



NUNAVIK CLIMATE CHANGE ADAPTATION STRATEGY

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Christian Busch	Air Inuit
Stéphanie Boisvert	
Pita Aatami	
James May	Air Inuit (formerly, now Makivvik President)
Jimmy Johannes	
Johnny Arnaituk	
Mikhaela Neelin	
Charlie Angutinguak	Anguvigaq (Nunavik Hunting, Fishing and Trapping Association)
Rhoda Kokiapik	
Elsa Cencig	
Chhoan Sokchiveneath	
Daniel Lelievre	
Mark Blair	Fédération des Coopératives du Nouveau Québec (Ilagiisaq-FCNQ)
Mary Johannes	
Jobie Oweetaluktuk	
Harriet Keleutak	Inukjuak Local Nunavimmi Umajulirijiit Katujjiqatigiinningit (LNUK)
Sarah Aloupa	Kativik Ilisarniliriniq
Marie-France Brisson	Kativik Ilisarniliriniq, President
Marie-Christine Vanier	
Kris Tukkiapik	Kativik Municipal Housing Bureau (KMHB)
Hossein Shafeghati	KRG – Civil Security Department
Veronique Gilbert	KRG – Municipal Public Works Department
Jérémie Loeb	KRG – Renewable Resources Department – Environment and Lands
Betsy Berthe	
Catherine Noiseux	KRG – Renewable Resources Department – Land Use
Clara Morrissette Boileau	KRG – Renewable Resources Department – Hunter Support Program
	KRG – Renewable Resources Department – Parks

Elise Paquette	
Laura Ekomiak	
Mary Pilurтуut	
Lydia Watt	KRG – Sustainable Employment Department
Barrie Ford	Makivvik – Department of Environment, Wildlife and Research (DEWR) (formerly Nunavik Research Centre, NRC)
Jackie Marchand	
Tony Wright	Makivvik – Economic Development Department
Geraldine Gouin	Makivvik – NRC
Maxime Ladouceur	Makivvik – Kautaq Construction
Audrey Lemieux	
Suzanne Paquin	Nunavik Eastern Arctic Shipping Inc. (NEAS)
Anthony Ittoshat	
Helene Orlando	
Robert Deer	Nunavik Landholding Corporations Association (NLCA)
Léa Laflamme	
Sylvie Ricard	
Virginie Noel	
Joannie Richer	
Jordyn Stafford	
Yassen Tcholakov	Nunavik Regional Board of Health and Social Services (NRBHSS)
Bobby Snowball	Nunavik Elders Association
Allen Gordon	Nunavik Tourism Association
Shaomik Inukpuk	Northern Village (NV) of Inukjuak
Salimuni Qavavauk	NV of Ivujivik, Mayor
Sima Kanarjuak	NV of Ivujivik
McCombie Annanack	NV of Kangiqsualujjuaq, Assistant Mayor
David Annanack	NV of Kangiqsualujjuaq, Mayor
Jim Stewart	NV of Kangiqsualujjuaq
James Craig	
Markusie	NV of Kangiqsujuaq
Tiivi Qumaaluk	NV of Kangiqsujuaq, Mayor
Lucy Qalingo	NV of Puvirnitug, Mayoress
Barbara Papigatuk	NV of Salluit, Assistant Mayoress
Pauloosie Papigatuk	NV of Salluit, Mayor
Billy Cain	NV of Tasiujaq, Mayor; Tasiujaq Landholding Corporation (LHC), Vice-President

Jack Niviaxie	NV of Umiujaq, Mayor
Marion Macé	Pirursiivik
Paulusi Novalinga	Puvirnituaq LNUK; Rangers; Makivvik Governor
Elisapie Lamoureux	Qarjuit Youth Council
Annie Arnatuk	Saturviit Inuit Women's Association of Nunavik
Joe Lance	Tarquti Energy, previously Ilagiisaq-FCNQ

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PREFACE

[Placeholder]

EXECUTIVE SUMMARY

Nunavik Inuit culture and ways of living are deeply rooted in the natural environment. Nunavik communities and organizations are observing and experiencing climate change impacts firsthand and are the best placed to identify what is needed to respond to these changes to support the safety and wellbeing of Nunavimmiut. The speed and extent of changes taking place means that listening to and acting on the climate change priorities of Nunavimmiut is more urgent than ever.

This Nunavik Climate Change Adaptation Strategy (Adaptation Strategy or NCCAS) has been developed by Nunavimmiut and Nunavik organizations. Work first began in 2019 with a regional workshop to develop a shared understanding of climate change impacts. From 2020 to 2022, five multi-organizational working groups focused on different sectors worked to develop this Adaptation Strategy. Collectively, over 90 knowledge holders and expert representatives from Nunavik organizations contributed to the development of this Adaptation Strategy from 2019 to 2022.

This Adaptation Strategy is a roadmap to guide climate change adaptation actions within our region, and to inform government and external organizations of Nunavik's collective priorities and needs. It was developed so that our communities and especially our youth will continue to thrive in our homeland as our ancestors did before us.

Four pillars for strengthening Nunavik's resilience to climate change

This Adaptation Strategy identifies four pillars for strengthening the resilience of Nunavik to climate change:

1. Advance Nunavik Inuit self-determination and equity

This pillar is overarching and must be central to climate change decision-making in Nunavik. It will be achieved by promoting community engagement, strengthening the use of Inuit knowledge to inform and direct adaptation planning and fostering collaboration and mutual support.

2. Protect Nunavimmiut health, wellbeing and culture

Protecting Nunavimmiut health, wellbeing and culture requires supporting the capacity of the communities to travel safely on the land, including strengthening emergency responses. Protecting traditional food systems and maintaining access to a strong supply of both safe country food and drinking water are key needs. Supporting the transmission of knowledge between generations is essential to this pillar.

3. Maintain and protect built infrastructure in communities

Improving the climate resilience of built infrastructure is critical to the wellbeing and effective functioning of communities. It will require stronger collaboration between sectors to implement best practices and adapt policies so that planning is integrated, responsive to Nunavik realities, and supports long-term thinking and habitation.

4. Improve provision of essential services

The location and environment of Nunavik increases the complexity of providing essential services, and changing conditions increases the risk of disruption. Marine and air transportation service providers are key players in the provision of essential services to Nunavik, and solutions to maintain reliable and safe air and marine connectivity must include them. Supporting communities in their effort to reduce the potential impacts of climate change on essential services such as water delivery and sanitary services is also an important aspect of this pillar.

Moving forward

Implementation of the Adaptation Strategy requires broad participation. It is intended that Nunavik organizations, communities, and governments will use the NCCAS as a guide to inform adaptation actions. Nunavik organizations and communities can also use the NCCAS as an advocacy tool. The creation of a regional climate change committee to oversee the implementation of the Adaptation Strategy will be instrumental for communication, coordinating decision-making and helping to guide communities and regional organizations in their climate change adaptation projects and policies.

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1 INTRODUCTION

Background

Nunavik is experiencing profound changes due to climate change, and Nunavik Inuit have been alerting the world about these changes and their impacts for decades. To build a common understanding of the nature and magnitude of those changes and their impacts, Makivik, the Kativik Regional Government (KRG) and the Nunavik Regional Board of Health and Social Services (NRBHSS), held a workshop on climate change in Kuujuaq in November 2019.¹ This event gathered community members from twelve of the fourteen Nunavik communities along with various knowledge holders from regional and local organizations. To ensure diverse perspectives, participants included Elders, hunters, women and youth. During the workshop, participants shared numerous observations of changes in the environment such as changes in air and water temperature, wind, precipitation, snow cover and lake ice and coastal sea ice. Changes in wildlife health, distribution and migrations were also extensively discussed. Participants discussed that sightings of new wildlife species are more frequent, and the abundance, distribution, and migration patterns and timing for important species to Nunavimmiut are changing. Although the rate and magnitude of changes vary from one community to another, the common experience shared by participants was of the environment changing and this is having major impacts on the daily life of Nunavimmiut.

