

Exploration of Indigenous Practices and Knowledge Concerning Natural Hazards and Risk Reduction

Case study: Inuit of Iqaluit, Nunavut, Canada
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A Note from the Author

It's a conundrum: it seems the more I learn, the more my ignorance becomes apparent – and particularly, about traditional Indigenous knowledge. It is a broad and rich field of exploration that I have come to appreciate more though the opportunity of this consultancy.

Here is why, in part: the landscape of Indigenous knowledge seemed narrow when viewed through the small window through which I had initially been exposed. That's not to say that I ever suspected that the knowledge of Indigenous Peoples was not rich. It most certainly is. Rather, my limited, and frankly negative view of the phrase came from my professional experience in the field, where I had too often seen the phrase used as what I considered a placeholder—in meetings, conferences, needs assessments, etc.—for a broader and deeper discussion that should and would happen at some time... but never seemed to happen. To me, it seemed a way to suggest that a deliberative body had given reasonable consideration to the necessity to respect Indigenous Peoples, their experience and their needs without defining what that experience was, what those needs were or how, specifically, they would be met. And too frequently, when reports of meetings or findings of assessments were written, the words used were not the words of the Indigenous delegates themselves; for, more often than not, there was neither a sufficient number of Indigenous delegates assembled, nor was there enough time to discuss various Indigenous perspectives (they are not homogenous), nor were sufficient interpretation and translation resources available, nor... ad infinitum, to accurately represent the many and varied needs of the communities about whom the meetings were convened and the assessments commissioned.

Humankind developed complex societies over thousands of years in a world in which 'disasters' as we know them today did not occur. That is not to say that their exposure to natural hazards was non-existent nor that their vulnerability to these natural hazards was less. The way in which the first humans related to disasters and hazards is likely not too different from conventional beliefs that were widely held until fairly recently: that disasters were considered acts of god(s) or a divine supra-natural force; they were examples of animism. These beliefs endured for many reasons, including the fact that population centers were very dispersed and structural assets less complex than today.

In a not too distant past, beginning in the early 1970's, as death tolls continued to rise dramatically, another school of thought began to take root: it is potentially possible to avoid disasters if we change our approach. The idea of preparedness was born, which further evolved into disaster mitigation and risk reduction. Today it is commonplace to speak in terms of risk management and resilience.

From a personal interview with Dr. Jean Luc Poncelet, former head of the Pan American Health Organization/WHO Department of Public Health Emergencies.

Inuit of Iqaluit, Nunavut, Canada

Traditional Indigenous Knowledge

Understanding Indigenous worldviews and whether and to what extent they lead to reduced risk to natural hazards is at the core of this initiative. And it would be possible to spend a great deal of time discussing traditional Indigenous knowledge (TIK) and the many and varied characterizations that describe TIK (or TEK, Traditional Ecological Knowledge, or other similar terms).

My personal view of Indigenous knowledge is that it comprises content, empirical evidence gathered over generations and tested, assimilated and transferred through culturally-framed processes. It is the filter (comprised of customs, beliefs, values) through which experience, past and present, is processed and science and technology are adopted or adapted by individuals and communities. It is an ongoing process.

There is value in exploring the many and varied understandings of Indigenous worldviews, cosmovision, surrounding the terms. But to dwell too long on attempting to explore only a small facet of a much larger cultural experience (in our case DRR), runs the risk of becoming too involved in the frequently contentious discussion over what is meant by traditional Indigenous knowledge and the similarly contentious argument as to whether there is an equivalency between traditional knowledge and “Western Science”, or whether it matters. In this author’s experience, this discussion can challenge our ability to move the broader conversation forward. That being said, it would be difficult to overstate the importance of an appreciation of the concepts behind the argument. For a richer understanding of the traditional experience and reasons why TIK is such an important issue to many Indigenous people, the reader is encouraged to make the effort to explore the issue.¹ In particular, I would call attention to the essay of Pitseolak Pfeifer, “From the Credibility Gap to Capacity Building: An Inuit Critique of Canadian Arctic Research” in Northern Public Affairs, 2005.

“I reflect here on some of the tensions and struggles I have experienced when thinking about and conducting Arctic research, as an Inuk raised in Nunavut and as a scholar trained in Western traditions. These tensions are fundamentally rooted in having to deal with what I call the credibility gap between Western knowledge and Inuit knowledge. I understand this credibility gap as the view that Inuit (traditional) knowledge does not have (the same) credibility compared to Western academic knowledge. The former is assumed to be based on questionable oral tradition, myth, and story, while the latter is assumed to come from research that collects, questions, and analyzes evidence in a rigorous manner.”

Pitseolak Pfeifer From “The Credibility Gap to Capacity Building: An Inuit Critique of Canadian Arctic Research” Northern Public Affairs, 2018

and the diversity of ideas

definitions, particularly when

¹ For the reader who is interested in further exploring the discussion of TIK, I suggest, as a start, looking at the several definitions of the topic compiled by the National Aboriginal Forestry Association of Canada http://nafaforestry.org/forest_home/documents/TKdefs-FH-19dec06.pdf.

For the purpose of this paper the term traditional Indigenous knowledge will be characterized using the definition drawn from Peter J. Usher² and adopted by the Nunavut Wildlife Management Board in 2009, which captures well the inclusive nature of traditional knowledge (in this case, through an environmental lens):

“[Traditional Ecological Knowledge (TEK)] includes the following four components: factual/rational knowledge about the environment; Factual knowledge about past and current use of the environment; Culturally based value statements about how things should be, and what is fitting and proper to do, including moral or ethical statements about how to behave with respect to animals and the environment, and about human health and well-being in a holistic sense; and information derived from observation, experience, and instruction is organized to provide explanations and guidance.”

Let’s look at the experience and what I learned during my visit to Iqaluit, the capital city of the territory of Nunavut in the Canadian Arctic, which took place over the period of seven days in February 2018.

Seven days in one city (Inuit culture is circumpolar) is an insufficient amount of time to fully understand the Inuit culture and its views on disaster risk reduction. My visit was made fruitful, however, thanks to considerable assistance from a friend and colleague, the Honorable Madeleine Redfern, who is Inuit and the Mayor of Iqaluit. Additional support on this visit came from another friend and colleague, Dr. Simon Lambert, who is associate professor in Indigenous Studies at the University of Saskatchewan and whose research interests include the role of Indigenous communities and Indigenous knowledge in disaster risk reduction. Further, I found and read a number of journal articles specifically dealing with disaster risk reduction and climate change in Inuit communities. (Links to text and audio outtakes can be found throughout this report and journal articles are cited where appropriate).

Disaster Risk Reduction Terminology

Within the professional community, several key terms are used in discussions of disaster risk reduction, including ‘hazard,’ ‘disaster,’ ‘emergency,’ ‘risk,’ ‘vulnerability,’ and more recently, ‘resilience’. Although the terms ‘response,’ ‘relief,’ and ‘recovery’ are not commonly associated with disaster risk reduction (DRR), they do figure in discussions surrounding disaster resilience and are more typically associated with post-event activities.

This following simplified scenario can help to explain these DRR terms: Communities located in areas that frequently experience hurricanes are at **risk**. Hurricane-related **hazards** are related to strong winds, excessive rainfall and storm surge that accompany these events. The community is **vulnerable** if it lacks systems, infrastructure, etc. to deal with the impact of a

² Usher, Peter J., Traditional Ecological Knowledge in Environmental Assessment and management. Arctic. Volume 53. No. 2. (June 2000) P. 183-193.

hurricane; in other words, the absence of early warning system; no building codes or codes not enforced; and poor land use management that has resulted in deforestation, which may promote flooding, etc. The United Nations Office for Disaster Risk Reduction summarizes the definition of risk as: The potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity.

