals in Paulatuk emphasized that there is a need to maintain international awareness of climate and environmental change issues because one day, similar changes will be occurring worldwide. “[We should] help create awareness internationally because one day we all will be affected” (Paulatuk, ISR).

### Community-Scale Research and Information

Communities identified a series of research and information needs to help them understand and respond to the changes. Some of the research requests made by communities were related to climate-specific changes and impacts, while many were related to other environmental concerns in their area. In many cases, they do not differentiate between these types of information needs; rather, they bring forward a number of environmental issues they would like investigated based on their concern or need for information to make daily decisions regarding what to eat, what is safe, etc. The community reports include a detailed listing of all requests from each specific community (see Appendix 1). We have listed here only those research recommendations most related to climate change issues, which are the following:

- Kangiqsujuag residents would like a study conducted to check the depth of lakes and rivers and to better understand the impacts of changes in water depth on key species and water quality.
- Nunatsiavut would like research conducted on the increasingly extreme tidal levels. “We need science to tell us why these things are happening” (Nunatsiavut).
- People in the ISR, particularly in Tuktoyaktuk and Aklavik, requested studies on erosion taking place in all communities in the region. A relocation/reinforcement study has already been done in Tuktoyaktuk by the Inuvialuit Regional Corporation (IRC) and residents in this community discussed the importance of documenting cultural sites along the shore that are disappearing as a result of erosion. In Aklavik, an opportunity for a researcher to spend a season at Shingle Point to assess changes in gravel and permafrost melt and to aid in better understanding the timeline of land degradation was suggested.

- The recent sighting of a tornado during the summer prior to the workshop in Aklavik instigated interest in research on summer weather patterns and the tornado's potential impacts on wildlife.
- Aklavik residents also expressed interest in having a researcher conduct a study of Running River to better understand why flow has decreased and if the formation of a glacier or a beaver dam may be the cause.
- Aklavik residents also suggested that there is a need for research on new insects and how this may be linked to warming temperatures.
- Residents from Aklavik felt that it would be interesting to also study why cougars are now being seen as far north as their community.

## Conclusion

Climate change is and has been a reality in the Canadian Arctic for a number of years. Although national and international governments have been slow to develop adaptive responses to address the impacts, Inuit do not have the luxury of being able to wait. Indeed, this book identifies a number of adaptive measures that have already been implemented by Inuit communities out of necessity.

The adaptive measures currently in place in the Canadian Arctic reflect the cultural, social, political and economic realities of Inuit communities. Although there have been relatively few outside investments in Inuit-driven adaptations research or in adaptive measures, Inuit communities have initiated responses that take advantage of the advanced body of Inuit knowledge on the relationships in the environment and on the Inuit relationship to the land and sea. Many strategies currently employed reflect

changes in behaviour or modifications in the relationships between Inuit and the land (for example, shifting hunting seasons to match changes in animal migrations). Other adaptive measures involve the introduction of technological solutions, such as using community freezers to alleviate concerns of food security (due to decreased availability and access to some wildlife species).

A number of communities identified recommendations for regional and national policy makers. There is clearly a need for investment and increased Inuit involvement in emergency response infrastructure and planning. Communities also made recommendations on increased sharing of scientific and traditional knowledge related to climate change, in general, and adaptive measures, specifically.

What can be learned from the Inuit experience in adapting to date is that adaptive measures are not solely financial or technological in nature; rather, there are clear social and cultural components to consider. Successfully adapting to climate change will require a blend of cultural, technological, social and economic actions in ways that meet the specificities and needs of each individual, community, region and national circumstance. The experiences of Inuit in the Canadian Arctic demonstrate that this is not only possible, but it is the only effective means to address the impacts of climate change at the local scale. Finally, we have learned that successful strategies are those in which local communities and regions are heavily involved.