Scientific research and climate change projections predict that these trends will continue in the future and will further affect species and ecosystems, cultural practices, infrastructure and transportation, land access, safety, health and the well-being of Nunavik Inuit.²

Finding ways to adapt to those changes and mitigate their impacts is imperative. During the workshop, adapting to climate change was envisioned by the participants as a way to protect the environment and maintain Inuit culture by ensuring safe access to the land and the transmission of traditional knowledge and skills. Fostering collaboration and supporting Nunavik communities by building community capacity and promote community-led actions that are suited to specific contexts and needs was seen as the best path forward. The vision to work collaboratively towards the Nunavik's first climate change adaptation strategy was raised as a solution to support climate change adaptation in the region. This approach is consistent with the National Inuit Climate Change Strategy (NICCS) developed by Inuit Tapiriit Kanatami and released in 2019. The NICCS identifies common Inuit climate priorities across Inuit Nunangat and promotes Inuit-led actions. Recognizing that the four Inuit regions have distinct contexts and needs, the NICCS was designed to support the development of regional strategies to ensure that region-specific challenges and opportunities are brought forward for discussions and decision-making at regional, provincial and

¹ The 2019 Nunavik Climate Change Workshop report is a companion document to the Adaptation Strategy (Makivik Corporation et al., 2019).

² A summary of scientific observations of change and climate change projections for Nunavik prepared by Ouranos Consortium and is a companion document to this Adaptation Strategy (Ouranos, 2022)

federal levels. While the Nunavik Climate Change Adaptation Strategy (NCCAS or Adaptation Strategy) has been developed collaboratively by Nunavik organizations and communities to meet the needs of Nunavik, it will also help work towards the objectives of the NICCS.

Objectives

The ultimate purpose of the Adaptation Strategy is to strengthen Nunavik's resilience to climate change. The NCCAS will do this by:

- establishing and communicating a shared vision of climate change adaptation for Nunavik
- increasing collaboration and coordination among Nunavik organizations and communities in response to climate change
- informing climate change adaptation decision-making regionally, provincially and federally with the priorities, needs and goals of Nunavimmiut

This Adaptation Strategy identifies our priorities for the next ten years. It is intended to help guide our actions and those of our government partners, so that the funding directed towards climate change adaptation in Nunavik meets community and regional needs and priorities.

Mitigation of climate change continues to be essential and there is a recognized gap in mitigation measures that could be taken in Nunavik. However, the scope of the NCCAS is focused on adaptation to climate change and a fulsome discussion of mitigation strategies is outside the scope of the NCCAS. It is recognized that strengthening Nunavik's adaptation to the large-scale social, economic, and political changes that are occurring to mitigate climate change in Canada and beyond (e.g. transition to a low-carbon economy) will also support the long-term well-being and resilience of Nunavik communities. Key adaptations to these indirect impacts of climate change are also identified.

Approach

Collaboration and communication between Nunavik's regional and local organizations and communities was essential for developing this strategy, both because of the complexity of climate change and also because of the organizational, cultural and political reality of Nunavik. This ongoing collaboration will be even more important for its implementation. To cover the range of climate change impacts mentioned during the 2019 workshop, five multi-organizational working groups were created to develop the Adaptation Strategy (Figure 1):

- Harvesting and Food Security
- Culture and Learning
- Health and Safety
- Economy and Business
- Infrastructure and Community Services

The purpose of the working groups was to bring together expertise from regional and local organizations and other Nunavimmiut with expertise in the field to identify what is needed to

overcome challenges and take advantage of opportunities in that sector. Eleven working group meetings and workshops were held between autumn 2020 and the summer 2021. During workshops, experts in the five working groups identified long-term goals that would help enhance climate change resilience in Nunavik for that area, the steps needed to reach those goals, and the barriers in place that might prevent them to being achieved. These outcomes and the changes needed to achieve them were documented during workshops as a web of sticky notes that were then analyzed and refined.³ Refined outcomes were then shared back with working groups for validation.

During analysis, the project team identified gaps in topics based on past knowledge of key issues related to climate change adaptation in Nunavik, as well as gaps in adequate representation of groups or organizations in working group meetings. To address these gaps, 10 targeted workshops and meetings were held between fall 2020 and summer 2021. Topics addressed were:

- Municipal Perspectives (Northern Villages of Umiujaq, Inukjuak, Puvirnituk, Ivujivik, Salluit, Kangiqsujuaq, Quaqtaq, Tasiujaq and Kangiqsualujjuaq)
- Parks and Tourism (Nunavik Parks, Nunavik Tourism Association)
- Youth Perspectives (Qarjuit Youth Council)
- Transport and Connectivity (Air Inuit, NEAS, Ilagiisaq-FCNQ)
- Archaeological Resources (Avataq Cultural Institute)

³ A web of outcomes and pre-conditions needed to achieve them is referred to as a Theory of Change, and has been applied to climate change adaptation planning (Bours et al., 2014).

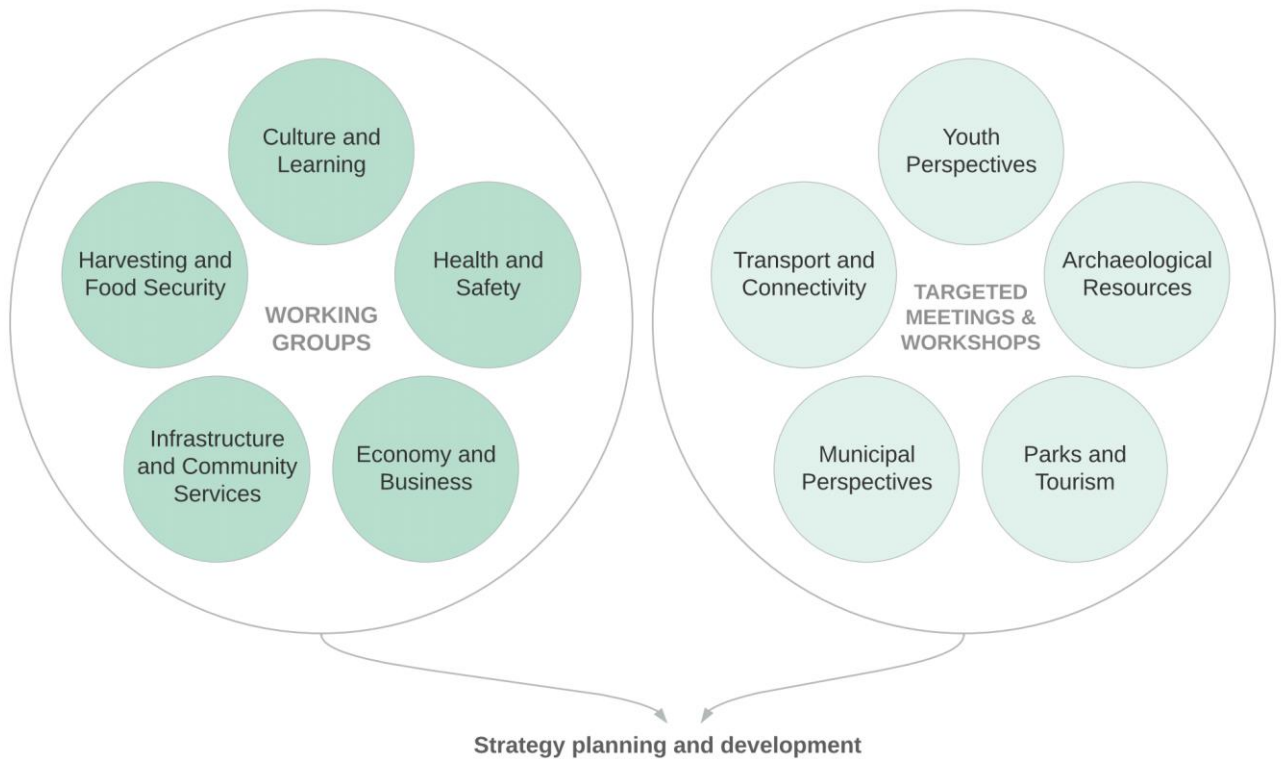


Figure 1. Five working groups and additional targeted meetings and workshops develop the NCCAS

Additional outcomes and changes needed were gathered and analyzed from the targeted meetings and workshops and used to add to and further refine the outcomes identified by working groups.

A community engagement tour is planned for spring and fall 2023, where the draft strategy will be shared with communities and feedback gathered and used to modify and improve the strategy further.

