



Northern Research
Leadership
and **Equity**

Expert Panel on the Future of Arctic
and Northern Research in Canada



CCA | CAC

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This project was undertaken with the approval of the Board of Directors of the Council of Canadian Academies (CCA). The members of the expert panel responsible for this report were selected by CCA for their special competencies and with regard for appropriate balance.

This report responds to a request from a group of Arctic and Northern research organizations from across Canada, led by ArcticNet. The group was not involved in either panel selection or report development; any opinions, findings, or conclusions expressed in this publication are those of the authors, the Expert Panel on the Future of Arctic and Northern Research in Canada, and do not necessarily represent the views of their organizations of affiliation or employment.

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Land Acknowledgment from the Expert Panel

The Arctic and Subarctic are homelands to many different Indigenous Peoples, including the First Nations and Métis of the Yukon, Northwest Territories, northern Quebec, and Labrador, as well as the Inuit of Inuit Nunangat which includes the Inuvialuit Settlement Region, Nunavut, Nunavik, and Nunatsiavut. The Panel honours and recognizes the place-based knowledges of Arctic and Northern Indigenous Peoples and the roles they have played and continue to play in the protection and care of their beautiful and enduring homelands.

As individuals residing or working on the diverse and life-sustaining homelands of many different Indigenous Peoples across Canada—the North in particular—and participating in Arctic and Northern research, Panel members recognize the Lands, waters, air, and ice in the North as the traditional and continuing territories of Indigenous Peoples. It is the responsibility of each researcher to develop a culturally grounded understanding of the Indigenous Peoples with whom they engage, for this report and beyond. The Panel encourages everyone in the Arctic and Northern research community to meet this responsibility and to increase and use their individual and collective understanding to enhance engagement, partnerships, and co-production of knowledge with Indigenous Peoples on the basis of their right to self-determination. It is important to recognize that all knowledge systems are equally valuable and that each is uniquely bound to the Land by cultural norms, traditions, and expressions. All of these rich and diverse knowledge systems are necessary to inform meaningful Arctic and Northern research, decisions, and policies that support all Arctic and Northern people and advance the rights of Indigenous Peoples.

Land Acknowledgment from the CCA

The Council of Canadian Academies (CCA) acknowledges that our Ottawa offices are located on the unceded, un-surrendered ancestral home of the Anishinaabe Algonquin Nation, who have nurtured the land, water, and air of this territory for millennia and continue to do so today.

Though our offices are in one place, our work supports evidence-informed decision-making that may contribute to collective actions that support equitable and ethical research in ways that empower Indigenous decision-making and ethically include Indigenous knowledge systems.

We at the CCA recognize the importance of drawing on a wide range of evidence, knowledges, and experiences to inform policies that will build a stronger, more equitable, and more just society.

Photo courtesy of Gita Ljubicic

The CCA

The CCA is a not-for-profit organization that supports independent, science-based, authoritative expert assessments to inform public policy development in Canada. Led by a Board of Directors and advised by a Scientific Advisory Committee, the CCA's work encompasses a broad definition of science, incorporating the natural, social, and health sciences as well as engineering and the humanities. CCA assessments are conducted by independent, multidisciplinary panels of experts from across Canada and abroad. Assessments strive to identify emerging issues, gaps in knowledge, Canadian strengths, and international trends and practices. Upon completion, assessments provide government decision-makers, researchers, and stakeholders with high-quality information required to develop informed and innovative public policy.

All CCA assessments undergo a formal peer review and are published and made available to the public free of charge. Assessments can be referred to the CCA by foundations, non-governmental organizations, the private sector, and any order of government.

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Expert Panel on the Future of Arctic and Northern Research in Canada

Under the guidance of its Scientific Advisory Committee and Board of Directors, the CCA assembled the **Expert Panel on the Future of Arctic and Northern Research in Canada** to undertake this project. Each expert was selected for their expertise, experience, and demonstrated leadership in fields relevant to this project.

Ashlee Cunsolo (Co-Chair), Vice-Provost, Labrador Campus and Dean, School of Arctic and Subarctic Studies, Labrador Campus of Memorial University (Happy Valley-Goose Bay, NL)

Karla Jessen Williamson (Co-Chair), Associate Professor, Educational Foundations, University of Saskatchewan (Saskatoon, SK)

Richard Boudreault, FRSC, FCAE, Chair, Board of Governors, First Nations University of Canada; Governor, Aurora College; Governor, Institut national de la recherche scientifique; Adjunct Professor, École Polytechnique Montréal; Adjunct Professor, University of Waterloo; Chief Scientist, Canadian Space Mining Corporation (Montréal, QC)