**Table 6. Summary of Adaptations and Recommendations to Environmental Change in the Canadian Arctic**  
(as reported during the workshops)

| Concern                                                           | Inuvialuit Settlement Region (ISR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Nunavut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Nunavik                                                                                                                                                                                                                                                                                                                                                                                                       | Nunatsiavut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HUNTING &amp; TRAVELLING</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Unpredictable Weather & Increasingly Dangerous Travel Conditions. | <ul style="list-style-type: none"> <li>• Need to improve effectiveness of Search and Rescue Operations and communication between Coast Guard and communities.</li> <li>• Use of community radios, cellphones and two-way radios to facilitate transfer of knowledge community-wide.</li> <li>• Need better access to ocean and weather forecasts.</li> <li>• Build more permanent shelters on land.</li> <li>• Satellite imagery should be made available to more communities.</li> <li>• Need to mark unsafe areas and safe routes with high-quality buoys.</li> <li>• Have to be more careful with travel routes and use new routes.</li> </ul> | <ul style="list-style-type: none"> <li>• Use of search and rescue operations.</li> <li>• Calling ahead to other communities to find out conditions so as to reduce risk of dangerous travel.</li> <li>• Use of community radios to facilitate transfer of knowledge community-wide.</li> <li>• Need to use both scientific and traditional weather predicting skills.</li> <li>• Taking shorter trips and returning home early.</li> <li>• Using camps as shelters and waiting out storms.</li> <li>• Being more selective of hunting locations.</li> <li>• Bringing ample supplies and equipment.</li> <li>• Use of bigger and faster boats.</li> <li>• Use of GPS and satellite images as well as traditional tools and skills.</li> </ul> | <ul style="list-style-type: none"> <li>• Increasing the number of cabins on the land.</li> <li>• Sharing info about dangerous places on the land.</li> <li>• Sharing travel plans with others in communities to ensure safety.</li> <li>• Use of community radios to facilitate transfer of knowledge community-wide.</li> <li>• Northern regions should be added to mainstream weather forecasts.</li> </ul> | <ul style="list-style-type: none"> <li>• Increase the number of search and rescue operations in region and education by search and rescue teams.</li> <li>• Calling ahead to other communities to find out conditions so as to reduce chance of dangerous travel.</li> <li>• Use of scientific forecasts as well as a strengthening of traditional skills.</li> <li>• Finding different travel routes to get to the same location.</li> <li>• Educate youth on weather forecasting.</li> <li>• Changing the traditional times of trips and activities so that travel occurs during safer times throughout the year.</li> <li>• Marking dangerous areas on travel routes.</li> </ul> |

| Concern                                                                         | Inuvialuit Settlement Region (ISR)                                                                                                                                                                                                                            | Nunavut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Nunavik                                                                                                                                                                                                                                                                                                     | Nunatsiavut                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RESOURCES, EQUIPMENT & INFRASTRUCTURE                                           |                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                               |
| Potential loss of houses, buildings, culturally important sites due to erosion. | <ul style="list-style-type: none"> <li>Communities have put rock along coastlines.</li> <li>Protect the entire area as a heritage site.</li> <li>Funding for erosion control is needed.</li> <li>Document cultural sites that may be disappearing.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Have put down wood and boards to attempt to slow erosion, but it doesn't work for long.</li> </ul>                                                                                     |
| Changes in weather / environment necessitating changes to use of equipment.     | <ul style="list-style-type: none"> <li>Use of fencing to protect residents from growing bear populations.</li> </ul>                                                                                                                                          | <ul style="list-style-type: none"> <li>Buying larger and more powerful boats to make travel easier in difficult weather.</li> <li>Adjust the use of different types of travel equipment throughout the year.</li> <li>Use of GPS and satellite images as well as traditional tools, means of travel and skills.</li> <li>Bringing ample supplies and equipment for trips.</li> <li>Building boxes on kamotiks and boats to protect against elements.</li> <li>Use of tents more often as igloos cannot be built as often now.</li> </ul> | <ul style="list-style-type: none"> <li>Use ATVs less often; ATV use is damaging vegetation on the land in certain areas.</li> <li>Possibly return to more traditional means of travel.</li> <li>Increased need for hats, sunscreens and eye wear to protect against increased heat from the sun.</li> </ul> | <ul style="list-style-type: none"> <li>Increased need for hats, sunscreen and eye wear to protect against increased heat from the sun.</li> <li>Use of fencing to protect residents from growing bear populations.</li> </ul> |