Understanding the Adaptation Strategy

This Adaptation Strategy is a roadmap for strengthening climate resilience in Nunavik. Four pillars were identified by regional and community-level experts – these are the long-term outcomes towards which we will work during the next 10 years. To achieve these long-term outcomes, shorter and medium-term outcomes were identified by regional and community-level experts. These are the pre-conditions, or what needs to be in place, for the long-term outcomes to be achieved. Put another way, the strategy identifies ultimate outcomes and lays out the major steps (causal pathway) needed to achieve it. These long, medium, and short-term outcomes are the core of the NCCAS (Figure 2). They will serve as a guide for climate adaptation activities in the region. These activities will be planned and carried out by organizations and communities. A new regional

climate committee will be established that oversee implementation of the NCCAS and will serve as a forum for coordination, communication and monitoring of activities.

Over the course of this initial Adaptation Strategy, there will be monitoring, evaluation and learning that will help inform future versions of the NCCAS. Key long and medium-term outcomes are presented in Section 2. A detailed list of outcomes developed by experts in working groups and targeted meetings is presented in Appendix A, Appendix B, Appendix C, and Appendix D.

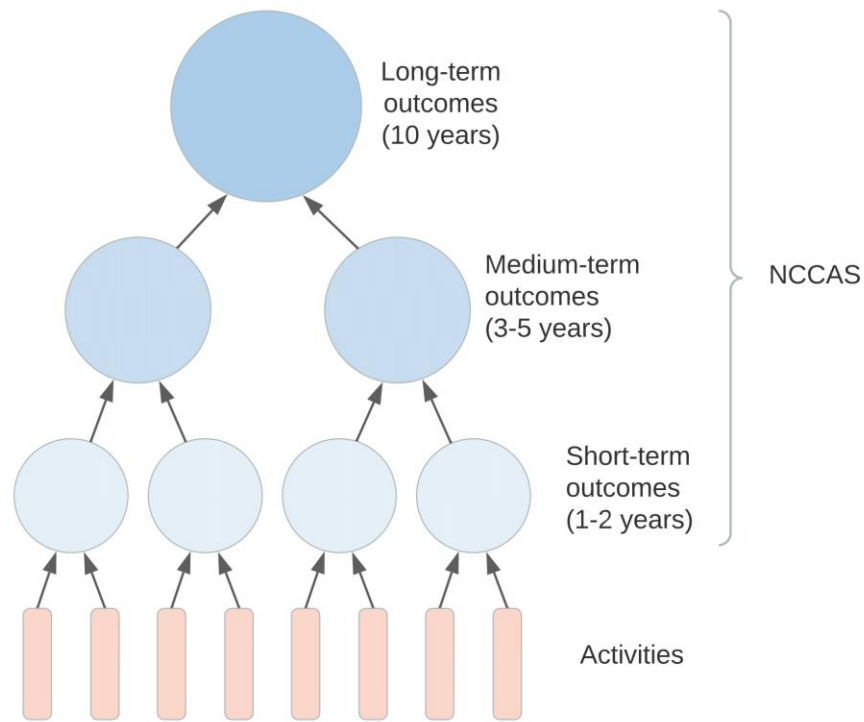


Figure 2. The NCCAS structure is based on short, medium and long-term outcomes to be achieved on a ten-year time scale, and will inform and guide activities

2 THE ADAPTATION STRATEGY

Nunavik communities and organizations identified the four pillars for the Adaptation Strategy as:

1. Advance Nunavik Inuit self-determination and equity
2. Protect Nunavimmiut health, well-being and culture
3. Maintain and protect built infrastructure in communities
4. Maintain the provision of essential services

The first pillar, advancing Inuit self-determination and equity, is overarching and supports the other three.

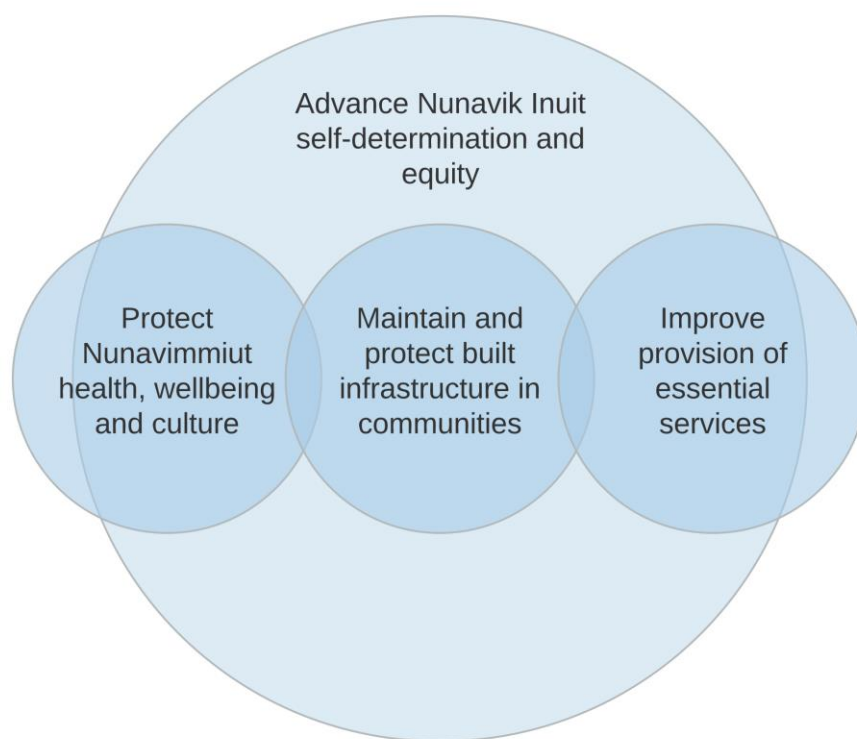


Figure 3. The four pillars of the NCCAS

PILLAR 1: ADVANCE NUNAVIK INUIT SELF-DETERMINATION AND EQUITY

Advancing self-determination and equity should guide all climate change decisions and actions in Nunavik. Nunavik Inuit have a fundamental right to determine the future of our society and territory, including regarding how we adapt to climatic changes that are affecting our health, economy, country foods, cultural practices, infrastructure, connectivity and homeland. We must prepare ourselves and work together, across sectors and the regional and local level, to make

informed decisions that will meet our needs and reflect our priorities and values. Coordination on climate adaptation in Nunavik is important to build capacity, share best practices, reduce gaps, and improve efficiency in actions. Inuit self-determination in research is also needed, so that Inuit are posing the questions and finding innovative solutions to challenges our communities are facing.

Additionally, colonial government policies have created a harmful legacy of social and economic inequities in Nunavik compared to the rest of Canada, and climate change impacts are worsening them.⁴ For example, food insecurity levels are already disproportionately high in Nunavik compared to the rest of Canada⁵, and changes in access to the land and country foods will have the greatest impact on those in our society that are already the most vulnerable to food insecurity. Climate solutions should be used as a tool to reduce social and economic inequities – they should improve living conditions and protect our way of life. Additionally, broader social, political and economic changes are underway in Canada and beyond to mitigate climate change. These create opportunities for Nunavik to make structural shifts that will strengthen self-determination, resilience and well-being in the region. Not making these adaptations will also be a risk for Nunavik, for example in not being adequately prepared for and adapted to a future low-carbon economy. Table 1 summarizes the long and medium-term outcomes for this pillar (for detailed outcomes, see Appendix A).

Table 1. Summary of key medium and long-term outcomes to advance Nunavik Inuit self-determination and equity

Long-term outcomes	Medium-term outcomes
Improved coordination, communication and mutual support in Nunavik for climate adaptation	<ul style="list-style-type: none"> • Increased regular and ongoing information sharing among and between regional and local organizations for adaptation planning and implementation • Improved alignment of regional adaptation policies and decisions with local needs and priorities • Greater inclusion of essential service providers in sector-specific, collaborative adaptation planning
Strengthened equity in climate policies	<ul style="list-style-type: none"> • Improved government engagement and support for Nunavik-led adaptation projects • Increased government resources that reflect Nunavik needs for adaptation as well as needs to reduce existing equity gaps • Improved consideration of Nunavik geographic and economic realities in government climate policies

⁴ See National Inuit Climate Change Strategy (Inuit Tapiriit Kanatami, 2019).