A landslide or flooding is a naturally occurring phenomenon. Whether or not it becomes a disaster rather than an emergency situation depends on the degree to which a community can manage the aftermath. The threshold for considering it a disaster would be if it results in significant loss of life, property or other economic loss and if the magnitude of the event outstrips the community's ability to cope using its own resources. (It's important to note that the intensities and frequencies of hurricanes are influenced by a warming climate. And humans are influencing a warming climate, to an extent that we are only recently discovering. Therefore, the damage caused by landslides or floods might not necessarily be described as entirely 'natural.')

The resilience of a community is characterized by its ability to function throughout the hurricane, or at least the ability to restore critical systems soon afterwards, thereby preventing or significantly mitigating disruption to lives, livelihoods and economies (resilience usually is not the result of luck. Rather, it is attributed to the development and implementation of community-specific disaster risk reduction strategies).

It is also important to understand that Indigenous (and other) communities may simultaneously exhibit vulnerability and resilience. The resilience is often from 'learned strength' (as distinct from TIK). That is, individuals and communities, through adversity, are becoming stronger than they originally were, simply as a means to survive daily emergencies and struggles. This is a useful, if new, observation, as it gets away from the assumption that Indigenous Peoples are resilient through some sort of cultural 'magic' (i.e., DNA and culture do not confer resilience).

Background on Nunavut

On April 1, 1999, the political map of Canada was redrawn: the former territory known as the Northwest Territories was divided and a new territory—Nunavut—was created as a settlement of Inuit land claims and homeland for Canada's Inuit people. The Inuit, who make up 83% of Nunavut's 38,000 residents (2017 figures), achieved self-governance. Nunavut means 'our land' in Inuktitut, the Inuit language.

General Statistics on Iqaluit Capital City of Nunavut Territory

- Population: 7,740
- Number of housing units: 2,930
- Average age: 30.1
- Schools: 6 in total (3 elementary, 1 middle, 1 secondary, 1 French school)
- Post-Secondary Institution: 1 (Nunavut Arctic College)
- Average housing price: \$376,640
- Average children per family: 1.4
- Average # persons per household: 2.8
- Average Income per individual: \$60,688
- Cost of gas in January 2015: \$1.37/liter
- Average cost of a plane ticket to Ottawa: \$1624
- Average cost of 2 liters of milk: \$7.49

The capital of the territory of Nunavut is Iqaluit. It is also the territory's only city. It encompasses an area of about 52 km². The 2016 Census placed the population of Iqaluit at 7,740. Its residents include the largest number of Inuk (Inuit) people, both in numbers (3,900) and percentages (59.1%), of all Canadian cities with populations greater than 5,000. While 92% of the people speak English, only 45% identify it as their mother tongue. Another 46% identify Inuktitut as their mother tongue.

There is relative diversity in Iqaluit: a mixture of long-term residents, including Inuit originally from Iqaluit; Inuit who have moved from elsewhere in the territory; and non-Inuit. The community also includes many short-term residents (transient workers in government and industry, college students, researchers, and others.). The majority of the city's residents have moved to Iqaluit during their lifetime for work, education, or for family reasons.

Arviat is the second largest community in Nunavut, with a population of approximately 2,318 (2011 Census). Only three other communities in Nunavut—Cambridge Bay; Rankin Inlet; and Cape Dorset—have populations that exceed 1,000 people.

There are many Inuit sub-communities within Iqaluit, and it is common for residents to label themselves or others as being from another community (e.g. Pangnirtung, Cambridge Bay, Rankin Inlet or Pond Inlet), even after living many years in Iqaluit. A large number of Inuit in Iqaluit maintain elements of a traditional lifestyle, and the harvesting of fish, wildlife, and berries are an important aspect of everyday life. Unlike other Nunavut communities, in Iqaluit daily life takes place in both English and Inuktitut, with English being the default working language.

Beyond Iqaluit and Nunavut, Inuit culture is circumpolar. As Mary Ellen Thomas explains, "It is not north-to-south. We go east-to-west. Any Inuit in Nunavut can talk to Inuit in Finland, who can talk to Inuit in Denmark, who can talk to Inuit in the northern part of Russia, who can talk to Inuit in Alaska. The language and the culture are circumpolar." Mary Ellen is the Senior Research Officer in the Nunavut Research Institute at Nunavut Arctic College in Iqaluit.

In 2017 the Government of Canada created two departments: Indigenous Services Canada and Crown-Indigenous Relations and Northern Affairs Canada (see <https://www.canada.ca/en/crown-indigenous-relations-northern-affairs.html>). Until this time, Canada's governmental relations between Inuit (and First Nations and Métis) were conducted through the Department of Indigenous and Northern Affairs (INAC).

One of the more unique indigenous governance frameworks in Canada is the proposed circumpolar Arctic Policy Framework, to be led by the Crown-Indigenous Relations and Northern Affairs Canada, (formally Indigenous and Northern Affairs Canada (INAC)). The purpose of the Framework is to "provide overarching direction to the Government of Canada's priorities, activities, and investments in the Arctic, with a horizon of 2030." More information is available at <https://bit.ly/2FivLe6>.

Canada and the United States work together on a wide range of Indigenous and Northern issues. In 2010, INAC signed a Memorandum of Understanding³ with the United States Department of the Interior to enhance cooperation on:

- policy and legislation experience
- socio-economic development of Indigenous peoples and the North
- northern environment and sustainable development
- capacity-building through partnerships

An Inuit Worldview

Inuit beliefs, laws, principles, and values, along with traditional knowledge, skills and attitudes, are what Inuit Elders refer to as *Inuit Qaujimaqatigiit*, or IQ. These are also referred to as *piqujat* (communal laws), which focus on the ways one is expected to behave - how to live one's life as an Inuk. *IQ* embraces all aspects of traditional Inuit culture, including values, worldview, language, social organization, knowledge, life skills, perceptions and expectations.

Following the creation of Nunavut in 1999, Elders identified six guiding principles (Nunavut Tunngavik, Inc. later added two) that form the basis for understanding the conceptual philosophy for IQ and how its principles apply to individuals and society. As Peesee Pitsiulak stated, "These principles reflect Inuit worldview with the new government system, so that it would ... Hopefully the government would show more of the traditional values of the Inuit, through its operations, through the services they provide and everything that government ... hopefully almost all of what the government does. That's how they were created." Ms. Pitsiulak is the Director of Inuit Language and Culture Programs, and former dean of the Nunatta Campus of Nunavut Arctic College.

These guiding principles include:

- Inuuqatigiitsiarniq Respecting others, relationships and caring for people.
- Tunnganarniq Fostering good spirit by being open, welcoming and inclusive
- Pijitsirniq Concept of serving and providing for family and community
- Aajiiqatigiinni Concept of consensus decision making
- Pilimmaksarnik Development of skills through practice, effort and action
- Piliriatigiinni Working together for a common purpose
- Qanuqturniq Being innovative and resourceful
- Avatittinnik Kamatsiarniq Respect and care for the land, animals, and the environment

³ Memorandum of Understanding between the Department of Indian and Northern Affairs Canada and the Department of the Interior of the United States of America concerning Indigenous and Northern Issues. 2010. Online at: <https://bit.ly/2E31Qg1>

Elders also describe *maligait* (natural laws) as the most fundamental laws entrenched in Inuit society that respect one's place in the universe, the environment and in society. These laws speak to interconnectedness in the world and the spiritual supports available to aid in survival. The natural laws are best described as the core laws of relationship that govern how one connects to other people and how one connects to the environment. The essential beliefs that underpin these relationships include: Working for the common good; being respectful of all living things; maintaining harmony and; continually planning/preparing for a better future.⁴

Inuit traditional culture did not, for the most part, look to the future, focusing rather on the here and now. Mary Ellen Thomas offers this example: "I go to the river, I catch my fish. I eat today. In traditional culture they didn't say, Go to the river, catch 10 fish, bring them back and we'll eat for a week.' That's European culture, where there was a culture of farming, a culture of storage." She continues, "traditional culture says, I have all the knowledge I need in my head to survive, so I don't need to go to the river and catch 10 fish. Because I know everything in my environment. It is a culture based on knowledge, but not planning into the future. Today, we live in a very European culture, and here we are, a community of 8,000 people, on the edge of a river that needs to sustain 8,000 people forever."