| Concern                                                                                                       | Inuvialuit Settlement Region (ISR)                                                                                                                                                                                                                      | Nunavut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Nunavik                                                                                                                                                                                                                                                                                                                                                                                   | Nunatsiavut                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>COMMUNICATION &amp; INFORMATION DISSEMINATION</b>                                                          |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Need for increased communication within and between communities due to the reduced predictability of weather. | <ul style="list-style-type: none"> <li>• Use of community radio to facilitate information sharing.</li> <li>• Need for better access to weather forecasts.</li> <li>• Communications between Coast Guard and communities should be improved.</li> </ul> | <ul style="list-style-type: none"> <li>• Sharing of information about conditions on land and sea within and between communities.</li> <li>• Calling ahead to other communities when travelling on land.</li> <li>• Use of community radio and satellite phones to facilitate information sharing.</li> <li>• Equal emphasis should be placed on traditional and scientific weather forecasts.</li> <li>• A central office in communities would help facilitate communication between scientists and communities.</li> </ul> | <ul style="list-style-type: none"> <li>• Sharing of information about conditions on land and sea within communities.</li> <li>• Letting someone in community know about plans for travel on land in case you get stranded.</li> <li>• Use of community radio to facilitate information sharing.</li> <li>• Local scientific forecasts should be made available to communities.</li> </ul> | <ul style="list-style-type: none"> <li>• Sharing of information about conditions on land and sea within and between communities.</li> <li>• Calling ahead to other communities when travelling on land.</li> <li>• Equal emphasis should be placed on traditional and scientific weather forecasts.</li> <li>• Traditional weather prediction skills could be used in radio and television forecasts.</li> <li>• Improve communications between Coast Guard and communities and shorten delays before beginning search.</li> </ul> |
| <b>HEALTH</b>                                                                                                 |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Increased heat from the sun.                                                                                  | <ul style="list-style-type: none"> <li>• Houses for Elders should be built so that there are cool areas for relief from increased warm temperatures in summer.</li> </ul>                                                                               | <ul style="list-style-type: none"> <li>• Use of sunscreens for protection against harmful UV rays.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>• Wear more sun block.</li> <li>• Wear masks when out on the land.</li> <li>• Turn meat more often when it's left out to dry.</li> <li>• Protect food underground or in freezers at home.</li> </ul>                                                                                                                                               | <ul style="list-style-type: none"> <li>• Sunscreen, hats and sunglasses are used more often for protection against the sun.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                             |
| Increased number of insects.                                                                                  | <ul style="list-style-type: none"> <li>• Use of mosquito repellents.</li> <li>• Screens should be installed in houses.</li> </ul>                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>• Use of bug nets more now.</li> </ul>                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Concern                                                                     | Inuvialuit Settlement Region (ISR)                                                                                                                                                                                                                                                                                                                                  | Nunavut                                                                                                                                                                                                                                                                                                                                                           | Nunavik                                                                                                                                                                                                   | Nunatsiavut                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FOOD SECURITY</b>                                                        |                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                           |
| Changes to migration patterns / accessibility of wildlife.                  | <ul style="list-style-type: none"> <li>• Travelling farther to access animals.</li> <li>• Use of some animal species to replace others that are not as available now (e.g., muskox replace caribou).</li> <li>• Community freezers are used, but maintenance costs are high.</li> <li>• Communities should request support to fix and maintain freezers.</li> </ul> | <ul style="list-style-type: none"> <li>• Adjusting hunting times and methods to better match the distribution patterns of animals and to account for fewer numbers of some animals.</li> <li>• Using faster boats to adapt to changes with harvesting seals and beluga.</li> <li>• Adjusting yearly quotas to better match annual patterns of animals.</li> </ul> | <ul style="list-style-type: none"> <li>• Use of community freezers for access to country foods year-round.</li> </ul>                                                                                     | <ul style="list-style-type: none"> <li>• Travelling farther to access animals.</li> <li>• Use of some animal species to replace others no longer available (e.g., rock cod to replace cod).</li> <li>• Sharing family quotas to ensure all people have enough to eat.</li> <li>• Use of community freezers ensures traditional foods are available year-round.</li> </ul> |
| Increased number of unhealthy animals and animals with abnormalities found. | <ul style="list-style-type: none"> <li>• Be more selective about which animals to consume.</li> <li>• Suspect meat should be tested.</li> <li>• Promote food exchanges between communities.</li> </ul>                                                                                                                                                              | <ul style="list-style-type: none"> <li>• Be more selective about which animals to consume.</li> <li>• Exchange food between communities.</li> </ul>                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>• Be more selective about which animals to consume.</li> <li>• Exchange food between communities.</li> </ul>                                                       | <ul style="list-style-type: none"> <li>• Be more selective about which animals to consume.</li> <li>• Exchange food between communities.</li> </ul>                                                                                                                                                                                                                       |
| <b>TRADITIONAL SKILLS, EDUCATION &amp; RESEARCH</b>                         |                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                           |
| Preservation of Inuit cultural skills and knowledge.                        | <ul style="list-style-type: none"> <li>• Need to maintain the practice of passing cultural skills and knowledge to youth and children.</li> <li>• Spending more time on the land could better facilitate knowledge sharing about the environment.</li> <li>• Schools should be involved to help facilitate youth learning about the environment.</li> </ul>         | <ul style="list-style-type: none"> <li>• Use of traditional weather predicting skills in conjunction with scientific forecasts / technologies.</li> <li>• Use of IQ more often and in a more consistent manner.</li> <li>• Possibly return to more traditional means of travel.</li> </ul>                                                                        | <ul style="list-style-type: none"> <li>• Possibly return to more traditional means of travel.</li> <li>• Maintain the practice of passing cultural skills and knowledge to youth and children.</li> </ul> | <ul style="list-style-type: none"> <li>• Maintain the practice of passing cultural skills and knowledge to youth and children.</li> </ul>                                                                                                                                                                                                                                 |