⁵ See Qanuilirpitaa Inuit Health Survey (Furgal et al., 2021)

Long-term outcomes	Medium-term outcomes
Strengthened use of Inuit knowledge to inform and direct adaptation planning	<ul style="list-style-type: none"> • Greater involvement of Inuit, including Elders and youth, in climate change research • Improved sharing of accessible scientific and adaptation planning information with communities • Greater local engagement in adaptation planning and projects, especially involvement of Elders and youth
Greater community engagement in conservation and stewardship	<ul style="list-style-type: none"> • Strengthened conservation practices that reflect past ways of living and adapting based on Elder knowledge • Improved sharing of accessible scientific information with communities • Greater support for knowledge and skills transfer between Elders and youth
Strengthened adaptation in the local and regional economy	<ul style="list-style-type: none"> • Strengthened renewable energy production, storage and distribution • Strengthened land use planning and implementation for community density/land use optimization • Improved policies and programs for responding to climate risks and opportunities in the local and regional economy • Strengthened climate resilience of local tourism infrastructure and the practices of service providers and businesses, such as local outfitters

PILLAR 2: PROTECT NUNAVIMMIUT HEALTH, WELL-BEING AND CULTURE

The impact of climate change on ecosystems, on food security, as well as on the health, wellbeing and culture of Nunavik Inuit are all strongly interconnected. Maintaining traditional practices on the land has become increasingly difficult as climate change reduces the duration and extent of safe travel on sea and freshwater ice. Growing vegetation is affecting trails and land access in the summer season. Increasing costs of land-based travel – due to wear and damage to vehicles from changes in the land and ice, and increased need for communication technologies for safety – are affecting access to healthy country food. These changes are compounding with other changes in the environment that are affecting country food access, such as the location and abundance of wildlife. Reduced land access also affects our mental, cultural and spiritual health and wellbeing and connection to our homeland.

Adaptation solutions in the region must utilize a holistic health lens and promote Inuit culture and ways of life. Nunavimmiut have identified that solutions that support, reinforce and adapt

traditional practices and that use Inuit knowledge to address new challenges are key. Greater access to resources, increased community capacity and increased access to information, tools and technologies are critical for achieving medium and long-term outcomes under this pillar. Table 2 summarizes the long and medium-term outcomes for this pillar (for detailed outcomes, see Appendix B).

Table 2. Summary of key medium and long-term outcomes to protect Nunavimmiut health, well-being and culture

Long-term outcomes	Medium-term outcomes
Strengthened travel safety on the land	<ul style="list-style-type: none"> • Strengthened transmission of land-based knowledge and skills • Strengthened capacity of land users to stay safe through improved access to weather, ice and trail condition information, navigation information, emergency communications, and shelters • Strengthened effectiveness of search and rescue (SAR) through improved access to equipment, training, rapid emergency communications and resources, including personnel
Access to a strong supply of safe and healthy country foods maintained	<ul style="list-style-type: none"> • Improved policies and programs to support harvesters in practicing a continuity of seasonal harvesting activities • Strengthened use of harvesting and butchering practices that maintain the safety and sustainability of country foods and manage ecosystem impacts of changing conditions (e.g. new species) • Enhanced capacity of communities to monitor changes in the environment and wildlife and the use of Inuit knowledge in decision-making • Strengthened land conservation and stewardship policies and practices • Greater effectiveness of community food programs
Access to safe drinking water improved	<ul style="list-style-type: none"> • Strengthened source water protection from climate risks and contamination for both municipal and on the land sources • Improved practices for safe collection of fresh water on the land
Reduced health risks associated with climate- induced hazards and impacts	<ul style="list-style-type: none"> • Strengthened community preparedness for responding to changing natural hazards (e.g. landslides, landscape hazards, tundra fires) • Improved policies and practices for reducing cumulative impacts of climate change and industrial activities, including improved regional and community preparedness for responding to incidents (e.g. shipping fuel spill) • Better holistic supports for mitigating mental health impacts of changing conditions based on Inuit knowledge

Long-term outcomes	Medium-term outcomes
Strengthened cultural transmission and learning	<ul style="list-style-type: none"> • Strengthened support for cultural transmission and learning by reducing interference and barriers due to culturally inappropriate policies and regulations • Improved access to indoor spaces for traditional activities, including food butchering and preparation and other traditional women’s activities
Nunavik’s cultural heritage is protected and maintained	<ul style="list-style-type: none"> • Greater protection of archeological resources at risk from climate change

PILLAR 3: MAINTAIN AND PROTECT BUILT INFRASTRUCTURE IN COMMUNITIES

Sufficient, functional and safe community infrastructure is fundamental to the wellbeing of communities. Nunavik communities are currently facing a significant infrastructure gap, most significantly a massive housing shortage.⁶ Current infrastructure gaps must be understood in the context of decades of government underfunding of Nunavik infrastructure, funding models that prioritize short-term solutions, and use of construction technologies and approaches that are not well suited to Nunavik’s climate and population needs. While efforts are being made to address infrastructure needs locally and regionally, a number of challenges constrain the pace of change. Numerous organizations are involved in different aspects of community infrastructure development, such as municipal planning (KRG and NVs), building construction (Makivvik and others), aggregate production (LHC), and social housing maintenance (KMHB), which adds a high level of complexity. High marine transportation expenses and long lead-ups for shipping of construction materials and equipment demand advanced planning, but lack of timely access to information about needs, timing of funding cycles, and limited resources are creating significant obstacles.

Climate change is exacerbating current infrastructure challenges in communities by further degrading existing infrastructure, including essential service infrastructure such as water treatment plants. The thawing of permafrost is causing shifting in buildings and drainage changes, resulting in the need for costly repairs for even very recently constructed buildings. Greater frequency of extreme weather conditions is causing damage to infrastructure not designed for such conditions. While adapting Nunavik’s infrastructure to become more climate resilient will require significant investment and changes in policies and practices, prevention of issues will be more cost-effective than dealing with their consequences. Nunavik’s growing population means

⁶ According to the 2021 Social Housing Needs Assessment Report for Nunavik, a total of 893 new units would be needed for families so as not to have to share houses (KMHB, 2021).

that infrastructure needs will grow as well, increasing the urgency for protecting, improving and expanding community infrastructure in Nunavik and ensuring its climate resilience. Table 3 summarizes the long and medium-term outcomes for this pillar (for detailed outcomes, see Appendix C).

Table 3. Summary of key medium and long-term outcomes to maintain and protect built infrastructure in communities

Long-term outcomes	Medium-term outcomes
Reduced degradation and maintained usability of existing infrastructure	<ul style="list-style-type: none"> Improved timely road, building, marine, energy, and airport infrastructure maintenance policies and practices by adapting policies, training and providing the necessary funding Improved existing water drainage to better prevent erosion and water damage impacts on roads and buildings
Improved climate resilience of infrastructure	<ul style="list-style-type: none"> More efficient, informed, coordinated and long-term community development planning among infrastructure partners Improved climate resilience of new builds, including roads, docks, buildings and airports, from design to construction Improved suitability and functionality of policies and regulations, including building codes, for Nunavik environmental conditions and community realities, with consideration of the regional environmental diversity

PILLAR 4. IMPROVE PROVISION OF ESSENTIAL SERVICES

Climate change creates risks for disruption of access to communities for essential service provision, including food, fuel, and other essential goods delivery; communications and internet services; postal services; air transportation and emergency medical transportation (MedEvac). Nunavik communities are not accessible by road and consequently are heavily dependent on air and sea transport services for the movement of supplies and people, including MedEvac operations. Increased extreme weather events, stronger winds, and precipitation changes (e.g., increased ice fog) are affecting the regularity and timeliness of air access in and out of communities, with risks for access to essential goods and emergency medical care. Enterprises, specifically Air Inuit, Canadian North, NEAS and Ilagiisaq-FCNQ, have a significant role in providing essential services in Nunavik, but forums for cross-sectoral collaborative adaptation planning between government, regional and community organizations, and enterprises have been limited.