Chris Derksen, Senior Research Scientist, Climate Research Division, Environment and Climate Change Canada (Toronto, ON)

Kimberly Fairman, Executive Director, Institute for Circumpolar Health Research (Yellowknife, NT)

Bronwyn Hancock, Vice-Provost, Academic and Research, Yukon University (Whitehorse, YT)

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Gita Ljubicic, Canada Research Chair in Community-Engaged Research for Northern Sustainability and Professor, School of Earth, Environment and Society, McMaster University (Hamilton, ON)

Nicole Redvers, Associate Professor, Schulich School of Medicine and Dentistry, Western University (London, ON)

Dalee Sambo Dorough, Senior Scholar, University of Alaska Anchorage (Anchorage, AK)

Rachel Olson, President and Director, The Firelight Group (Vancouver, BC) participated in early discussions of the Panel.

Message from the President and CEO

When ArcticNet and a group of supporting organizations from across Canada's research system asked the Council of Canadian Academies to examine the foundational elements needed to create an inclusive, collaborative, and effective Arctic and Northern science system in Canada, we knew this assessment would demand a different approach and provide an important learning opportunity for the CCA.

For the Panel, this assessment meant considering all aspects of the research process and related interactions, including the actions and behaviours of individuals and all levels of institutions conducting research in the North. It also meant elevating Northern voices, particularly Northern Indigenous voices.

For the CCA, *Northern Research Leadership and Equity* was an opportunity to practise our commitment to better reflect Indigenous knowledges and lived experiences in our work. This included adapting our approaches and processes to draw upon a variety of evidence as well as making our products more accessible. From taking on a charge co-developed by dozens of diverse organizations, to assembling an expert panel where the majority of members are from or based in the North, and enhancing accessibility by translating the executive summary into Indigenous languages, *Northern Research Leadership and Equity* is itself part of the CCA's learning journey.

On behalf of the CCA, I'd like to thank co-chairs Karla Jessen Williamson and Ashlee Cunsolo and the entire Panel for their important work on this report. They brought a wealth of perspectives and expertise from across the physical, social, and health sciences, as well as diverse lived, cultural, and research experiences.

I join the Panel in its hope that all who read this report will be inspired to continue the dialogue and efforts needed for a bright future in Arctic and Northern research in Canada.



Eric M. Meslin, PhD, FRSC, FCAHS, ICD.D

President and CEO, Council of Canadian Academies

Message from the Expert Panel

Arctic and Northern research in Canada has long been dominated by Southern researchers and institutions as well as Southern interests, needs, priorities, and perspectives. This has been reflected in approaches to research that ignore Indigenous Peoples and their rights, cultures, and knowledges, all of which are vital to understanding Arctic and Northern environments and societies. We wish to remind all who are engaged in Arctic and Northern research that the North is not simply a locale for research; the North is a beautiful home to diverse Indigenous and non-Indigenous peoples, all of whom have priorities and desires that reflect the distinct realities of life in the North. These realities do not neatly align with the Southern narratives that are largely perceived as dominant. That is why, in responding to the charge presented to us, we have deliberately centred Northern experiences and prioritized approaches to research *by and for the North*.

Our approach to the writing of *Northern Research Leadership and Equity* was to consider the process of building and tending a community fire. The community fire is a meeting place where diverse peoples, cultures, and perspectives can be brought together, respected, and celebrated. The meeting place is also where all participants must actively choose to commit to research and dialogue, through both comfort and discomfort. Our Panel was made up of multiple different perspectives—Indigenous and non-Indigenous—from both the North and the South. In our view, the diversity of views and experiences brought strength to our mandate, generating inspiring and at times challenging dialogue. All voices were shared and, more importantly, heard throughout the process of addressing the charge. Being listened to and heard is a critical component of inclusivity and collaboration—two of the driving elements of the charge. To be genuinely heard is to be included from beginning to end. It is to be respected and cared for by the others around the fire. To be heard is to belong.



Meeting of the Expert Panel on the Future of Arctic and Northern Research in Canada, November 2022, Ottawa, Ontario

We present *Northern Research Leadership and Equity* as not only a guide for transformational change in the Arctic and Northern research system but also an example of how this change can be enacted. We came together around the fire—discussing, sharing, hearing, reflecting, and belonging within the space we created. Together we invite you, the reader, to gather with the research community as a whole to continue the dialogue and efforts needed for a bright future in Arctic and Northern research in Canada. Transformational change is possible, but it requires each one of us at the fire, listening, learning, and working together.