Continuing on this thought, Thomas says, "Although we're putting in rules on how we build a sustainable fishery, we've been slow to embrace or move into a new world order with many varied cultures and expectations. Our Western culture would note that, Fish are getting fatter. And I would say, Yes, the size of the fish has increased 30%. That's the scientist in me talking. Then I say, "But there's 8,000 people here now who are flushing their toilet every day, and putting untreated water back into the food system. And you wonder why your fish here are 30% fatter, because we used to be a community of 1,500 people and now we're a community of 8,000 people, and things are changing. They get to see that it's all a complex system."

Inuit Perceptions of Risk to Natural Hazards

The last of the Inuit Qaujimajatuqangit principles mentioned above, *Avatittinnik Kamatsiarniq*, may be the closest of the Inuit guiding principles to risk reduction -- taking care of or respecting your environment. When asked for examples of what in daily Inuit life would reflect adherence to this principle, Peesee Pitsiulak said: "Throwing things on the ground is a big one. I grew up in a very traditional home, traditional Inuit home. We grew up being told by our elders and grandparents and parents that you treat the earth with the greatest respect. You don't abuse it. You don't throw things on it, because that shows disrespect." She continued explaining, "Traditional Inuit spiritual beliefs were very much nature based. I grew up in a very traditional home where my father, who was born in 1919, was from the old world where they only traveled by skin kayaks and skin boats in the summer and dog team in the winter. He shared a lot of his world with me when I was growing up. He truly, truly believed in the old way of respecting the

⁴ Nunavut Department of Education, "Education Framework for Inuit Qaujimajatuqangit for Nunavut Curriculum" 2007

land, respecting the animal, respecting the weather, especially, respecting the ocean. That's what he based his life on, knowing the animals, knowing the land, knowing the sea.”

‘Friends Behaving Strangely’: An Inuit Perception of Risk

In her book, *The Right to be Cold*, Sheila Watt-Cloutier discusses the political, environmental, cultural and personal effects of a changing climate on the Arctic. To characterize the changes that the region is experiencing she uses the term *uggianaqtuq*. She writes, “The weather, which we had learned and predicted for centuries, had become *uggianaqtuq*”— also an Inuit term used to describe a friend who is behaving unexpectedly, or in an unfamiliar way. She continues, “Our sea ice, which had allowed for safe travel for our hunters and provided a strong habitat for our marine mammals, was, and still is, deteriorating.”

Sheila Watt-Cloutier, “The Right to be Cold: One Woman's Story of Protecting Her Culture, the Arctic and the Whole Planet”

Emergency Management and Risk Reduction in Iqaluit

When queried about natural hazards in Nunavut, staff from Emergency Services say the hazards are minimal. They do have tsunamis and underwater earthquake risks, but they are rare occurrences.

Nunavut has had a few underwater earthquakes. Most have occurred in the area around Resolute Bay and down the east coast of Baffin Island. One occurred in Pond Inlet, on the northern tip of Baffin Island, directly across Baffin Bay from Greenland.

A magnitude 5.9 earthquake occurred on January 8, 2017 to the southeast of Resolute Bay.⁵ On Jan. 9, a second earthquake, of slightly less magnitude, was reported to have hit the same region, Natural Resources Canada’s website noted.⁶ In the polar regions, scientists have noted that earthquakes are on the rise, and that some of these may be associated with global warming. That is because the pressure of glaciers suppresses earthquakes, so when this ice melts, the pressure release can trigger earthquakes in a movement known as post-glacial rebound.

⁵ Nunatsiaq News. 9 January 2017. Online at: http://nunatsiaq.com/stories/article/65674earthquake_rocks_nunavuts_high_arctic/

⁶ Natural Resources Canada. Online at: <https://bit.ly/2QDoVvF>

Ed Zebedee, outgoing director of Protection Services for the Government of Nunavut and Jimmy Nobel, incoming director, explained, "We've done some studies on the east side of Baffin Island between here and Greenland. The tectonic plates in the Atlantic side are much different than the tectonic plates in the Pacific. They overlap differently, so when there is a shift, it is not so much a drop as it is a linear movement. It's the drop that actually causes the tsunami. So, that and the water between here and Greenland is not very deep, so you don't have that big depth and the sloping into a shallower area its consistent across. An entire village in Greenland was destroyed because of the tsunami that was created by an underwater landslide. The whole village was destroyed."

Fire is a significant hazard in Iqaluit, says Luc Grandmaison, who was Iqaluit's Fire Chief at the time of my visit. "In 2014 in Iqaluit, there were 45 fires. Our fire loss that year was half a million dollars. Our loss per capita was around 68 dollars. Keep the following in mind. In Iqaluit, our fire rate per thousand population is 6. In 2008, the rat per thousand was less than 3. Compare this to British Columbia, where a 10-year study, showed a rate of 1.60 per thousand."

Looking toward the future Mr. Zebedee, said, "I time for change." Referring to himself he continued, ago that it was time for change. Because, as an older into a worldview that isn't keeping up. And, so I put younger and more culturally relevant into the job. That's Senior management in our government doesn't have a in. I know a lot of them, people that are very protectionist should understand. When they start writing job descriptions or qualification levels, they write them based on their own preferences. They may not have a person in mind, but they have a type of person ... And I have a huge problem with that."

"When I took over, I downgraded some job descriptions in the sense that I wasn't asking for a degree in emergency management. And you know what? We filled them based on that, and we got people that are actually more qualified than if I would have kept the original job descriptions in place. Because it opened the door for people to feel that they could get in."

"There's a lot of intellect out there, but there's not a lot of cultural appreciation. If you're advertising a position, for someone's intellect and scholastic achievement, that's a lot different from advertising for cultural understanding. And, I would rather have the latter and then teach the skills they will need. I'm more interested in their passion, if they have passion for the job."

One Inuit View of Disasters

Traditionally, an Inuit perception of disasters generally was based around food security, as this is one of the main issues with how a family group or an extended family group related their world. Today that is changing. There are aircraft accidents; there are power failures in communities, an issue that we as well as our power companies, struggle with. In the last two weeks I've seen seven notices of communities without power for varying lengths of time, for whatever reason. So in the dead of winter that can be a disaster, and its also has a real effect on community life.

*Jimmy Noble
Director, Nunavut Emergency
Management. Personal interview.*

realized a while ago that it was "Being a fossil, I realized a while person, you start getting locked forward a plan to get somebody a problem in our government. succession plan to bring people about their position and who

By and large in the past, non-indigenous persons have managed Iqaluit's emergency services. However, the new head of Government of Nunavut's Emergency Management is Inuk (although his long-time predecessor was not). The mayor of Iqaluit is Inuit (65-85% of the population of Iqaluit is Inuk), but by ballot not by statute. The Iqaluit Emergency Management Plan (Revised August 31, 2010) does not specifically mention 'Inuit', nor does it include references to a need for accommodation or messages that would be culturally or linguistically appropriate to that portion of the population that may need special attention. And it is quite likely that the non-Inuit management of the Emergency Services has been in large part due to the lack of education, training opportunity and experience available to Inuit candidates. This lack of training and education is discussed later in this report and its resolution is central to any risk reduction strategy going forward.

Luc Grandmaison says that the city of Iqaluit has an Emergency Preparedness Plan and it knows the risks, but there are no contingency plans to deal with each specific risk Department of Emergency and Protective Services, which is comprised of three sections that work together to provide for the protection of life, property and the environment:

- Fire Department
- Ambulance
- Communications/Dispatch

Luc Grandmaison, who has since retired but at the time of my visit was Iqaluit's Director of Emergency and Protective Services, said that although the city of Iqaluit has an Emergency Preparedness Plan and it knows the risks, there are no contingency plans to deal with each specific risk.