Climate change also creates risks for disruption of essential services in communities, including water and sewage services and snow clearing. An increase in winter precipitation will require increased snow removal operations to avoid disruptions, requiring a larger workforce and snow removal fleet and increased equipment maintenance. For example, there was an over two-week

period where an NV could not deliver essential water and sewage services to the population because of lack of capacity to keep roads clear in blizzard conditions. To avoid unstable permafrost zones, communities must build new developments further away, which takes an increased toll on water, and sewage, road maintenance and snow clearing services. These direct and indirect impacts need to be assessed and addressed to maintain stable provision of essential services to Nunavimmiut. Increased knowledge, capacity and resources are significant needs to achieve the long and medium-term outcomes under this pillar summarized in Table 4 (for detailed outcomes, see Appendix D).

Table 4. Summary of key medium and long-term outcomes to maintain provision of essential services.

Long-term outcomes	Medium-term outcomes
Delivery of safe drinking water improved	<ul style="list-style-type: none"> • Strengthened municipal drinking water filtration/treatment and delivery capacity • Improved source water protection
Sanitation services improved	<ul style="list-style-type: none"> • Strengthened municipal sanitation service capacity
Secure energy production and access improved	<ul style="list-style-type: none"> • Increased diversification of energy supply and storage capacity to include renewables • Improved energy efficiency
Food supply improved	<ul style="list-style-type: none"> • Adapted food-specific transport and distribution infrastructure and operations
Reliable and safe air connectivity for travel, cargo and Medevac improved	<ul style="list-style-type: none"> • Improve and maintain airports and runway infrastructure to increase climate resilience • Increase reliability of air connectivity through the adaptation of airports and airfields infrastructure, increased access to and training on specialized equipment (e.g. de-icing equipment, equipment for runway maintenance) and increased access to accurate meteorological data • Improved collaboration and adaptation planning strategies among air carriers, regional organizations and government agencies to ensure stability and maintenance of essential air travel services

3 NEXT STEPS

As the climate continues to change and its impacts are becoming more important for the communities of Nunavik, we need to reflect and take action bearing in mind our future generations. This Adaptation Strategy will inform decision-making to avoid investing energy and resources towards short-term band-aid solutions, and instead help us coordinate and plan for an impactful response to climate change.

The priorities presented in this Adaptation Strategy are the result of extensive regional engagement and conversations and reflect the actual needs and gaps and the proposed solutions to address them. Given the extensive lists of short, medium and long-term outcomes under each of the four pillars, it is essential that the local and regional organizations, provincial and federal governments and businesses become fully involved and contribute, within their respective jurisdictions and responsibilities, to achieve our ultimate objective of making Nunavik communities more resilient to climate change.

This collaborative strategy, intended to be renewed every decade, should serve as a roadmap to guide our actions along our journey towards adaptation. Yet, as with any other roadmap, we will need to be flexible enough to respond to changes in the social, political, or natural environment to keep it relevant and up to date. To this end, a regional climate change committee will be established to foster collaborations between organizations and communities, help guide climate change adaptation actions and to oversee the implementation of the NCCAS, by creating and monitoring indicators to measure progress on our desired outcomes. Nunavik Inuit are a highly adaptable and problem-solving people, and we believe that if we follow this path that we have created together, we will keep our communities safe and resilient for future generations.

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APPENDIX A: DETAILED OUTCOMES: INUIT-SELF DETERMINATION AND EQUITY

Appended Table 1. Detailed short, medium and long-term outcomes for advancing Inuit self-determination and equity

Long-term outcome	← Medium-term outcome	← Short-term outcome
Improved regional coordination, communication and mutual support in Nunavik for climate adaptation	<ul style="list-style-type: none"> Increased regular and ongoing coordination among and between regional and local organizations for adaptation planning and decision-making Improved alignment of regional adaptation policies and decisions with local needs and priorities Greater inclusion of Inuit social economy businesses/essential service providers in sector-specific, collaborative adaptation planning 	<ul style="list-style-type: none"> Better understanding of local needs by regional partners Improved regular forums for regional and inter-community communication (e.g. permanent working group with representation from villages, involvement of youth and Elders)
Strengthened equity in climate policies	<ul style="list-style-type: none"> Improved government engagement and support for Nunavik-led adaptation projects Increased government resources that reflect Nunavik needs for adaptation as well as needs to reduce equity gaps Improved regard for Nunavik geographic and economic realities in government climate policies (e.g. carbon mitigation measures) 	<ul style="list-style-type: none"> Increased government understanding of Nunavik adaptation priorities Increased government understanding of Nunavik realities (e.g. energy, infrastructure) Increased knowledge of Nunavik Inuit experiences with climate change in broader society
Strengthened use of Inuit knowledge to inform and	<ul style="list-style-type: none"> Greater involvement of Inuit, including Elders and youth, and use of Inuit knowledge in climate change research 	<ul style="list-style-type: none"> Improved capacity to document changes being observed, by and for Inuit Better engagement of front-line staff to identify issues and plan solutions

Long-term outcome	← Medium-term outcome	← Short-term outcome
direct adaptation planning	<ul style="list-style-type: none"> • Increased community engagement in adaptation planning and projects, especially involvement of Elders and youth <ul style="list-style-type: none"> ◦ Increased local community planning for taking advantage of opportunities • Improved sharing of accessible scientific and adaptation planning information with communities 	<ul style="list-style-type: none"> • Expanded community education and training opportunities for engaging on climate adaptation and planning (including related to the Adaptation Strategy) <ul style="list-style-type: none"> ◦ Ensure inclusion of youth and Elders • Improved administrative capacity support for climate change adaptation projects⁷ • Greater awareness of needs for Inuktitut translation of scientific information¹ • More financial and technical support for Inuit-led climate change and adaptation research¹ • Greater support for the Nunavik Research Centre¹ • Improved awareness of need to return of results by researchers¹
Greater community engagement in conservation and stewardship	<ul style="list-style-type: none"> • Strengthened conservation practices that reflect past ways of living and adapting based on Elder knowledge • Improved sharing of accessible scientific information with communities • Greater support for knowledge and skills transfer between Elders and youth • <i>Opportunity:</i> Greater adoption of renewable energy 	<ul style="list-style-type: none"> • Greater awareness of past ways of living and adapting based on Elder knowledge • Increased community awareness of conservation • More spaces and opportunities for Elders and youth to gather for transmission of skills and knowledge¹
Strengthened adaptation in the local and regional economy	<ul style="list-style-type: none"> • Strengthened renewable energy production, storage and distribution • Strengthened land use planning and implementation for community density/land use optimization • Improved policies and programs for responding to climate risks and opportunities in the local and regional economy 	<ul style="list-style-type: none"> • Improved awareness and compliance of developers with community land use regulations, Nunavik Master Plan, and best practices for density/land use optimization [e.g. building multi-floor buildings, repurposing old buildings, adapting building footprints to different lot sizes, adapting foundations to allow for building on land that cannot accommodate gravel pads (e.g. use of piles on rock outcrops)]

⁷ From 2019 Nunavik climate change workshop

Long-term outcome	← Medium-term outcome	← Short-term outcome
	<ul style="list-style-type: none"> Strengthen adaptation for sustainable tourism 	<ul style="list-style-type: none"> Improved knowledge of how Nunavik industries (fisheries, mines, etc.) should adapt operations due to changing conditions to meet highest environmental protection standards Improved, safe access to parks and camps during seasons of activity <ul style="list-style-type: none"> Increased ice safety supports and protocols for winter tourism in parks [due to greater ice instability] More planning and upgrades for parks air strips to maintain tourist access More support/planning winter access in Kuururjuaq Park [due to greater ice instability of Koroc river] More support for fixing/upgrading camp landing strips [due to degradation from permafrost change] Strengthened flexibility and capacity for adapting tourist / client activities in parks [due to greater weather/seasonal temperature unpredictability] More support for Inuit small-scale fishing outfitters to prepare for and adapt to changes [due to impacts on fish health and species abundance from warmer waters and their impacts, changing water levels and drying up of char spawning beds, beavers affecting streams, salmon displacing char, etc.] Improved assessment of new and changing tourism opportunities <ul style="list-style-type: none"> Increased support for outfitters/camp owners and operators to shift to greener, quieter energy sources (e.g. for camps, boat motors)

APPENDIX B: DETAILED OUTCOMES: NUNAVIMMIUT HEALTH, WELLBEING AND CULTURE

Appended Table 2. Detailed short, medium and long-term outcomes for protecting Nunavimmiut health, wellbeing and culture