—Expert Panel on the Future of
Arctic and Northern Research in Canada

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Peer Review

This report was reviewed in draft form by individuals selected by the CCA for their diverse perspectives and areas of expertise. The reviewers assessed the objectivity and quality of the report. Their confidential submissions were considered in full by the Panel, and many of their suggestions were incorporated into the report. They were not asked to endorse the conclusions, nor did they see the final draft of the report before its release. Responsibility for the final content of this report rests entirely with the authoring Panel and the CCA.

The CCA wishes to thank the following individuals for their review of this report:

Cana Uluak Itchuaqiyaq, Assistant Professor, Virginia Tech (Blacksburg, VA)

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The peer review process was monitored on behalf of the CCA's Board of Directors and Scientific Advisory Committee by **Kyle Bobiwash**, Assistant Professor and Indigenous Scholar, Department of Entomology, University of Manitoba. The role of the peer review monitor is to ensure that the Panel gives full and fair consideration to the submissions of the peer reviewers. The Board of the CCA authorizes public release of an expert panel report only after the peer review monitor confirms that the CCA's report review requirements have been satisfied. The CCA thanks Dr. Bobiwash for his diligent contribution as peer review monitor.

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Derrick Pottle, Inuit Cultural Educator (Rigolet, NL)

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Executive Summary

It has been said that there were times before night and day. Few things moved the Land's Strength more surely than a song. But what if song battled against song? This was how night and day came to be.¹

The North is home to many peoples—Indigenous and non-Indigenous—yet Arctic and Northern research has long been centred on Southern voices, needs, priorities, and institutions. As a result of longstanding Southern influences, there are numerous systemic challenges that have gone unaddressed and continue to impact Arctic and Northern research in Canada. Through the explicit elevation of Northern perspectives—in particular, Arctic and Northern Indigenous Peoples' perspectives—the Expert Panel on the Future of Arctic and Northern Research in Canada (hereafter, “the Panel”) sought to provide guidance on how to address these complex challenges and create a path forward for transformational change.

Using the perspectives of Raven and Wolf²—central figures in many Northern Indigenous knowledge systems—as well as the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) and Canada's Truth and Reconciliation Commission (TRC), the Panel orients the report around the affirmation of Indigenous rights (including the right to self-determination) and the responsibilities associated with upholding these rights. Throughout the report, the Panel returns to the metaphor of the *community fire* and *that of being on the Land*, illustrating ways in which diverse peoples and perspectives can gather respectfully to create ethical and equitable space.

- 1 Excerpts throughout the executive summary are reproduced with permission from “The Battle of Day and Night” in *How Things Came to Be: Inuit Stories of Creation* (Qitsualik-Tinsley & Qitsualik-Tinsley, 2015). This text is used throughout the report as a narrative touchstone that serves as a reminder about the importance of balance and reciprocity among all things.
- 2 Raven is a central feature in many Inuit narratives, while many Northern First Nations communities share narratives of similar import centred on the common crow and wolf. The moiety system of southern Yukon, for example, uses Crow and Wolf to recognize kinship and relational connections with and beyond blood relationships. Stories of one cannot be represented without the other, and both moieties of Crow and Wolf are required for a holistic understanding of the surroundings.

Doing Research in a Good Way

And so it went, with bird against beast against bird. Will and words began to flow and intertwine, like currents struggling over the course of a river.

The Panel was charged with envisioning an Arctic and Northern research system that is inclusive, collaborative, and effective.³ In the Panel's view, this means that the entire research process itself, including the actions and behaviours of individuals and institutions (at all levels) conducting research in the North, must be carried out *in a good way*—that is, ethically and respectfully. Doing research in a good way involves realizing the rights affirmed by UNDRIP and the Calls to Action outlined in the final report of the TRC. To do research in a good way is to acknowledge that colonialism has long existed in the systems and structures of what is now known as Canada, as well as the fact that these realities persist today. It is to respect the natural laws of equality and interdependence, and to approach all research activities and interactions, from beginning to end, with a sense of responsibility, reciprocity, and respect. This includes balancing the relationship between Indigenous and Western knowledge systems in appropriate, context-dependent ways.

Elements and Avenues of Transformational Change

Raven chanted: "Light-light-light! Let-it-be-day! Light-light-light!"

Greater inclusivity and collaboration in Arctic and Northern research will only be achieved through positive and ethical transformation. The Panel identified four key elements necessary for ensuring that Arctic and Northern research in Canada is inclusive, collaborative, and, most importantly, ethical—these are essential to achieving an effective research system (Figure 1). First, the Panel believes research in Canada must be *just* and thereby conducted consistent with the right to self-determination of Indigenous Peoples. Second, inclusivity and effectiveness in research require that the system provide *cultural security* for Indigenous knowledge systems and any related data, rooted deeply in Indigenous Peoples' distinct status, rights, and roles. Third, all aspects of Arctic and Northern research in Canada, including processes and outputs, must also be *accessible*. And finally, research must be based in *accountability* and rooted in responsibility and reciprocity. These four elements, when applied to the Arctic and Northern research system in Canada, affirm and uphold the existence and legitimacy of Indigenous knowledge systems; however, careful thought and application are needed to meaningfully give space to ethical and equitable research practices.