| Concern                                                                    | Inuvialuit Settlement Region (ISR)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Nunavut                                                                                                                                                                                                                                                                                                                                                                                                                              | Nunavik                                                                                                                                                                                                                            | Nunatsiavut                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Inclusion of Inuit and Inuit knowledge in research.</b>                 | <ul style="list-style-type: none"> <li>Communities would like to be more involved in research opportunities, and particularly should be consulted to select appropriate timing for research.</li> <li>Locals can record observations of the environment.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>A central office in communities would help facilitate communication between scientists and communities.</li> </ul>                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>Weather diaries were proposed as a method to share Inuit knowledge about the environment with scientists.</li> </ul>                                                                                                                                              |
| <b>Public education needed on certain aspects of environmental change.</b> | <ul style="list-style-type: none"> <li>Educate youth on environmental issues through school programs.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>Increase the amount of information on animal health, potential impacts and indicators disseminated to communities.</li> <li>Education is needed about the need to wear sunblock.</li> </ul> | <ul style="list-style-type: none"> <li>Residents would like more information on water safety, and would like to hear more about this issue from health experts.</li> <li>Need education about search and rescue operations.</li> </ul>                                                                   |
| COMMUNITY RECOMMENDATIONS & NEEDS                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                          |
| <b>Community-identified recommendations and needs.</b>                     | <ul style="list-style-type: none"> <li>Large areas should be made into heritage sites.</li> <li>Relocation / reinforcement studies have been done.</li> <li>Residents need to work effectively to secure funds to successfully conduct local initiatives.</li> <li>Investigate effectiveness of water and sewage treatment.</li> <li>Better waste disposal is needed in Inuvik.</li> <li>Form community committees on environmental change.</li> <li>Create international awareness because one day everyone will be affected by climate change.</li> <li>Request studies on permafrost melt, impacts of tornados on wildlife, flow of Running River and new insect species.</li> </ul> | <ul style="list-style-type: none"> <li>Create central offices to coordinate efforts and concerns at the community level.</li> <li>Reduce the use of harmful technologies and look to use convenient technologies that are not harmful to environment.</li> <li>Take responsibility for the role local communities play in the global environment.</li> <li>Implement national and international environmental strategies.</li> </ul> | <ul style="list-style-type: none"> <li>A study should be done to assess depth of area lakes and rivers and fish migration.</li> <li>Investigate effectiveness of water and sewage treatment.</li> </ul>                            | <ul style="list-style-type: none"> <li>Weather diaries were proposed as a method to share Inuit knowledge about the environment with scientists.</li> <li>Studies should be done on high / low tidal extremes.</li> <li>Effectiveness of water and sewage treatment needs to be investigated.</li> </ul> |