Long-term outcome	← Medium-term outcome	← Short-term outcome
Strengthened travel safety on the land	<ul style="list-style-type: none"> Strengthened transmission of land-based knowledge and skills 	<ul style="list-style-type: none"> Improved support for transmission of land-based knowledge for those with less access to equipment and mentorship Improved support for transmission of land-based knowledge and skills to younger generations (e.g. within schools) (this is ongoing) Improved access to sustainable, accessible, long-term funding for land-based knowledge transmission programs
	<ul style="list-style-type: none"> Strengthened decision-making by land users based on up-to-date, localized weather, ice and trail condition information 	<ul style="list-style-type: none"> Increased access to up-to-date, Nunavik specific weather information and alerts (e.g. via apps) in the community and on the land Improved access to marine weather reporting Strengthened sharing of ice observations by harvesters (e.g. by expanding use of Siku app) Expanded remote trail monitoring (e.g. CAIMAN network) Better detection and access to information about landscape hazards
	<ul style="list-style-type: none"> Strengthened communications capabilities during travel on the land, especially for communities that are far apart 	<ul style="list-style-type: none"> Improved access to an effective, sustainable and controllable VHF network outside of communities <ul style="list-style-type: none"> ○ Increased number of VHF repeaters

Long-term outcome	← Medium-term outcome	← Short-term outcome
		<ul style="list-style-type: none"> ○ Strengthened use of local knowledge for effective communications infrastructure planning (e.g. where to best position VHF repeaters) ○ Strengthened community capacity for operating and maintaining VHF repeaters ○ Enhanced access to long-term sustainable funding for operations and maintenance
	<ul style="list-style-type: none"> • Expanded access to satellite phones for land users (e.g. via lending programs) 	
	<ul style="list-style-type: none"> • Strengthened decision-making by land users based on access to accurate navigation information 	<ul style="list-style-type: none"> • Improved access to navigation technologies (GPS) for land users • Improved accuracy of maps for harvesting areas • Improved marine charting in Nunavik waters
	<ul style="list-style-type: none"> • Increased ability for land users to stay safe when stranded or stuck 	<ul style="list-style-type: none"> • Increased access to equipped survival cabins (i.e. with food, water, fuel)
	<ul style="list-style-type: none"> • Better use of Inuit knowledge to inform and direct climate change adaptation policy and decision-making 	<ul style="list-style-type: none"> • Strengthened capacity for community-based monitoring and documentation of changes being observed • Strengthened community capacity for adaptation initiatives related to travel and land use
	<ul style="list-style-type: none"> • Strengthened effectiveness of search and rescue (SAR) 	<ul style="list-style-type: none"> • Enhanced access to sufficient, functional SAR travel equipment in communities [i.e. skidoos and boats primarily, also all-terrain vehicle (ATVs)] <ul style="list-style-type: none"> ○ Expanded access to dedicated SAR equipment in communities (rather than relying on the equipment of hunters), via increased funding ○ Improved ongoing funding for equipment maintenance and repair ○ Increased backup equipment • Improved access to specialized SAR equipment/new technologies in communities (e.g. drones, hovercrafts, underwater cameras), especially during ice freeze-up and melt <ul style="list-style-type: none"> ○ Increased funding for specialty equipment

Long-term outcome	← Medium-term outcome	← Short-term outcome
		<ul style="list-style-type: none"> ○ Improved use/sharing of existing resources (e.g. Deception Bay cameras) • Expanded Inuit-led safety training for local SAR/emergency responders, including training on how to use new equipment, survival, specialized skills, etc. <ul style="list-style-type: none"> ○ Increased funding for SAR training (professional and traditional/land-based) • Enhanced rapid communications within communities for SAR/emergency responders (e.g. via a restricted mobile network) • Improved local capacity for SAR diving <ul style="list-style-type: none"> ○ Improved access to diving gear ○ Expanded training for SAR divers • Enhanced compensation for local SAR/emergency responders • Improved ATV trail access on the land (to improve SAR access) • Shortened activation time for external SAR support <ul style="list-style-type: none"> ○ Communicate the need for a northern base for SAR aircraft dispatch • Improved community service centre (CLSC) capabilities to address emergencies <ul style="list-style-type: none"> ○ Improved telehealth connection between CLSC and expertise in the south
<p>Access to a strong supply of safe and healthy country foods maintained</p>	<ul style="list-style-type: none"> • Improved policies and supports for harvesters to practice a continuity of seasonal harvesting • Strengthened practices to keep harvesting levels for main food species sustainable 	<ul style="list-style-type: none"> • Expanded road/ATV trail access to harvesting areas, especially fishing areas [due to reduced duration and safety of sea ice access] • Better alignment of regulated harvesting seasons with season timing changes • Reduced shipping interference with marine access of hunters • Better support for addressing impacts of changing conditions (e.g. rising tides) on camp location • Improved knowledge of how to butcher and prepare a diversity of country foods, to reduce pressure on main species

Long-term
outcome

← Medium-term outcome

← Short-term outcome

- Improved knowledge from other regions on how to harvest, butcher and prepare different species (e.g. beaver, mussels in winter)
 - Improved knowledge sharing and skills transfer via videos on social media, programs with youth via increased funding for programs/supports
 - Improved community awareness of existing funds and support (e.g. community food program through NRBHSS, also through climate change preparedness in the North program)
 - Improved access to and development of spaces/infrastructure for community food programs (e.g. spaces for butchering, kitchens) for learning how to butcher and prepare diverse foods
 - Improved knowledge of how to butcher and use all parts of the animal effectively
 - Improved knowledge of impacts of different conditions on berry growth
 - Improved access to freezers and use of effective packaging for safe storage of country foods in freezers
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- Strengthened practices to maintain the safety of country foods
 - Strengthened knowledge of safe ways to transport, store and prepare country foods
 - Greater sharing of Elders' knowledge on food poisoning (e.g. botulism)
 - Improved access to country food harvesting and food preparation skills training (e.g. in schools and the community)
 - Improved awareness of safe containers for storage of fatty country foods (i.e. glass and metal)
 - Increased awareness of signs of food poisoning (e.g. botulism)

Long-term
outcome

← Medium-term outcome

← Short-term outcome

- Strengthened practices for monitoring changes in the environment and wildlife
- Improved access to food storage infrastructure (community fridges, freezers, warehouses to prevent meat spoilage [due to warmer summer temperatures])
- Improved knowledge to mitigate exposure to mercury in country foods [due to risk of higher levels as a result of permafrost melt]
 - Improved monitoring of mercury in the environment and country foods
 - Expanded regular monitoring of blood mercury in pregnant women and young children
 - Improved knowledge and communication of (or awareness of) safe limits/thresholds for mercury exposure for different species, parts/organs
- Improved knowledge of contaminant levels at a local level and factors influencing them
- Research on new diseases brought by climate change
- Reduce wildlife contamination by lead shot [to mitigate cumulative contamination given that climate change will affect contaminants in the food web]
 - Strengthen awareness of cleaning the bullet wound (ongoing)
 - Strengthen awareness of avoiding use of lead shot (ongoing)
- Improved communication of research results back to communities on wildlife research (including contaminants)
- Strengthened long-term, community-based monitoring of wildlife health (e.g. parasites, diseases) and environmental changes (i.e. building on existing Indigenous Guardians program and expanding to include more community members)
 - Improved use of Inuit knowledge to inform and direct monitoring
 - Better support for ongoing engagement of harvesters in monitoring

Long-term
outcome

← Medium-term outcome

← Short-term outcome

- Enhanced training/capacity development for community-based monitoring by harvesters
- Strengthened centralized collection of information about wildlife (e.g. observations of sick, healthy, or dead wildlife) to assess wildlife health and track on epidemic or emergent diseases (e.g. development of centralized database and a reporting process)
- Strengthened research on new diseases due to climate change
 - Better community awareness of Nunavik Research Centre (NRC) wildlife sampling kits (to send samples of odd/unhealthy wildlife to be tested at NRC)
 - Strengthened mosquito/tick sampling to monitor vector-borne zoonoses
- Strengthened research on prevention and management of invasive species due to climate change
- Improved communication of research results back to communities on wildlife research
- Strengthened monitoring in Nunavik parks
 - Build on and expand current monitoring efforts (e.g. weather station installation project)
 - Expand monitoring of key environmental variables across all parks (e.g. snow depth)
 - Strengthen sharing of monitoring results (ongoing)