3 ArcticNet, with the support of over 40 organizations, asked the CCA to convene an expert panel tasked with addressing the following question: *Based on assessment of current knowledge and evidence, what are the key foundational elements to create an inclusive, collaborative, effective, and world-class Arctic and Northern science system in Canada?*

The Panel notes that transformational change entails implementing and supporting the above elements. Avenues for transformational change represent the ways in which justice, cultural security, accessibility, and accountability can be actualized. The Panel identified two main avenues that can light the fire of sustained change in an ethical and equitable research system (Figure 1). The first avenue for change is shifting the *influence* related to decision-making from the South to the North. Without Northern Indigenous leadership in research, any changes achieved will remain superficial. However, this shift in influence must be accompanied by an increase in human, financial, and infrastructural *capacity* to equitably transform—and sustain—the Arctic and Northern research system. In this understanding, *capacity* refers to both the needs identified by Indigenous communities themselves as well as the capacity of non-Indigenous people to respect and recognize Indigenous rights and ethically engage with Indigenous Peoples and their knowledge systems.

The elements of transformational change identified by the Panel are the building blocks, or kindling, of the community fire. Without kindling, the fire cannot light. However, kindling is insufficient in isolation. The fire must be lit in a way that respects both the fire itself and those who gather around it.

Fuelling the Fire in a Good Way: Funding

I like eating, too, you know. And I miss half the things that fall dead around here, because it's so dim. Besides, don't you find it a bit ... depressing?

Funding is a central, often primary, influence in all phases of the research process. The priorities set by funders affect who gets to conduct research, what type of research is undertaken, and what the outputs of research need to be. However, Canada's current funding system, which relies heavily on the publicly funded Tri-Agencies, is largely grounded in (and thus prioritizes) Western knowledge systems. In the Panel's view, a long-term vision for just and ethical Arctic and Northern research is one that expands access, improves coordination among different research entities and funders, reduces overlap, and enhances accountability to Northerners. Within existing funding structures, this includes adjusting eligibility criteria to promote inclusivity and enable strong partnerships. However, greater Indigenous governance over research is also essential. Specialized funding streams and transdisciplinary or collaborative approaches can address critical Indigenous research priorities and support Indigenous-led research. Such shifts in influence would better prioritize social accountability in research, which, in the view of the Panel, would enhance the collaborative nature of Arctic and Northern research in Canada.