Many types of situations can put the community at risk. Take, for example, water issues, which are becoming more and more of an issue, not in terms of safe drinking water, but in terms of availability. In the example that Grandmaison presented, "If, you take away the restrictions that we have put on water by the federal government and how it is to be handled, in most cases the issues revolve around the facilities that treat and deliver water. Communities have actually declared an emergency because there was no available water truck. And it's true it's an emergency, although a manmade emergency." When asked what could be done to remedy these situations, he continued, "It's a lack of resources and people that are not prepared for any situation, where somebody that's responsible for ensuring that our reservoir gets filled, doesn't get it filled."

Climate Change in Nunavut

In the Inuit worldview, a great deal of importance on respect, particularly respect toward elders. When asked if certain cultural changes might be required in order for Inuit to play a greater role in the decision making process (particularly to reduce risk—whether climate change mitigation or the risk of other hazards), Maatalii Okalik, past president of Canada's National Inuit

Youth Council replied: “I think we have to be at the front of how we prepare for [the increase in human activity due to climate change-induced melting sea ice] and how we monitor it because that’s part of Inuit Nunangat, which is our Inuit homeland. I don’t think, and history shows, when non-Inuit make decisions over Inuit Nunangat they are most times uninformed. And not reflective of our values and not reflective of something that we would usually call sustainable in dialogues.”

Bigger than the Polar Bear

“No disrespect to our fellow inhabitants, the polar bear, of which we have thrived off of, as I’ve been told, for forever. And as you may know Inuit respect the harvest and have very close connection to our homeland and everything upon it. It just always boggled my mind that people that aren’t from Inuit Nunangat, which is our Inuit homeland across the circumpolar world, only think of the polar bear as far as climate change is concerned.

“For me, from Inuit Nunangat, I think about way more than that. I think about my homeland -- the land, the water, and the ice. In fact, I always encourage people to view the globe, not just simply in blue and green as we’ve been trained to with different geographic imagery, but blue, green, and white, because for us, we’re the only population in the world that lived on and traverses on the ice. And one thing that us Inuit in the advocacy world say to kind of humanize ice for our fellow global family is that it’s actually a highway for us.”

Maatalii Okalik. Personal interview.

In a March 2018 report, Canada’s Office of the Auditor General reported that “climate change has been identified as one of the defining challenges of our time. The impacts of a warming climate and extreme weather events are already being felt in Canada and are forecast to become more severe and more frequent. For example, an increase in the frequency and severity of wildfires and floods is expected. Beyond environmental and physical impacts, climate change is also expected to have significant economic and social impacts.”⁷

The report cites a number of concerns for the population of Nunavut and the Northwest Territories. As a result of melting sea ice, “the extent of summer Arctic sea ice has decreased by nearly a third since 1980. This reduction means less protection from waves and storm surges, which increases the risk of coastal erosion and flooding. This also threatens traditional food sources of northern communities.” With regard to thawing permafrost, the report points out that “more than half of Canada is underlain by varying types of permafrost, much of which is degrading, causing land deformations and landslides that in turn have affected roads, buildings, and other infrastructure. In the Northwest Territories, roads have shifted and slumped, and sinkholes have developed.”

⁷ Perspectives on Climate Change Action in Canada—A Collaborative Report from Auditors General—March 2018. Online at: http://www.oag-bvg.gc.ca/internet/English/parl_otp_201803_e_42883.html.

The following examples have been adapted from an Independent Auditor's Report on Climate Change in Nunavut and expands on the subsequent impact on the Territory.

⁸ Government of Canada. Climate Change in Nunavut. 2018. Online at: http://www.oag-bvg.gc.ca/internet/English/nun_201803_e_42874.html.

Examples of the Impacts of Climate Change on Nunavut and the Arctic

Type of change: Warming

Impact: Arctic sea ice has reduced.

- The shortened and less reliable ice season has affected those who travel on sea ice. It affects cultural connections with the local environment as well as hunting and fishing, which can affect income and food security.
- Researchers have found that reduced sea ice has led to increased shipping activity in some areas surrounding Nunavut. This presents Nunavut with economic opportunities but also increases the risk of incidents that require emergency response, such as fuel spills.
- Less ice means less protection from waves and storm surges.

Impact: Permafrost is warming.

- Nunavut's communities are built on permafrost, which is ground that has been frozen for two or more years. Warming air and ground temperatures have caused permafrost to warm. In some areas of Nunavut, warming permafrost has created hazards for residents, affected some land-based travel routes, and poses risks to infrastructure, such as shifting, foundation distress, and other structural problems in buildings.

Type of change: Changing precipitation levels

Impact: The annual average amount of regional snowfall has increased, whereas in other areas there is less precipitation. Such is the case with Iqaluit where snow is melting earlier in the year.

- In some instances, severe rain events have led to local flooding and washouts. For example, in Pangnirtung in 2008, significant damage to two bridges from a rainstorm and rapid snowmelt prevented access to the community's water reservoir, sewage treatment plant, and landfill site.
- In Coral Harbour in 2012, significant damage to a road and bridge from rain and rapid snowmelt caused the community to be without access to its airport for about one week. The flooding also damaged the resupply pipeline for the community's fuel tank farm.

The report on climate change in Nunavut of Canada's Auditor General found that, "Overall, Nunavut was not adequately prepared to respond to climate change. Although it had strategies for adapting to climate change and managing the territory's energy use and greenhouse gas emissions, it did not have implementation plans that outlined how and when the objectives of the strategies would be met and who would be responsible for what. It also did not publicly report on its implementation of either strategy." Mary Ellen Thomas expanded on these findings. Nunavut is also not prepared from a societal standpoint to meet these challenges, she said in an interview, nor are communities organized to deal with them. Each family is being affected to one degree or another, but no one has come together to say, "We need to fight this. Community leaders are talking about climate change, but it's one leader here or another leader there, rather

than a group of leaders coming together. Everything in our culture is done as a group. Nothing is done individuals.”

When asked, who knows what’s going on with climate? Is the general population aware, or is there consensus among scientists, Mary Ellen Thomas said: “Bits and pieces are known by all of those groups. Architects and engineers will talk more about precipitation and the need to improve the resistance of buildings. Community elders, on the other hand, tend to rely on their observations, such as it’s raining more; our lock pads are eroding; we’re experiencing more runoff from the eaves and our houses are actually eroding.”

Thomas also hears from elders about the increase in fog in the region, which she believes indicates a changing climate, particularly as Nunavut has been gradually moving from a polar climate to a maritime climate (in which the fluctuation in temperature between winter and summer months is much less). Mary Ellen Thomas notes her personal observations on how the changing climate is affecting life in Iqaluit:

Community Observations on a Changing Climate in Nunavut

Scientists can give you a factual and precise explanation for why changes to the climate in Nunavut are happening, but the people who live in the communities in this environment have a very different way of expressing this based on their observations. “They’ll say more fog; more rain; different birds; different fish. They may not be able to say why those things are happening, but they will tell you they *are* changing.”

Mary Ellen Thomas. Personal interview.

Seasonal Changes Affect Household Dynamics

“The change of seasons is least six weeks off from what it used to be. In a town of hunters, everyone awaited New Year’s Day, which marked the start of polar bear hunting season. Household preparations were made, gear was packed, and machines were readied. You can’t count on that anymore because seasons have changed. Now, because the ice is not good on January 1, hunting season begins around February 1. This affects all household members. Diets are changing because it affects what you eat. These cultural and social changes are related to climate change. There are two issues going on. Climate change is coming. Social change is happening. It’s already beginning to hit us. It’s just that the full crest of the wave hasn’t hit us yet, but it’s coming. Those of us who have lived here a long time know and accept this.

Mary Ellen Thomas. Personal interview.