- Strengthened effectiveness of community food programs

- Enhanced access to country foods of adequate quality, variety, and quantity at community freezers
 - Improved use of / access to effective packaging for safe storage of country foods in freezers
 - Improved access to information about what country foods are available in community freezers
- Improved development of and access to suitable spaces for food programs

Long-term outcome	← Medium-term outcome	← Short-term outcome
		<ul style="list-style-type: none"> • Increased capacity for food growing/production at the community-level (e.g. Pirursiivik in Inukjuak) <ul style="list-style-type: none"> ○ Improved support for community food growing programs ○ Improved access to adapted, accessible infrastructure for year-round food growing ○ Improved knowledge of how to grow food • Improved coordination and knowledge sharing among different types of food programs <ul style="list-style-type: none"> ○ Increased collaboration between organizations to reduce food waste
	<ul style="list-style-type: none"> • Adapted harvesting and trapping practices to manage ecosystem impacts of new species (e.g. beaver) 	<ul style="list-style-type: none"> • Improved knowledge of new species and their harvesting and use to manage their presence in the ecosystem
	<ul style="list-style-type: none"> • Strengthened land conservation and stewardship policies and practices <ul style="list-style-type: none"> ○ Greater prevention and clean-up of contamination of the land and wildlife, including by diesel, hazardous waste, and sewage ○ <i>Opportunity</i>: Greater adoption of renewable energy 	<ul style="list-style-type: none"> • Improving remediation of the Asbestos Hill mine • Improving oil spill clean-up response capacity and prevention • Increased access to biodegradable items in communities
	<ul style="list-style-type: none"> • Better use of Inuit knowledge to inform and direct climate change adaptation policy and decision-making 	<ul style="list-style-type: none"> • Strengthened community capacity for adaptation initiatives related to food systems <ul style="list-style-type: none"> ○ Improved community supports for accessing funding and program development • Strengthened capacity for community-based monitoring and documentation of changes being observed
Reduce mental health impacts of	<ul style="list-style-type: none"> • Better, holistic supports for mental health based on Inuit knowledge 	<ul style="list-style-type: none"> • Improved awareness of existing mental health supports • Enhanced training of social workers in communities

Long-term outcome	← Medium-term outcome	← Short-term outcome
changing conditions		
Access to safe drinking water improved	<ul style="list-style-type: none"> • Strengthened water source protection from climate risks and contamination (e.g. diesel) • Strengthened drinking water quality from municipal sources • Improved practices for safe collection of freshwater on the land 	<ul style="list-style-type: none"> • Improved understanding of the vulnerability of water supplies (quality and quantity) to climate impacts • Increased compensation to attract and retain quality staff • Increased awareness of importance of municipal water quality monitoring • Increased community compliance with municipal boil water advisories • Improved regular monitoring of water quality at sites where freshwater is collected for drinking (e.g. around camps), with the understanding that presence of bacteria can fluctuate [can be affected by invasive species intrusion due to climate change – e.g. beaver and giardia] (e.g. investigate options for quick test kits that includes testing for coliforms) • Improved awareness and knowledge transfer regarding certain land-based water sources that should be avoided because they are too mineral-rich • Increased awareness of safe practices for drinking freshwater collected from the land (i.e. boiling)
Reduced health risks associated with climate-induced hazards and impacts	<ul style="list-style-type: none"> • Improved community preparedness for wildfires below the tree line, tundra fires and landslides (e.g. community emergency and evacuation plans) • Improved policies and practices for reducing the cumulative impacts of climate change and industrial activities <ul style="list-style-type: none"> ○ Updated regulations and practices for managing mine tailings to not be reliant on permafrost ○ Stronger policies for proponent accountability for environmental impacts 	<ul style="list-style-type: none"> • Expanded geomorphology and geology research around landslides, landscape hazards • Better preparedness for shipping accidents • Better understanding of cumulative impacts from climate change and industrial activities, and how impacts can be mitigated

Long-term outcome	← Medium-term outcome	← Short-term outcome
	<ul style="list-style-type: none"> Better, holistic supports for mental health based on Inuit knowledge 	<ul style="list-style-type: none"> Improved awareness of existing mental health supports Enhanced training of social workers in communities More support for a hands-on approach by community groups based on Inuit knowledge (i.e. reclaim older practices, knowledge of Elders)
Strengthened cultural transmission and learning	<ul style="list-style-type: none"> Greater building on strengthens and the cultural transmission that is already happening Reduced interference and barriers to cultural transmission and learning due to culturally inappropriate policies and regulations Strengthened access to indoor spaces for food butchering and preparation and other traditional women's activities 	<ul style="list-style-type: none"> Greater capacity for developing culturally-relevant curriculum Greater awareness of past ways of living and adapting based on Elder knowledge More spaces and opportunities for Elders and youth to gather for transmission of skills and knowledge¹ Greater understanding of traditional women's activities as essential and requiring resources (e.g. access to appropriate space)
Nunavik's cultural heritage is protected and maintained	<ul style="list-style-type: none"> Greater protection of archeological resources at risk from climate change 	<ul style="list-style-type: none"> Expanded capacity and resources for emergency archaeological work (e.g. salvage excavation, monitoring on archaeological sites under threat by climate changes [due to risk of coastal land erosion]) More support for the documentation and preservation of sensitive heritage sites located in in Nunavik parks and Nunavik communities

APPENDIX C: DETAILED OUTCOMES: BUILT INFRASTRUCTURE

Appended Table 3. Detailed short, medium and long-term outcomes for maintaining and protecting built infrastructure

Long-term outcome	Medium-term outcome	Short-term outcome
Reduced degradation and maintained usability of existing infrastructure	<ul style="list-style-type: none"> Improved road maintenance practices [to address to higher snowfall, more precipitation] 	<ul style="list-style-type: none"> Greater local maintenance capacity and resources: <ul style="list-style-type: none"> Expanded snow removal fleets Upgraded maintenance and snow clearing equipment Increased resources to meet maintenance needs
	<ul style="list-style-type: none"> Improved building maintenance policies and practices: <ul style="list-style-type: none"> Improved regular housing levelling (e.g. coordinated annual levelling of all houses) Improved prevention of mould growth within buildings [due to increased precipitation] 	<ul style="list-style-type: none"> Increased resources to meet maintenance needs Improved dependability of maintenance funding (e.g. separate funding stream from new build)
	<ul style="list-style-type: none"> Improved dock maintenance [to address to higher water level and higher tides from stronger winds] 	<ul style="list-style-type: none"> Improved capacity and resources (i.e. funding) <ul style="list-style-type: none"> Improved training programs to increase local capacity to maintain infrastructure
	<ul style="list-style-type: none"> Improved drainage to prevent erosion impacts on building and roads [to address increased precipitation and permafrost change] (e.g. larger culverts) 	<ul style="list-style-type: none"> To be determined
	<ul style="list-style-type: none"> Improved airport infrastructure maintenance policy and practices 	<ul style="list-style-type: none"> To be determined

Long-term outcome	Medium-term outcome	Short-term outcome
	<ul style="list-style-type: none"> Improved energy infrastructure (storage and transport) policies and practices 	<ul style="list-style-type: none"> To be determined
<p>Improved climate resilience of infrastructure</p>	<ul style="list-style-type: none"> Improved suitability and functionality of policies and regulations for Nunavik environmental conditions and community realities <ul style="list-style-type: none"> Improved suitability and functionality of building codes in Nunavik (e.g. establish mandatory regional and municipal building codes) More efficient, informed, coordinated, and long-term planning among infrastructure partners for climate resilience <ul style="list-style-type: none"> <i>Opportunity:</i> Improved use of infrastructure development projects to create local economic opportunities through collaborative planning Expanded climate-resilience of buildings (foundations, construction materials, design) 	<ul style="list-style-type: none"> Improved understanding of Nunavimmiut infrastructure and maintenance needs (e.g. feedback on what is working and not) and community development plans Improved knowledge of climate impacts on Nunavik infrastructure, what maintenance is working and not working Improved monitoring of impacts of permafrost change on buildings (as a flag for action) Improved understanding of Nunavimmiut infrastructure and maintenance needs (e.g. feedback on what is working and not) Improved collaboration and communication between infrastructure partners (e.g. by establishing an inclusive, multi-organizational community that meets 2-3 times per year; by creating a shared database) Improved sharing of information between Nunavik organizations regarding Nunavimmiut housing adaptation needs Enhanced shared understanding of roles and responsibilities for NCCAS action planning Improved capacity and resources Improved Nunavik-specific knowledge of impacts and benefits of climate-resilient infrastructure options/upgrades (e.g. erosion impacts from road upgrades to pavement, harvesting impacts from expansion of runway length) Better knowledge of climate impacts on infrastructure and community infrastructure needs and solutions: <ul style="list-style-type: none"> Improved timeliness of and access to information about infrastructure needs and funding availability Expanded use of building materials and design resilient to higher/extreme wind conditions Improved water drainage planning, including related to site location