## CONCLUSIONS

### Evidence of Change

The information presented in Unikkaaqtigiit—Putting the Human Face on Climate Change is the result of workshops held from 2002 to 2005, involving 17 Inuit communities. The depth of knowledge about the local Arctic environment expressed in these workshops stands on its own. This book presents only the highlights of these workshops, with an emphasis on impacts and adaptations. The community and regional workshop reports contain all of the information shared at the workshops; please consult these documents for more information about any of the issues or observations presented here (see Appendix 1).

Inuit living in Arctic communities hold a wealth of knowledge on the ways their environment is changing. In the community workshops, Inuit clearly stated their observations that support the claim that the Arctic environment is changing. They reported a broad scope of changes encompassing biophysical, socio-economic and human health aspects.

The preceding chapters have clearly shown that documenting observations of environmental change alone is not sufficient to reach a full understanding of how communities can adapt to the impacts they experience from environmental change. It is for this reason that the Unikkaaqtigiit—Putting the Human Face on Climate Change research project was initiated, with the intent to help communities document observations, understandings and effects of climate-related change and to identify and develop strategies to cope and adapt to these changes.

Inuit reported that environmental changes are happening at an alarming rate in the Arctic and are creating many challenges for them. Participants in the community-

based workshops identified a number of ways in which environmental changes affect them which go beyond the biophysical realm. Impacts extend to the individual, household and community levels. Mental, physical, spiritual and cultural well-being, and the economic health of the community are all identified as being impacted by the changes currently taking place. It is evident that for Inuit, the effects of change are experienced throughout the ecosystem, of which they are an integral part.

Clearly, not all of the changes occurring in the North are affecting communities in the same way. Observed changes differed among communities and regions. Similarly, a particular change in the environment may affect communities or individuals differently in various locations, depending on many factors, including geography, local environment, socio-economic opportunities and community priorities, to name a few. This suggests that any measures taken to respond to these impacts must take into account community residents' needs, abilities and desires, as well as differences in the regional and local context. Occupying the top level of the Arctic food chain, Inuit are already adapting to the impacts of environmental change and are eager to find solutions to the challenges they still face.

### Inuit Understanding

Each of the workshops held in communities across the Canadian North began with a discussion about observations of change in the local environment. Most striking in this study were the expressions of relational chains that linked environmental observations to impacts to adaptations as reported by residents (see Figure 2, 5, 6, 7 and 8). For example, in the ISR, changes in temperature were reported that were causing changes in the timing

of freeze-up and melting of ice, which affected the area where seals were regularly found in the spring; in some cases, these areas were becoming more difficult to access, resulting in a lack of fresh country foods during this critical time of year. The depth, richness, and interconnected nature of Inuit knowledge of the Arctic environment and Inuit's relationship with the environment are evident in these statements.

Emerging here is a picture of the nature of Inuit knowledge, which reveals complex webs of relationships. The investigation of these relational chains helps to expose the similarities—and differences—of observations, impacts and adaptations from one community to another and from one region to the next. The examination highlights the critical components to monitor in the future that may help develop a better understanding of adaptation in Inuit communities. It also exposes the similarities and differences from one region to the next in the priority communities place on specific aspects of existing relational chains.