CONCEPTUAL FRAMEWORK

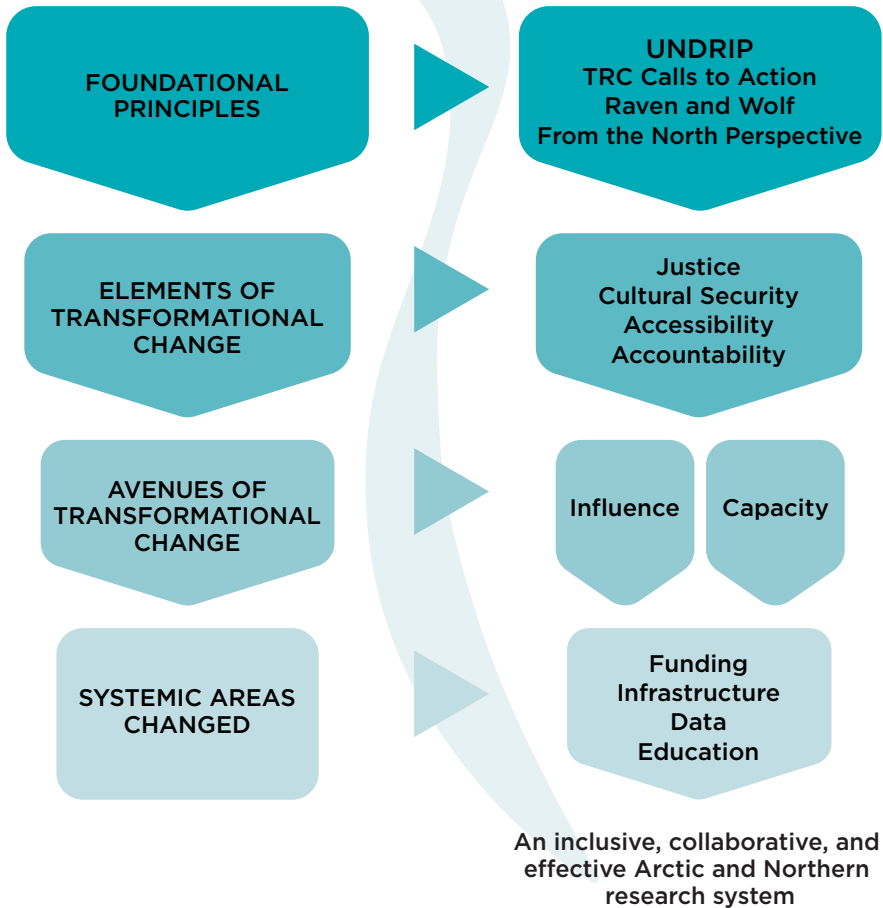


Figure 1 Report Approach

Building on a foundation rooted in the rights affirmed in UNDRIP and the TRC’s Calls to Action—and taking a Northern perspective guided by Raven and Wolf—the report applies the four elements of transformational change (justice, cultural security, accountability, and accessibility) by way of avenues for transformational change (influence and capacity) to four key aspects of the Arctic and Northern research system: funding, infrastructure, data, and education. In so doing, the report works through the transformational changes that, if undertaken, support a truly inclusive, collaborative, and effective Arctic and Northern research system in Canada.

Further, the Panel notes that increasing the total funding spent on Arctic and Northern research, as well as increasing Northern research institutions' access to funding, is required for Canada to be globally competitive. This increase relies on better and more consistent accounting of all funding sources, tailored to the unique Arctic and Northern research context. Changes that would support a more effective and collaborative system include streamlined and simplified funding applications; greater flexibility in the use of funds; and dedicated, sustained funds for training and capacity-building, particularly regarding ongoing research projects and monitoring efforts. Such changes would also reduce research fatigue in Northern communities and improve responsible research outcomes. Moreover, coherence and transparency in funding allocations enable the effective and equitable distribution of research funds. Improving publicly accessible tracking and monitoring of data (regarding both research outcomes and spending) would support a more fulsome understanding of the local economic and social impacts of research as it relates to the Indigenous and non-Indigenous people living in Arctic and Northern communities.

The Gathering Places: Infrastructure

Raven said, "I'm just trying to touch things up a bit."

The physical structures within which we gather to do research, as well as the services that make such gathering possible, are foundational elements of effective and ethical research systems. This includes aspects that often go overlooked when supporting effective and ethical research, such as community housing and internet connectivity.

Synergizing available research infrastructure across disciplines and jurisdictions can increase Arctic and Northern research capacity in Canada. Currently, disciplinary divides result in significant barriers to accessing the infrastructure needed to engage in effective research that addresses the needs and priorities of Northern communities. Support for multidisciplinary programs can provide research capacity beyond the scope of individual researchers and supports collaborative, interdisciplinary, and potentially cross-cultural research outcomes and benefits. However, a majority of research stations in the North are not owned or operated by Northern institutions or Indigenous communities, limiting the influence of Northern voices on the research being carried out.

The Panel notes that Northern, Indigenous-led organizations provide critical guidance, support, and research services on topics that are most meaningful to Indigenous Peoples; however, dedicated resources are required to maintain this essential function. This extends to post-secondary institutions in the North, which are leading the way in engagement and investment for inclusive,

collaborative, equitable, and ethical Arctic and Northern research in Canada. Greater support for Northern post-secondary institutions, and stronger partnerships between them and outside researchers (Southern and foreign) working in the North, may provide the groundwork for long-term, effective, and meaningful engagement between the research community and Northern Indigenous Peoples.

Another critical component of infrastructure identified by the Panel relates to the processes of research ethics review and approvals, which do not adequately recognize the rights and priorities of Indigenous Peoples. Furthermore, the current system of ethics review and license/permit approvals in Arctic and Northern research is disjointed and overly complex, resulting in duplication of efforts and accessibility barriers—especially for Northern-based researchers. Shifting the responsibility of ethics review and research approvals to Indigenous Peoples or their institutions can reduce some of these barriers while simultaneously ensuring self-determination and culturally appropriate review. Increased support and capacity-building by and for researchers are also needed for effective review and engagement by Indigenous organizations to be fully realized.

Many structures and services that support effective research are not sufficiently resourced in the North. For example, community infrastructure—which includes housing, professional spaces, telecommunications, road and air travel networks, and physical and mental health services—does not meet the needs of Northerners. This infrastructure is essential for an effective research system. Improved access to such structures and services would directly support the self-determination of Northern Indigenous Peoples, improve opportunities for meaningful collaboration, and, as a result, strengthen the overall research capacity of the North.