Long-term outcome	Medium-term outcome	Short-term outcome
	<p>and site location) that are adapted to the realities of each community</p> <ul style="list-style-type: none"> ○ Improved climate resilience of water treatment plants ○ <i>Opportunity:</i> Improved efficiency through maximization of opportunities for winter construction (e.g. by installing piles) 	<ul style="list-style-type: none"> ○ Improved engineering and surveying capacity and support • Expanded flexibility of using different building foundations and techniques adapted to realities of each community <ul style="list-style-type: none"> ○ Strengthened local capacity/expertise for constructing different foundations (e.g. installing piles) ○ Improved access to specialized equipment (e.g. for installing piles, constructing concrete basements) <ul style="list-style-type: none"> ▪ Increased funding for equipment ▪ Improved planning for shared equipment investments • Improved knowledge about extent of applicability of different foundations (e.g. piles, concrete basements) to different communities <ul style="list-style-type: none"> ○ Improved access to baseline knowledge about land conditions for construction pre-planning (e.g. bedrock mapping, soil tests, etc.) • Improved timeliness and efficiency of planning around production of and access to construction supplies (e.g. gravel) <ul style="list-style-type: none"> ○ Improved understanding of future construction material needs (to improve planning around costs and investments) • Improved prevention of mould growth within buildings [due to more precipitation] • Improved placement of new buildings on climate resilient sites (e.g. not vulnerable to erosion) <ul style="list-style-type: none"> ○ Increased resources for decontamination and reuse of old housing sites for new housing • Increased access to funding for adapting and upgrading building infrastructure
<ul style="list-style-type: none"> • Improved climate-resilience of roads 		<ul style="list-style-type: none"> • Increased use of climate-resilient construction materials (e.g. gravel instead of asphalt, lighter coloured pavement that will absorb less heat) • Improved water drainage planning
<ul style="list-style-type: none"> • Improved climate resilience of docks 		<ul style="list-style-type: none"> • Upgraded dock construction and increased height [due to higher water level and higher tides from stronger winds]

Long-term outcome	Medium-term outcome	Short-term outcome
	<ul style="list-style-type: none"> Improved climate resilience of airport infrastructure 	<ul style="list-style-type: none"> Improved runway infrastructure to accommodate different aircraft types that are suited to changing weather conditions [due to temperature and wind conditions affecting aircraft suitability and performance] <ul style="list-style-type: none"> Expanded paved runways Expanded runway lengths Improved capacity for runway maintenance [due to permafrost shifts] <ul style="list-style-type: none"> Improved access to specialized equipment for runway maintenance Improved airstrip adaptation to changing predominant wind conditions (e.g. expanded or new airstrip that is better aligned with predominant winds) Improved fencing infrastructure and maintenance to prevent animals going on runway [due to climate change impacts on animal movements] <p>Improved long-term planning for adaptability of airport infrastructure to allow for expansion in the future (e.g. building additional structures)</p>

APPENDIX D: DETAILED OUTCOMES: ESSENTIAL SERVICES

Appended Table 4. Detailed short, medium and long-term outcomes for improving essential services

Long-term outcome	← Medium-term outcome	← Short-term outcome
Improved delivery of safe drinking water	<ul style="list-style-type: none"> Strengthened municipal water delivery capacity 	<ul style="list-style-type: none"> Expanded water delivery truck fleets [due to need to bring water from further drinking water sources related to permafrost changes] Expanded snow removal fleets [due to greater snowfall] Improved support for centralized water delivery system infrastructure upgrades
	<ul style="list-style-type: none"> Improved source water protection (e.g. contamination clean-up and prevention) and planning to ensure a long-term climate-resilient drinking water supply 	<ul style="list-style-type: none"> To be determined
	<ul style="list-style-type: none"> Strengthened drinking water filtration/treatment capacity 	<ul style="list-style-type: none"> Improved equipment/supplies for drinking water filtration [to address increased cloudiness from increased precipitation]
Improved sanitation services	<ul style="list-style-type: none"> Strengthened municipal sanitation service capacity 	<ul style="list-style-type: none"> Expanded sanitation truck fleet [due to greater snowfall] Expanded snow removal fleets [due to greater snowfall] Improved support for centralized sewage removal system infrastructure
Secure energy production and access improved	<ul style="list-style-type: none"> Increased diversification of energy supply and storage capacity to include renewables Improved energy efficiency 	<ul style="list-style-type: none"> Increased awareness of renewable energy To be determined

Long-term outcome	← Medium-term outcome	← Short-term outcome
Food supply improved	<ul style="list-style-type: none"> Adapted food-specific supply and distribution infrastructure and operations 	<ul style="list-style-type: none"> Improved marine and air travel food transport and storage infrastructure [to prevent spoiling in warmer temperatures] Improved access to community food storage infrastructure (community freezers, fridges)
Improved reliable and safe air connectivity for travel, cargo, and Medevac	<ul style="list-style-type: none"> Improved climate resilience of airport infrastructure <ul style="list-style-type: none"> <i>Opportunity:</i> Modernizing airport approach designs and flight planning to lower emissions footprints 	<ul style="list-style-type: none"> Improved runway infrastructure to accommodate different aircraft types that are suited to changing weather conditions [due to temperature and wind conditions affecting aircraft suitability and performance] <ul style="list-style-type: none"> Expanded paved runways Expanded runway lengths Improved capacity for runway maintenance [due to permafrost shifts] <ul style="list-style-type: none"> Improved access to specialized equipment for runway maintenance Improved airstrip adaptation to changing predominant wind conditions (e.g. expanded or new airstrip that is better aligned with predominant winds) Improved fencing infrastructure and maintenance to prevent animals going on runway [due to climate change impacts on animal movements] Improved long-term planning for adaptability of airport infrastructure to allow for expansion in the future (e.g. building additional structures)
	<ul style="list-style-type: none"> Improved capacity to maintain air travel connectivity and prevent flight delays and cancellations [due to increased precipitation, extreme weather events, stronger winds] 	<ul style="list-style-type: none"> Improved access to specialized ground equipment <ul style="list-style-type: none"> Expanded access to de-icing equipment Expanded access to aircraft power units Expanded safe storage for specialized equipment Improved staff knowledge of how to use specialized equipment Increased access to and use of most accurate meteorological data <ul style="list-style-type: none"> Improved sharing of meteorological data between organizations

Long-term
outcome

← Medium-term outcome

← Short-term outcome

- Improved infrastructure capacity to manage impacts of increased flight delays and cancellations [due to increased precipitation, extreme weather events, strong winds, etc.]
 - Improved collaborative planning for adaptation for maintaining safe and reliable air connectivity for the public, cargo, and Medevac
- Increased staff knowledge of how to interpret meteorological data for decisions
 - installation of automated weather stations in all communities
 - Increased preparation and support for the health and safety of ground service employees while working outside
 - Expanded capacity and improved design in terminals to accommodate higher numbers of people
 - Expanded terminal maintenance to accommodate greater use
 - Expanded warehouses in hub communities for cargo accumulation
 - Improved knowledge and skills of employees in managing flight delays, rerouting and cancellations
 - Improved close collaboration between Air Inuit (carrier), KRG (operator), Ministère des transports du Québec (MTQ) (owner), NavCanada and Transport Canada to identify needs and challenges and plan solutions
 - Increased support for gathering knowledge on climate change impacts on the operational environment for air travel and solutions (e.g. changing predominant wind conditions and wind effects on runway orientation)