Exploring the relationships between observations, impacts and adaptations provides researchers a more substantial foundation upon which to base further detailed investigations on the most critical aspects of environmental change influencing communities today. Examining change in this way also makes it easier to shed some light on the vulnerability and resilience of individual Inuit communities and regions in the face of environmental change.

### Working Together

To better understand the complexity of the issue of environmental change in the Arctic, it was imperative that a

working partnership, involving a number of organizations, conduct this research. As well, cooperation and partnerships among various levels of government, across departments, involving non-governmental organizations (NGOs) and, most importantly, involving Inuit was required to develop meaningful and effective solutions. The partnerships facilitated the uniting of a scientific understanding of climate and its potential impacts in the North and the Inuit observations and understanding of actual changes taking place in the local environment and their meaning to Inuit. The recognition that no one contributor could comprehend and solve these problems alone allowed for the mutual exchange and learning among the communities and researchers involved.

Continued partnerships of this nature and, most importantly, strong community level involvement will be critical in the development of policies, programs and strategies to successfully cope with the changes identified in this book. The local context and knowledge that exists among the residents of these communities is critical to understanding what these changes mean for residents of each region.

The *Unikkaaqatigiit—Putting the Human Face on Climate Change* project has allowed Inuit knowledge on climate change to feed into the larger scientific pool of knowledge, while at the same time allowing that knowledge to remain in the community. The forging of new partnerships through involvement in this project—such as those developing between communities, Inuit regional organizations and new Arctic climate change researchers — and the strengthening of existing ones has been key to the sustainability of this project and gaining support from the communities studied.

# RECOMMENDATIONS

## A Way Forward

While residents expressed appreciation for the opportunity to gather and discuss among Elders and youth and learn from each other, they also stressed the need to continue work on this subject, as the workshop format had simply “scraped the surface” of the community’s knowledge. Participants suggested further studies to discuss these issues, in detail, with certain Elders and youth to understand and document the breadth of their knowledge. As well, they suggested methods that would be most appropriate to conduct this work, including household visits with maps to encourage discussion and one-on-one interviews to document detailed information.

Going beyond simply documenting the various environmental changes and their effects on communities and individuals, the partnerships forged through this study are interested in supporting communities to develop responses to change wherever possible. This action would require a variety of approaches to enhance community capacity to respond to, cope with and ultimately adapt to the changes. Taking advantage of opportunities and minimizing adverse effects would be key.

Because these changes and their impacts are not occurring in isolation of other forms of change in the communities (e.g., political, social, economic, other forces inducing environmental change), we must be able to more accurately define the changes that are taking place, to what they are attributed, and their relationship with the other drivers of change at the community and individual levels.

To understand these relationships and the trends in these changes, some form of organized “monitoring” or observation needs to take place. In many ways, for example

through individuals’ time on the land and discussions among each other, this monitoring and oral record has already been, and continues to be, developed. However, to ensure the recording and sharing of this knowledge in an organized and easily accessible way for community decision-making purposes, some formalization of this process would be helpful. It would also facilitate collective understanding and action.

For these reasons, an approach of identifying and selecting community indicators for environmental change and community impacts is gaining attention across the Canadian North. It is argued that some form of organized knowledge or database will enhance community capacity to identify changes and effects and, thus, to understand the phenomenon better in order to develop response strategies where required.

## Research Recommendations

This project provides the impetus for further, more in-depth research on a number of topics that were identified in the workshops. Without this further work, the development of effective response and adaptation strategies would be incomplete. Some suggestions for data and research appear in Table 7 in Appendix 2.

## Policy Recommendations

In many of the workshops, participants were asked who should receive this information. Responses varied from local and regional governments and wildlife management organizations to international bodies, such as the Arctic Council. Generally, consensus from all of the workshops was simply to “get the word out.” Some suggestions of policy and service recommendations that stem from this project are presented in Table 8 in Appendix 3.