Sharing Knowledges: Data

Such tasty treasures were hidden under rock piles. Though the world was a lightless place, it was no challenge for Fox to sniff things out. Under [their] blanket of shadow, Fox raided at will.

A just research system recognizes Indigenous Peoples' rights to own and control their data and knowledges. There are ongoing efforts to solidify Indigenous data sovereignty and data stewardship, but there has not been adequate support and capacity building to enable them to reach their full potential. One critical component of Indigenous data sovereignty is repatriation, which, in the Panel's view, is required to fully respect and uphold the rights of Indigenous Peoples. Additional areas for support include access and benefit sharing policies and data-sharing and ownership agreements, as the nature of Indigenous knowledge systems demands unique protections to avoid misappropriation and harm. Such agreements can ensure accountability and appropriate access to data.

Furthermore, strengthening data-sharing and access and benefit sharing policies is one opportunity for the federal government to enhance Canada's leadership in Arctic and Northern research.

Data accessibility and accountability are also critical considerations for inclusive and collaborative research. Supporting Indigenous Peoples' rights to own and control their data requires that information is shared in accessible formats, including being translated into Indigenous languages. Furthermore, ongoing communication of research results enables communities and researchers to determine the best and most appropriate approaches for data sharing. However, the Panel notes that improving access to data cannot come at the cost of cultural security. Data stewardship arrangements can ensure that accountability to Indigenous Peoples is maintained, so that their ongoing access to data is supported alongside appropriate oversight. At the institutional level, improved interoperability and cohesiveness of Arctic and Northern data would increase accessibility; however, this would rely on the support of research organizations through improved internal processes and terms of use.

Carrying the Embers: Education

An idle word. An irresponsible thought. A wish. A dream. These could alter the world.

The legacy of colonialism in Canada, including the intergenerational impact of residential schools, is the foremost barrier to educational attainment in the North. Improved educational accountability beginning at the primary and secondary levels is vital to challenge this legacy. The Panel believes that an accountable education system is one that is fully inclusive and recognizes and affirms all forms of learning. This includes Indigenous-led accredited education programs that can protect Indigenous knowledge systems while advancing educational attainment and capacity in the North. At the post-secondary level, effective and accountable program development includes community input and the establishment of, and support for, education that is accessible, inspiring, and culturally relevant.

The Panel's view of educational accountability also extends to Southern and international institutions and researchers. Before engaging in Arctic and Northern research, it is imperative that all researchers take it upon themselves to develop an understanding of the histories, realities, and contexts of Indigenous Peoples in the Arctic and North, with particular focus on those that may be directly or indirectly impacted by proposed research.

Tending the Fire

So light was given permanence in the world. Fox's power has left its mark, though. When light grows weary, and the Strength from the Raven wavers, the world falls back into that darkness of old. Then there is the dark of Winter. Then comes the long night.

When the elements of transformational change are applied across funding, infrastructure, data, and education by everyone involved in the Arctic and Northern research system (see the actionable responsibilities summarized by the Panel in the Responsibilities Table), the community fire can be lit. Once the fire is alight, care and attention cannot be withdrawn—it must be tended and continually kept. Similarly, an ethical and equitable research system relies on ongoing care, a shared responsibility that extends to all people and institutions involved in Arctic and Northern research. Respect, reciprocity, and responsibility are central to all activities and processes at both the institutional and individual levels; transformational change means that research is done by all in a good way.

The Panel recognizes that the commitments necessary to sustain an inclusive and collaborative Arctic and Northern research system are not easy, especially in the face of pervasive structural and systemic barriers. Yet, in the Panel's experience, transformational change that is grounded in the perspectives, priorities, and needs of the North is essential and worth the inevitable struggle. When people and institutions tend to the fire and keep it burning over generations, we each contribute to a space of justice, cultural security, accessibility, and accountability. The community fire, at its core, is about so much more than research—it is about being recognized and belonging at the fire in the first place.

Responsibilities Table

Responsibilities of Different Actors (listed alphabetically) to achieve an Inclusive, Collaborative, and Effective Arctic and Northern Research System

All Actors

- Creating a cohesive, long-term vision for Arctic and Northern research to enable just and effective investment.
- Affirming and respecting Indigenous knowledge systems and leadership to ensure balance among knowledge systems in Northern research.
- Affirming and supporting diverse educational approaches, including on-the-Land learning and oral information sharing.