Jason Carpenter, senior instructor and coordinator of the Environmental Technology Program at Arctic College of Nunavut notes that although sudden-onset, massive disasters are not common in Nunavut, the impact or effects of climate change are happening now. “There are environmental changes to sea ice, permafrost thaw, changing weather conditions and the severity of weather. These freeze-thaw cycles—some early and some late in the winter—never used to happen. It would be cold and stay cold. Just like in the south, they’re getting really cold spells, and then they’re getting these really warm spells, and then another cold spell. Well, those are

happening up here too now. So, we get increased storm severity, and a decrease in sea ice. The sea ice season is shorter, so it means that there is a longer season where you have waves hitting shoreline and erosion occurs.”

He continues: “there are many things going on in the north related to climate change and they're happening slowly. Food cycles are changing. We've got new parasites showing up. We've got new invasive species coming up and out-competing; for example, red foxes out-competing arctic foxes all over on this island. So, they've already made it here. We've got grizzly bears invading the tundra, and we're seeing these ‘grolar’ bears, as they’re now called—a hybrid between grizzlies and polar bears. We're getting populations of marine organisms in both fish and mammals that have been cut off for millennia between the Atlantic and the Pacific, who are now getting close to meeting, which, I mean, these things have just never really been seen in the Arctic in known history.”

By and large, many Inuit acknowledge that some things can be done to lessen the impact of climate change. They look at this in terms of mitigation. “Can we build a sea wall? Can we put cement walls up near the coast to stop erosion?” They look to improved building codes and oversight to protect built infrastructure—for example changing flat roofs to pitched roofs that will lessen the load. However, they also acknowledge that some issues cannot be addressed—such as sea level rise, which is occurring. Mary Ellen Thomas pointed out: “Our island is actually tipping. The interior of the island is rising. The exterior is sinking into the sea.”

Jason Carpenter believes that building human capacity is key to changing how climate change is tackled in Nunavut. He says, “the Inuit are very innovative. They can adopt technology and then alter it a bit to make something better suited to their communities, or figure out a different use, or figure out a quick fix. Some of what they have done is utterly amazing. So, if that capacity could be built or improved upon, then maybe solutions could be worked out for some of the impacts of climate change within our communities.”

Education

Post-Secondary Education in Nunavut

Educational opportunities, and the lack thereof, represent a significant risk and an opportunity for risk reduction in Nunavut. The Nunavut Arctic College is funded by the Government of the Nunavut and has several campuses and centers spread throughout the territory, including in Iqaluit. Nunavut Arctic College is the territory’s only post-secondary institution and offers a range of one and two-year diploma programs. Beyond these studies, students who

Education Levels in Nunavut

Considering those over the age of 25:

- 75.7% are high school educated (for 15.9% of this group, this represents their highest level of education).
- 59.8% are post-secondary school educated.
- 24.3% have no certificate, diploma or degree.

wish to go to a university must pursue a full degree program away from their home territory. Canada is the only circumpolar arctic nation without a university in its northern regions.

Nunavut Arctic College offers a one-year program to train Inuit nurses and teachers, which, 25 years ago, was what the government said was needed. Gradually over the years, Thomas adds: "[students] began to train in environmental sciences to a second-year level, but not beyond that. There are also several other programs in social work, mental health and addictions, and training for the trades (apprentice carpenters, electricians, and plumbers)."

"We use a model of three weeks of intensive classes. So, if something happens to a young person who comes here, for example, if his mother gets sick and he must to go home for three weeks, he can step out and step back in. He doesn't lose his whole semester. We want to have as many points of entry as possible, and as many points of exit as possible, so people aren't losing a whole semester."

A Cultural Impact on Education

The Inuit are big hunters. Most men would use the term 'hunter' to define themselves. Jason Carpenter recounted his direct experience with this fact when he was an adult educator in Clyde River (an Inuit hamlet located on the shore of Baffin Island's Patricia Bay). "When the narwhal (a type of whale) came into the inlet, the students didn't even ask to be excused. They could hear the narwhal, they would get up, and they would be gone. And somebody on the way out would say: Sorry, Jason, Narwhal in the inlet and I'd say Yup, ok. And they would just leave."

Jason Carpenter. Personal interview.

Challenges and Proposed Solutions Related to Education in Nunavut

Over the course of meetings with educators, municipal leaders and researchers in Iqaluit, there was robust discussion about the obvious challenges to existing educational programs. Some of the most common challenges, observations, and proposals are listed below.

Money and funding: Nunavut Arctic College is not an independent college; it is part of the government. As such, Mary Ellen Thomas sees some issues that should be corrected. "There is no university anywhere in Northern Canada; there is no university anywhere in the indigenous homeland. That's just unheard of. We can't have educated young people until we have a place to educate them. Other countries with indigenous populations have tackled this early on. They committed money to a university and university-level programs. They're way ahead of us in that area. Look at New Zealand and Finland; look at Norway. You can find five universities in Norway, in northern Norway. We don't even have one university in indigenous Canada."

Educators interviewed for this report agreed that it would be optimal to have four-year post-secondary degree programs in Nunavut. But even in secondary education throughout the territory, science and math are not well-taught, particularly outside Iqaluit. Jason Carpenter says: "I know that because we quickly learned in [our environmental sciences program] that, despite graduating from high school with very good marks, our incoming students are not up to par with their knowledge of science or math. This is because the teachers in the small communities have to teach multiple subjects and consequently they're not science experts. You go to the high school

[in Iqaluit], it is a large school and has teachers specifically to teach chemistry or biology or math. That is not the case in small communities, and so for the most part, I teach as if our students know little about science. That's where we start with them."

Promoting Relationships with Four-year Universities: Because there is no four-year college/university in the North, the Research Institute at Nunavut Arctic College is negotiating to select and develop a relationship with a four-year academic institution in the South so that students in Nunavut can continue their education (online and/or by exchange) after completing two years in Iqaluit. When selecting a partner institution, it is important that the 'partner' is willing to develop a cultural competency program with faculty and staff that would be working with the Nunavut institute. This cultural competency program should be developed with Inuit involvement and be robust, unlike more superficial programs currently available.

Jason Carpenter does, however, see progress. "When I look back to 1996 when I was a student in the environmental sciences program, I do see an improvement in the level of education. The College has a nursing program, a teachers' program, and we've got this program. The college is increasing its relationships with university partners, hoping to choose a strategic partner to move almost all of its programs forward and offer post-diploma options."

But challenges do remain, and are evident in the field of research, more specifically in the interaction between and among minority communities and majority communities. It is common to see majority institutions, with their advantages in terms of science and technology, travelling to and conducting most of the research in minority communities. The students and even many of the researchers in the minority communities do not have the resources or the experience to be able to do the research on an equal level. Nunavut is not unique in this dynamic. Consider one experience with community-based open source GIS in the aftermath of Hurricane Katrina. Students and/or researchers from majority schools in the U.S. came to minority schools of higher education in New Orleans. They were willing to involve the minority schools in the more

Access to Knowledge

-- Two Perspectives --

"What we need is more educated people; because the information is there, and once they have access to it they know the decisions that need to be made. Or they will learn them along the way. To reduce risk, you need educated people that understand risk and are equipped to make decisions to avoid it."

Mary Ellen Thomas. Personal interview.

"Everyone has a different idea of what education is ... and, yes, Canada is the only circumpolar nation without a university in the circumpolar world. But for a lot of Inuit youth, the important education reflective of our surroundings happens in the home. A young hunter knows so much because he's been raised to know so much about how to thrive in our environment. Outside of newly created post-secondary opportunities that can assist in that training. A diploma or degree isn't needed for that kind of thing.

"So yeah, it's really hard to say. It's difficult because in order for someone to get a degree, outside of the partnerships that our local college has with Southern institutions to graduate degree programs, Inuit just have to leave or Inuit have to leave our homeland. That's me right now. I'm not there because in Ottawa studying and it's very difficult to do that. It's an incredible sacrifice. Yeah, I'm getting a little emotional because of that."