# RAISING THE VOICE OF INUIT

Most importantly, this project has provided a forum for knowledge exchange and given Inuit residents a voice on an issue that affects their lives and communities on a daily basis. It is hoped that not only will their concerns be brought to the attention of national and international governments and NGOs through existing structures and new partnerships, but also that Inuit can take ownership of the issue and, in turn, feel empowered to act at various levels. When Inuit residents themselves are involved in defining the coping strategies to environmental change, the resulting methods are often better suited to, and more likely to be adopted by, communities. The information in this book provides background from which Inuit as well as other researchers and decision-makers in the North can begin to develop tools that will allow community counsellors and planners to include climate change in all areas of their work and decision-making activities.

Unfortunately, once again, Inuit are the proverbial “canary in the coal mine” for the rest of the world. Not only are Inuit experiencing the affects of climate change first and are therefore in a position to warn the rest of the world about what is perhaps to come, but Inuit are also leading the world in ingenuity and knowledge to adapt to these changes at the local scale. Key to the cultural identity of Inuit is the ability to adapt. It has allowed them to survive for thousands of years in one of the harshest and most sensitive environments on Earth. Southern regions may very well benefit from the lessons being learned in the Arctic today.

This ability to adapt has never been more important for Inuit than it is now. Their world is changing at a pace that they have never experienced or heard of in the oral history passed down for generations. From the informa-

tion shared in the workshops and presented in this book, there is no doubt that communities will continue to try to adapt to the changes they are experiencing today. But many of the changes are coming at a rate, and to an extent that may exceed the threshold of current capacities of northern communities.

There is a great injustice in the fact that a relatively small group of people, who have lived for thousands of years in harmony with their environment, are now being the hardest hit by the impact of development—primarily based outside their regions—on the global environment.



## APPENDIX I

### Regional Reports

#### Inuvialuit Settlement Region:

Communities of Aklavik, Inuvik, Holman Island, Paulatuk and Tuktoyaktuk, Nickels, S., Buell, M., Furgal, C., Moquin, H. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change: Perspectives from the Inuvialuit Settlement Region. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

#### Nunavut:

Communities of Arctic Bay, Kugaaruk and Repulse Bay, Nickels, S., Furgal, C., Mark Buell, Moquin, H. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change: Perspectives from Nunavut. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

#### Nunavik:

Communities of Ivujivik, Puvirnituk and Kangiqsujuaq, Furgal, C., Nickels, S., Kativik Regional Government – Environment Department. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change: Perspectives from Nunavik. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing

Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

#### Nunatsiavut:

Communities of Labrador, Furgal, C., Denniston, M., Murphy, F., Martin, D., Owens, S., Nickels, S., Moss-Davies, P. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change: Perspectives from Labrador. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

### Community Reports

Community of Aklavik. Nickels, S., Furgal, C., Castleden, J., Armstrong, B., Buell M., Dillion, D., Fonger, R., Moss-Davies, P. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Aklavik, Inuvialuit Settlement Region. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

Community of Arctic Bay. Nickels, S., Furgal, C., Akumalik, J., Barnes, B.J. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Arctic Bay, Nunavut. Ottawa: Joint publication of Inuit Tapiriit

Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization. Community of Holman Island. Fonger, R., Moss-Davies, P. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Holman Island, Inuvialuit Settlement Region. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

Community of Inuvik. Nickels, S., Castleden, J., Armstrong, B., Binder, R., Buell M., Dillion, D., Fonger, R., Moss-Davies, P. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Inuvik, Inuvialuit Settlement Region. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

Community of Ivujivik. Furgal, C., Qinuajuak, J., Martin, D., Marchand, P., Moss-Davies, P. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Ivujivik, Nunavik. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

Community of Kangiqsujuak. Furgal, C., Qinuajuak, J., Moss-Davies, P. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Kangiqsujuak, Nunavik. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

Community of Kugaaruk. Nickels, S., Furgal, C., Buell, M., Moquin, H., Shirley, J., Carter, A. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Kugaaruk, Nunavut. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

Community of Paulatuk. Fonger, R., Moss-Davies, P. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Paulatuk, Inuvialuit Settlement Region. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

Community of Puvirnituk. Furgal, C., Qinuajuak, J., Martin, D., Marchand, P., Moss-Davies, P. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Puvirnituk, Nunavik. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