Federal and/or Territorial/Provincial Governments

- Ensuring compliance with existing guidance on how to carry out research projects in ways that appropriately consult, collaborate with, and benefit Indigenous Peoples.
- Shifting influence over review and approval processes to Indigenous Peoples and their institutions.
- Providing support to fill the human, financial, and infrastructural research capacity needs identified by Indigenous Peoples.
- Providing ongoing support to enable Northern Indigenous-led governance and organizations to continue providing critical guidance, support, and research services.
- Supporting the social, cultural, and health services needed for an inclusive and collaborative Arctic and Northern research system.
- Increasing access to reliable internet services and transportation networks in the North, which support equity in research.
- Working to advance intellectual property law and access and benefit sharing agreements with Indigenous Peoples.
- Supporting repatriation, a critical component of Indigenous data sovereignty required to uphold the rights of Indigenous Peoples.
- Supporting the connection of available research and laboratory infrastructure in the North across disciplines and jurisdictions.
- Shifting influence to enable Indigenous-led education systems in the North that include the centring of Indigenous knowledge systems.
- Ensuring educational accountability to Northern Indigenous Peoples at the primary, secondary, and post-secondary levels.
- Shifting control over research stations in the North to Indigenous communities and organizations.

Funders

- Developing flexible funding programs that are tailored to the Northern context, allowing for the time and resources needed for relationship-building.
- Expanding eligibility criteria to researchers outside the academic sphere to promote Indigenous-led and culturally safe research.
- Ensuring that Indigenous Peoples hold influence over research funding decisions that concern their communities and their Lands.

- Having specialized funding streams that support Indigenous-led research, including capacity-building, in an accessible and culturally secure way.
- Increasing funding opportunities for Northern post-secondary institutions and research organizations.
- Supporting transdisciplinary and collaborative approaches to address critical Indigenous research priorities.
- Streamlining and simplifying funding applications to reduce the burden on individuals and communities.
- Supporting coherence and transparency of research funding sources to enable effective and equitable distribution of resources.
- Ensuring there is ongoing monitoring of the economic and social outcomes of research to promote accountability.
- Prioritizing social accountability in research processes, outcomes, and evaluations to reflect the collaborative nature of Arctic and Northern research.
- Ensuring all researchers (domestic and international) comply with existing guidance and ethical protocols on how to carry out research projects in ways that appropriately consult, collaborate with, and benefit Indigenous Peoples.
- Prioritizing partnerships with international funders that comply with existing guidance on carrying out research projects with Indigenous Peoples.
- Offering ongoing support to enable Northern and/or Indigenous-led organizations to continue providing critical leadership, guidance, support, and research services.

Indigenous Peoples, Governments, and Organizations

- Developing and communicating local and regional research priorities.
- Continuing to develop and implement culturally appropriate research review and ethics approval processes where desired.
- Continuing to expand and share critical guidance, support, and research services on topics that are most meaningful to Indigenous Peoples.
- Identifying the human, financial, and infrastructural research capacity needs to enable culturally appropriate research and ethics approval.
- Engaging in the development of data-sharing and ownership agreements, where deemed appropriate.
- Continuing to develop and advocate for Indigenous-led education programs that centre Indigenous knowledge systems.

Post-secondary and Research Institutions

- Institutionalizing, normalizing, and ensuring compliance with existing guidance on how to carry out research projects in ways that appropriately consult, collaborate with, and benefit Indigenous Peoples.
- Participating in multi- and transdisciplinary projects to support collaborative and meaningful research.
- Participating in international partnerships only when there is compliance with Canadian, regional, and local protocols on ethical, responsible, and accountable research with Indigenous Peoples on all sides.
- Shifting influence over ethics review and research approvals to Indigenous Peoples or their institutions.

- Finding ways to connect available research and laboratory infrastructure in the North across disciplines and jurisdictions.
- Supporting data sovereignty of Indigenous Peoples through bi-directional capacity-building with researchers and academic institutions.
- Improving interoperability of Arctic and Northern data while protecting Indigenous cultural security.
- Supporting Indigenous data sovereignty in the North through internal processes and terms of use.
- Supporting the ongoing communication of research processes and results to impacted communities in accessible ways.
- Supporting repatriation, a critical component of Indigenous data sovereignty required to uphold the rights of Indigenous Peoples.
- Supporting education about the histories, Peoples, and priorities of the North to advance equitable relationships in the research system and enable researchers to ensure research is done ethically.
- Establishing and supporting post-secondary education that is accessible, inspiring, and culturally relevant.
- Shifting control over research stations in the North to Indigenous communities and organizations.