Maatalii Okalik. Personal interview.

mundane task of knocking on doors and collecting data but did not involve them in making decisions about what the design of the data collection instrument itself.

Improved Internet connectivity (speed and access) in Nunavut would benefit students in Nunavut. Jason Carpenter believes that, “If we get decent Internet speed up here, many people could work from home, developing things and programming, doing many things from our desks on a laptop, without having to go to the South to continue their education. That would not be difficult or expensive. If you look at the Aga Kahn University institute, for instance, all over the world it is training people online to obtain university degrees. Why can't we do the same with indigenous people?”

Build it and they will come: Jason Carpenter says, “If I was going to take any message back to the non-indigenous world, it is: build a university and they will come. And they'll come in flocks. And they will be indigenous. And they will be willing. All over the world young women are changing the world and young indigenous women are the most highly educated. That is happening in New Zealand and it is happening in Australia. I could name 20 scientists who'd come here tomorrow if we had a university.”

Shortchanging the STEM Curriculum

I feel that the sciences are really getting shortchanged. All STEM fields are. Consequently, I think people in Nunavut are missing out on some of most exciting career paths that are coming in the future. They're all connected to STEM. What is happening is that we're cutting off a whole generation of kids from future opportunities.

Jason Carpenter. Personal interview.

But moving forward, he continues, “We certainly still have challenges. I think people would have been foolish in 1999 [when Nunavut was created] to think that all of these challenges would be resolved tomorrow in our young territory. We have had lots of growing pains. But today we have more Inuit in positions of senior management than we did in 1999. And remember, with every family that has a college or university graduate, that sets a bar for that family. Ten, 15 years ago, almost every one of my graduates was the first in his or her family to graduate from college. That is not so common anymore.”

Community Awareness and Changing Dynamics

Perhaps the most significant aspect of the Nunavut Land Claims Agreement⁹ (NLCA) is that it gave the Inuit of Nunavut true self-government and a separate territory—a first in Canada. The official path to this landmark Agreement began in 1973, when a study was launched to document where Inuit lived at the time, where their ancestors lived, how they lived, and how they travelled and hunted in Canada's Arctic. The NLCA was ratified in 1992 and became law in 1993. The new territory of Nunavut was created in 1999.

⁹ Nunavut Land Claims Agreement. Online at: <http://nlca.tunngavik.com>

Madeleine Redfern, Inuk, and the Mayor of Iqaluit, says, “The whole purpose of the Land Claims Agreement stemmed from the Inuit’s desire to have more control over one’s life. What we mean by that is not control *per se* of the environment, but control over the systems and manmade controls.” She continues with a sense of optimism, “While there has been cultural erosion or degradation and even a lot of our culture has been undermined in recent years, there is tremendous opportunity now for control over our territory. If we step up, we can really bring about cultural changes. If we are to get things done our way, I think the struggle is to change the power dynamics that have long existed between Inuit and non-Inuit, or government and society. There is totally an opportunity to take control, but it is up to us to step up.”

These power dynamics have manifested themselves in a number of ways. There is no denying that the Inuit themselves have looked to improve collaboration among the Inuit community itself, even embracing modern technologies. Mary Ellen Thomas said, there are many ways that Inuit groups are created culturally, rather than just geographically. They are keen users of social media, Facebook, and have used these platforms to create whole new groups of people who will come together around a variety of issues. In addition, there is the Inuit Broadcasting Corporation. Almost all of its programs are broadcast in Inuktitut, the Inuit language, and center on Inuit culture.

Community action groups that seek to foster collaboration between Inuit and non-Inuit populations in Nunavut have also been created around specific areas of interest – for example, climate change. Mary Ellen Thomas explained that while there are some organizations that are doing interesting collaborative work, they tend to be small and not very vocal. On the other hand, there are some very good organizations that are doing well, but they’re not widely known, or unable to reach a wider geographical audience. She cites an example of a young man who wrote an excellent article on how climate change is affecting sea urchins in Nunavut. But the article may not find its way into the broader scientific community because he was speaking only to the people in his community

Action around climate change is primarily centralized at the federal level. It remains to be seen how the people who are supposed to be the beneficiaries are part of the process, particularly the decision-making process. At the global level, the parties to the U.N. Framework Convention on Climate Change (UNFCCC) established the Green Climate Fund (GRC) to support the efforts of developing countries to respond to the challenge of climate change. The GFC recognizes that Indigenous peoples are unique and distinct stakeholders of the GCF and that they have valuable and critical contributions to make to climate change mitigation and adaptation. Yet they are also facing serious threats to the realization of their rights from climate change actions. To this end, and with the input and contributions of many indigenous organizations, the GCF created an Indigenous Peoples Policy.

Indigenous Peoples and the Green Climate Fund

The GCF Indigenous Peoples Policy recognizes that indigenous peoples often have identities and aspirations that are distinct from mainstream groups in national societies and are disadvantaged by traditional models of mitigation, adaptation and development. In many instances, they are among the most economically marginalized and vulnerable segments of the population. The economic, social and legal status of indigenous peoples frequently limit their capacity to defend their rights to, and interests in, land, territories and natural and cultural resources, and may restrict their ability to participate in and benefit from development initiatives and climate change actions. In many cases, they do not receive equitable access to project benefits, or benefits are not devised or delivered in a form that is culturally appropriate, and they are not always adequately consulted about the design or implementation of activities that would profoundly affect their lives or communities.

Green Climate Fund. Indigenous Peoples Policy. Online at: <https://bit.ly/2SLd2Bp>

These are positive examples of Inuit collaboration and input into broader climate change undertakings, such as the Arctic Network of Centers of Excellence.

An Arctic Network of Centers of Excellence

The Government of Canada has adopted the United Nations Sendai Framework for Disaster Risk Reduction. The Framework highlights the need for Indigenous community resiliency planning. Public Safety Canada and Indigenous and Northern Affairs Canada will be working on an action paper to include Inuit and northern communities.

Nunavut's emergency management staff participated in the development of a pan-arctic program called ArcticNet. ArcticNet is a Network of Centres of Excellence of Canada that brings together scientists and managers in the natural, human health and social sciences with their partners from Inuit organizations, northern communities, federal and provincial agencies and the private sector to study the impacts of climate change in the coastal Canadian Arctic. More than 145 ArcticNet researchers from 30 Canadian Universities, 8 federal and 11 provincial agencies and departments collaborate with research teams in Denmark, Finland, France, Greenland, Japan, Norway, Poland, Russia, Spain, Sweden, the United Kingdom and the USA.

Nunavut Emergency Management Agency Annual Report 2016. Online at: <https://bit.ly/2RrwTVG>.

There seems to be consensus among Inuit leaders in Nunavut that while group collaboration and community action are a good thing, what is most needed is greater Inuit representation in government. Mayor Madeleine Redfern thinks that greater Inuit representation at the political level would, "Pretty much allow Nunavummiut to try to tell government that they need to implement the Land Claims Agreement and create Nunavut the way it needs to be created."

The box to the right outlines the role of Nunavut Tunngavik Incorporated (NTI), the Inuit agency charged with ensuring that the terms of the Land Claims Agreement are adhered to. But, says Redfern, “I’ve been at NTI, and there are way too many people, actually capable people, who are not doing nearly enough. Then I look at three Inuit regional associations and that’s another 150 people, almost all of who are Inuit. Then you have your regional development agencies, and that’s a lot of people. I’m not saying that we don’t need these Inuit organizations. But they’re just too big for what they produce. The thing is those Inuit organizations don’t deliver programs or services. They don’t do education. They don’t do healthcare.”

If we look at this in the context of disaster risk for example, we can see where Mayor Redfern’s concerns are warranted. As noted above, there are many capable Inuit in Inuit organizations. However, they are not producing anything tangible of benefit to the community, except for ideas and these ideas are not necessarily turned into information or action. The risk the community runs is that it will use up all of its finite financial resources for the sake of full employment, but with no product to show for it. At some point, the resources will run out and the community will not be able to implement those actions that might have reduced risk. This fact alone will create a risk for the community, the risk of increased unemployment.