Community of Repulse Bay. Nickels, S., Furgal, C., Buell, M., Moquin, H., Shirley, J., Carter, A. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Repulse Bay, Nunavut. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

Community of Tuktoyaktuk. Nickels, S., Furgal, C., Castleden, J., Armstrong, B., Binder, R., Buell M., Dillion, D., Fonger, R., Moss-Davies, P. 2005. Unikkaaqatigiit – Putting the Human Face on Climate Change – Perspectives from Tuktoyaktuk, Inuvialuit Settlement Region. Ottawa: Joint publication of Inuit Tapiriit Kanatami, Nasivvik Centre for Inuit Health and Changing Environments at Université Laval and the Ajunnginiq Centre at the National Aboriginal Health Organization.

## APPENDIX 2

Table 7. Research Recommendations

- Collect quality baseline Inuit health data to assess the impact of climate change on human health.
- Gather fine-scale meteorological data from many northern regions and collect it in a way that can be linked to existing and future community health datasets.
- Employ local scale standardized monitoring of observations of change and their related impacts.
- Conduct community-based assessments and systematic research on the issues of climate change impacts on all northern sectors.
- Document and make accessible community observation-based data on environmental change and impacts at the regional, community, household and individual scales.
- Examine potential and existing human health impacts of public safety issues (e.g., increased danger while travelling due to changing and unpredictable ice conditions).
- Understand the local, regional and national scales that are interconnected in supporting and facilitating action on climate change.
- Develop models of change and impacts that use/consider local observational data (using cross-scale analysis at local and regional levels).
- Create innovative approaches to climate impact assessment in order to obtain qualitative and quantitative data, and to collect long-term data on standard health and other community outcomes (e.g., economic) at comparable temporal and spatial scales. These data should include local observations collected via reliable and standardized methods.
- Perform climate impact assessments that take a multidisciplinary approach (i.e., those that bring together health scientists, climatologists, biologists, ecologists, social and behavioural scientists, policy researchers and local experts).
- Improve scenarios specific to regions projected to experience significant impacts, such as the North.
- Better understand the key factors, including cultural, that influence individual and community level capacity to adapt and respond to climate changes and impacts.
- Conduct work in a way that recognizes and continues to support or develop local capacities.
- Conduct research and monitoring to identify new species bringing in new diseases and abnormalities.

## APPENDIX 3

Table 8. Policy Recommendations

- Make available financial and other support, including more effective management, for measures to ensure an adequate and quality food supply in Arctic communities. These measures include community freezers, subsidized shipping costs to support food sharing, and shifting of regulated harvesting times to facilitate Inuit access where species are more difficult to access at certain times of the year.
- Support communities in reinforcing or moving infrastructure, such as houses, roads and commercial buildings, as a result of erosion and permafrost melt.
- Facilitate more and better culturally appropriate communications about climate change and its impacts. There is also a need to facilitate North-to-North sharing of adaptations strategies. Some workshop participants recommended the development of a central coordination and information centre for climate change and adaptations.
- Create better weather prediction/reporting/networks.
- Improve or develop access to better and more up to date weather information, which will aid in avoiding difficulties and dangers when travelling. In the ISR, it was recommended that weather information from Alaska be made available, necessitating multi-country cooperation to address the impacts of climate change.
- Educate Inuit in order to alleviate fear of climate change affecting contaminant cycling, which will affect animal health.
- Provide support for communications materials that would assist Inuit in identifying dangerous foods. This would help to ensure a safe food supply and optimum utilization of country foods.
- Provide financial support for a transition in transportation in areas where changing environmental conditions have necessitated the use of different modes of transport.
- Enhance capacity at all levels in the North to cope with the impacts of climate change. These regions have the least capacity to deal with it.
- Support improvements to water treatment centres in communities to ensure a safe, adequate supply of drinking water for Inuit communities.
- Instruct hamlets and municipalities to include climate change in their community planning.
- Develop innovative and useful tools for hamlet and municipal councils and decision makers to use in the planning process.

## INUIT REGIONS AND COMMUNITIES