Peesee Pitsiulak explains, “There’s a misunderstanding between Inuit organizations and the government, because, unless you know exactly what they do, I think a lot of Inuit, especially in communities outside of Iqaluit, believe that the Inuit organizations *are* their government; that they would be the governing bodies instead of the Government of Nunavut.

I’ve heard people say why do we have a Government of Nunavut when we have all these organizations? People don’t understand the difference between the two.”

Representing the Inuit

Nunavut Tunngavik Incorporated (NTI) is the legal representative of the Inuit of Nunavut for the purposes of native treaty rights and treaty negotiation. It ensures that promises made under the Nunavut Land Claims Agreement are carried out. Inuit exchanged Aboriginal title to all their traditional land in the Nunavut Settlement Area for the rights and benefits set out in the Nunavut Agreement. The management of land, water and wildlife is very important to Inuit. NTI coordinates and manages Inuit responsibilities set out in the Nunavut Agreement and ensures that the federal and territorial governments fulfill their obligations.

*Nunavut Tunngavik. Online at:
<https://www.tunngavik.com>*

Inuit Governance of their Lives

I think it would be extremely unfortunate and unnecessary for Inuit to lose control of our own government, to lose control of our territory. That’s all aspects, as you just related earlier, with respect to education, nursing and other services that we deliver and how we govern and how we prioritize and what is the outcome of effectively this society that we live in, which government has this over exaggerated influence in all aspects of our lives.

I think it would be an utter disaster if we continue along the road that I think we’re on, versus what I see in places like Greenland or New Zealand, where a majority indigenous population can become robust and strong; with no food insecurity or poverty, where we are empowered and do well.

Inuit generally accept that the environment naturally imposes risks on our lives and those risks are easier to accept than risks and harms caused by colonialism.

*Madeleine Redfern, Mayor of Iqaluit.
Personal interview.*

Mary Ellen Thomas believes that one aspect is particularly critical and will make a difference in how Inuit representation in government is maintained or improved: Voting. She says, “The Inuit are enthusiastic voters. We have one of the highest rates of voter participation in the world. We're talking about 80, 90% indigenous voting,” but she adds, “in *local* elections,” rather than in territorial or national elections. From this exchange and given the way policy on climate change or disaster risk reduction is formulated and enacted, it could mean that voting in local elections, alone, could reduce the impact on those policies.

Staff from the Iqaluit Emergency Services pointed to some encouraging trends. “We’ve got to remember that our territory’s legislative assembly was traditionally made up of older, respected people from the community. And, they were leaders in the family sense and the extended family of the community... What we are seeing now is a new batch of young people in the legislative assembly. There's some mix of the ‘old boys’ that have been around for a while, but there's also a new batch in there and we're seeing a lot of tougher questions being asked—the young aren't afraid to speak out—and a lot more forward thinking.” What they were getting at was that both candidates to new positions as well as existing staff must be knowledgeable about cultural competencies and have an obligation to come prepared to any discussion.

So, what can be done throughout the community to keep this forward momentum going? Mayor Madeleine Redfern says, “We definitely need to look at training a lot more local people.” As she contemplated forthcoming staff turnover in Iqaluit’s emergency services, she says. “We need to identify more Inuk candidates, because in terms of communicating and preparing, if you have marginalized Inuit populations and would need to communicate in Inuktitut, then we need to factor that in too. We need to actually bolster a training plan and incorporate our worldviews.”

But Mayor Redfern believes that Iqaluit cannot stop there. She suggests a continuing program of exercises that focus on promoting community involvement and feedback. This will not only raise awareness at community level and have a multiplier effect but also allow the community to share their experience and refine plans to better suit community needs.

Iqaluit Challenges and Strengths

Challenges

As Iqaluit grows as a city and as a ‘Gateway to the North,’ it faces many challenges. Some people say they feel disconnected as a community and seek new ways of connecting with each other, new ways of communicating, and new ways of embracing everyone in the community. They stress the need to counter the growing sense of isolation and disconnect they feel.

As discussed earlier, the territory of Nunavut is new and consequently, so are several of its municipalities: principally among them, the new territorial capital of Iqaluit. Prior to 1999, the Inuit of Nunavut lived in a greater number of smaller and disperse villages. Iqaluit was,

essentially, an overnight creation, established to house the territorial and National (Canadian) government offices. Inuit moved into permanent settlements for a variety of reasons, either voluntarily, enticed, coerced or forced and depending on when and how a particular family moved into a community directly influenced how well they did, in getting the first houses, training or jobs or not.

In Nunavut as a whole, communities began to be established or centralized in the late 1970s. Prior to that time, throughout what is now the territory, everyone lived off the land. The emergency services staff explains, “When the healthcare system and the educational system came in, they started centralizing people into these communities that we have today. But many communities were not situated at traditional locations. They were sited where, for example, the Hudson Bay Company or the RCMP (Royal Canadian Mounted Police) or somebody decided to put up a building.”

These rapid social changes that Iqaluit has and continues to face are deeply rooted in its recent colonial history. The major pressures and urgent needs that the community faces must be addressed on all fronts and present a challenging context for sustainability planning.

Nunavut faces other challenges as well. The Emergency Services Agency in Iqaluit offers one example: “With the influence at community level of white, or mostly white senior officials (non-Inuit), it is difficult to get them involved. Right now, I think eight or nine communities have temporary senior officials; these are senior ministerial officers or hired by the community under a government program. They run the community, and some are very involved and very active, but for the most part, it's a job and there's not a lot of passion.” “Because they have administrative talent rather than a cultural appreciation for the region,” the emergency services staffer continues, “they just don't fit in.”

This challenge of capacity building is a broad one and, again, emphasized the need for increased and enhanced educational opportunity. Without this focus on capacity building there is a long-term risk to Iqaluit and to the Territory. A reading of the 2017 employment statistics for Nunavut (see outtake below) illustrates the vacancies as well as percentage of Inuk represented in public service. Notwithstanding a significant representation of 85% Inuit in administrative support roles, there is a less-admirable 37%, 17%, 26% and %27% in senior management, middle

‘The Inuit Way of Doing Things’

Inuit *qaujimajatuqangit* is the knowledge and practice of Inuit ways. Although Inuit *qaujimajatuqangit* is often thought of as traditional knowledge, it is better defined as “The Inuit way of doing things: the past, present and future knowledge, experience and values of Inuit Society. It encompasses all aspects of traditional and modern Inuit culture, including wisdom, behaviors, world-view, beliefs, language, relationships, life skills, perceptions and expectations.

Inuit *qaujimajatuqangit* helps us to better understand and adapt to today's changes and challenges. It recognizes that everything is related to everything else; in such a way that nothing can stand alone. This is actually the pulse of our sustainability, and therefore these concepts are embraced in the Sustainable Community Plan.

Iqaluit Sustainability Plan 2014-2019. Online at: <https://bit.ly/2PaHnXF>

management and professional management roles, respectively. One would assume that this is, in large part, due to a lack of educational opportunities for Inuit to achieve the education and experience needed to fill many of these vacancies.

Employment Summary of the Government of Nunavut Public Service

Category All Departments, Agencies, Boards and Corporations

	Total Positions	Total Positions			Nunavut Inuit	
		Vacancies	Filled	% Capacity	Hired	% IEP
Executive	37.00	10.00	27.00	73%	10.00	37%
Senior Management	167.00	27.00	140.00	84%	24.00	17%
Middle Management	471.00	130.00	341.00	72%	87.00	26%
Professional	1,776.10	482.60	1,293.50	73%	355.00	27%
Paraprofessional	1,058.70	317.70	741.00	70%	447.50	60%
Administrative Support	1,370.98	360.05	1,010.93	74%	863.88	85%

There are also gaps or shortfalls in the infrastructure sector. The existing infrastructure requires upgrades; there are needs for new infrastructure; and all infrastructure—whether existing or planned—must be adapted to the risks posed by climate change. The Emergency Services Agency asks: “Our growth impacts our water, energy, waste, roads, housing and more. Increased infrastructure will need increased investment. It is a challenge to keep up now; how will we do it in the future?”

It takes financial resources to become sustainable. The City of Iqaluit, like all municipalities across Canada, has limited opportunities to generate additional revenue to accomplish the long list of needs. Without additional revenue, the City is restricted in its ability to maintain or increase programs and infrastructure. The City has two main sources of revenue: property taxes and user fees (approximately 1,500 taxed properties or 2,000 ratepayers) which contribute 85% of the City’s revenue and funding from the territorial and federal governments.

The social and political structure of Iqaluit has undergone significant changes since the creation of Nunavut. Today, Iqaluit has most of the amenities of a capital city, including a legislative assembly, municipal, territorial, and federal government offices, a hospital, college campuses, a courthouse, an airport, and more. As Nunavut’s capital, Iqaluit currently plays a major role as the territorial center of business, transportation, administration and services related to health, education and broadcasting.

However, at the same time, a small but significant portion of the community (primarily Inuit) struggles to cope with acute social issues. These individuals are fighting an uphill battle against mental illness, addiction, poverty, food insecurity, abuse, suicide, low educational achievement, unemployment, housing shortages, cultural erosion, and disengagement, which has a tremendous impact on the community as a whole.

These cultural, educational and socio-economic changes are occurring against a backdrop of significant political change resulting from the creation of the territory. Change is specifically

what Inuit wanted but many of the changes have not resulted in the hoped for goal of more Inuit dominance, control or a government that reflects Inuit values and priorities. There are also opportunities for exploitation of mineral and other natural resources. These projects have potential to bring increased wealth to Nunavut, as long as there is adequate consultation, mitigation of environmental and societal harms and adequate participation in development to bring about mutual benefit and wealth for Nunavummiut.

According to projections in the 2010 *General Plan*, the city of Iqaluit has a population of approximately 8,000¹⁰ in 2013. Based on projected growth rates, the population is expected to grow to approximately 13,050 by 2030. As such, Iqaluit will experience a significant increase in demand for housing, energy, water, the treatment of wastewater, and management of solid waste. This projected growth will pose considerable financial, social, cultural and environmental challenges since the community is already stretched in its infrastructure and resources. Climate change will place additional stress on systems.

With respect to disaster risk reduction, the idea of collective disaster risk reduction was not ‘necessary’ due to a pattern of subsistence living. Today that is different.

Strengths

As Iqaluit grows as a community and as a capital city, the community recognizes that it has many strengths.

The city report on the community assets¹¹ in Iqaluit puts it best: “People are at the heart of our community. Thanks to our committed and caring residents, our community is a vibrant place to live, grow, learn, and give. Everyone plays a role in enhancing our community: children, youth, adults, and Elders. Our community is multicultural but rooted in Inuit culture. We all benefit from the efforts and enthusiasm of our long-term, short-term and transient residents. The power of individuals makes our community a better place for everyone. Our community is made up of approximately 8,000 individuals who all have something to give, and who all make our community what it is today and will move us toward our vision for the future.”

Iqaluit has an abundance of dedicated, service-providing organizations and businesses. The Community Assets report footnoted below cites the organizations operating in Iqaluit; these include Iqaluit-headquartered territorial organizations and locally-focused organizations.

In addition, the report continues, “private businesses make the community more sustainable through the goods and services they provide. Private enterprise also contributes to sustainability through increasing capital investment in our community. These organizations and businesses make our community better and move us towards a more sustainable long-term future.”

¹⁰ City of Iqaluit. *General Plan*, By-law 703, October 2010. Online at: <https://bit.ly/2RM2RMN>

¹¹ Sustainable Iqaluit: Moving toward a better long-term future. Community Assets. 2012. Online at: <https://bit.ly/2QuqWu1>

“Our infrastructure keeps our community running on a daily basis. Our facilities, roads, and other public infrastructure are often overlooked in our daily lives; if it functions, we take it for granted. Although we have some clear challenges with our infrastructure, we recognize that on the whole, it is an asset that supports us in our day-to-day lives.”

When looking toward the future, Jason Carpenter of the Nunavut Arctic College sums it up well. He says, “In terms of optimism, well, if you haven't heard anybody be optimistic about the North, I am. I'm extremely optimistic about the North. I think if you talk to people that have only been here five years, they may give a lot of criticism about it. If you read the local newspaper or go on Facebook sites, everybody complains. But when I look, when I think about the way things were 20 years ago, and I think about the way things are today for me and the way I carry out my day-to-day life, things are way better today.” The positive future Dr. Carpenter looks forward to will only be made possible with a focus on educating Inuit, in all academic disciplines, as well as maintaining the study and practice of the IQ principals described earlier.

A Reason for Optimism

“If you haven't heard anybody speak optimistically about the North [Nunavut], then I will. I'm extremely optimistic about the North. I think if you talk to people that have only been here five years or so, they may give a lot of criticism. If you read the local newspaper or go on Facebook sites, everybody complains. But when I look at it, when I think about the way things were 20 years ago, and I think about the way things are today—for me and the way I sort of carry out my day-to-day life, things are way better today!”

*Jason Carpenter, Nunavut Arctic College,
Environmental Technology Program.
Personal interview.*

This also may be what native scholar Dr. Peter Kulchyski means when he says, “Inuit prize flexibility and ingenuity — a good idea is not something to hold back in the interest of maintaining the way things were always done. At the same time, elders and ancient traditions are highly respected. Balancing these two — an appreciation for newness and respect for the wisdom of the ages — will be one of the challenges of Nunavut.”

Annex 1. List of Interviewees and Participants

Nunavut

Honorable Madeline Redfern, LLB
Mayor
City of Iqaluit
Iqaluit, Nunavut, Canada

Peesee Pitsiulak
Director of Inuit Language and Culture Programs
Former Dean, Nunatta Campus
Nunavut Arctic College
Iqaluit, Nunavut, Canada

Maatalii Okalik
Past President, National Inuit Youth Council
Student, Carlton University, Human Rights and Political Science, Minor in Aboriginal Studies
Ottawa, Canada

Luc Grandmaison
Fire Chief and Director of Emergency and Protective Services
City of Iqaluit
Iqaluit, Nunavut, Canada

Mary Ellen Thomas
Senior Research Officer
Nunavut Research Institute
Nunavut Arctic College
Iqaluit, Nunavut, Canada
Jason Carpenter
Senior Instructor and Coordinator
Environmental Technology Program
Nunavut Arctic College
Iqaluit, Nunavut, Canada

Pitseolak Pfeifer
Coordinator at Resources and Sustainable Development in the Arctic
Research Assistant, Carlton University
Ottawa, Canada

James Noble
Director
Nunavut Emergency Management
Iqaluit, Nunavut, Canada

Ed Zebedee
Special Advisor (former director)
Nunavut Emergency Management
Iqaluit, Nunavut, Canada

Sara Holzman
Climate Change Adaptation manager
Government of Nunavut
Iqaluit, Nunavut, Canada

Annex 2. Acronyms

ArcNet	Arctic Network of Centers of Excellence
DRR	Disaster Risk Reduction
GFC	Green Climate Fund
IK	Indigenous Knowledge
INAC	Indigenous Relations and Northern Affairs Canada
NLCA	Nunavut Land Claims Agreement
NTI	Nunavut Tunngavik Incorporated
STEM	Science, technology, engineering and mathematics (educational curriculum)
TEK	Traditional Ecological Knowledge
TIK	Traditional Indigenous Knowledge
UNFCCC	United Nations Framework Convention on Climate Change