Researchers—Based in Canada

- Seeking an education about the histories, Peoples, and priorities of the North to advance equitable relationships and conduct research ethically.
- Seeking out cross- and transdisciplinary partnerships to support collaborative and meaningful research.
- Improving interoperability of Arctic and Northern data to increase accessibility while protecting Indigenous cultural security.
- Engaging in ongoing communication of research results to determine the optimal avenues for accessible data sharing.
- Sharing data in accessible formats to support Indigenous Peoples' rights to own and control their own data.
- Building data-sharing and ownership agreements into research programs to maintain accountability and support Indigenous Peoples' rights to own and control their data.
- Increasing personal capacity to respect and recognize Indigenous rights and ethically engage with Indigenous Peoples and their knowledge systems.

Researchers—International

- Increasing personal capacity to respect and recognize Indigenous rights, and seek out an education about the histories, Peoples, and priorities of the North.
- Seeking out meaningful partnerships with Indigenous Peoples and communities when engaging in Arctic and Northern research.
- Ensuring research activities comply with Canadian ethics review and research licensing processes.
- Following existing guidance on how to carry out research projects in ways that appropriately consult, collaborate with, and benefit Indigenous Peoples.
- Engaging in other responsibilities applicable to researchers based in Canada.

Abbreviations

ABS	access and benefit sharing
ARI	Aurora Research Institute
CARE	Collective Benefit, Authority to Control, Responsibility, and Ethics
CIHR	Canadian Institutes of Health Research
CINUK	Canada–Inuit Nunangat–United Kingdom Arctic Research Programme
CIRNAC	Crown–Indigenous Relations and Northern Affairs Canada
FNIGC	First Nations Information Governance Centre
ICC	Inuit Circumpolar Council
IP	intellectual property
IQ	Inuit Qaujimagajatuqangit
IQP	Inuit Qaujisarnirmut Pilirijjutit
IRB	institutional review board
ISED	Innovation, Science and Economic Development Canada
ITK	Inuit Tapiriit Kanatami
NCE	Networks of Centres of Excellence
NCP	Northern Contaminants Program
NISR	National Inuit Strategy on Research
NSERC	Natural Sciences and Engineering Research Council of Canada
OCAP®	ownership, control, access, and possession
POLAR	Polar Knowledge Canada
QNIHS	Qanuippitaa? National Inuit Health Survey
REB	research ethics board
SSHRC	Social Sciences and Humanities Research Council
TCPS 2	Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans
TIRB	Tribal institutional review board
TRC	Truth and Reconciliation Commission
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
WINHEC	World Indigenous Nations Higher Education Consortium

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 Cultural security: Inclusivity and effectiveness of Arctic and Northern research in Canada cannot be achieved outside a system that provides cultural security 23

 Accessibility: An effective, inclusive, and collaborative Arctic and Northern research system upholds accessibility for all aspects, including processes and outputs 24

 Accountability: Effective, inclusive, and collaborative Arctic and Northern research is rooted in responsibility and reciprocity, and in a sense of accountability 24

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 Influence: Transformational change in research means shifting decision-making influence from the South to the North 25

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For too long, Arctic and Northern research in Canada has been dominated by and centred on Southern¹ voices, needs, institutions, and priorities, with the questions of the South dominating research in the North. As a result of this dynamic, numerous systemic challenges limit the effectiveness and value of the Arctic and Northern research system. That is why the Expert Panel on the Future of Arctic and Northern Research in Canada (hereafter, “the Panel”) has chosen to be explicit in its elevation of Northerners—and Northern Indigenous Peoples, in particular. The North is home to many Indigenous Peoples and requires treatment as such.

The following is an excerpt, which describes the battle between Day and Night in the Arctic (from *How Things Came to Be: Inuit Stories of Creation*, by Rachel and Sean Qitsualik-Tinsley). It is an account that is fundamental to many Inuit communities and serves as a narrative touchstone throughout this report, reminding us about the importance of balance and reciprocity in all things.

The Battle of Day and Night

It has been said that there were times before night and day. Few things moved the Land’s Strength more surely than a song. But what if song battled against song? This was how night and day came to be.

There were days, though nearly forgotten, when the Land lay dark and heavy with power. That power was there for all beings to use. It was for good or evil. For beast or human.

There was too much power.

An idle word. An irresponsible thought. A wish. A dream. These could alter the world.

This force ran in the veins of the Fox. [Their] fur was grey and [their] mind was keen. [Fox’s] great pleasure was to raid the places where Inuit had concealed their food. Such tasty treasures were hidden under rock piles. Though the world was a lightless place, it was no challenge for Fox to sniff things out. Under [their] blanket of shadow, Fox raided at will.

Life was indeed sweet.

Until the light came on.

One day, Fox was halfway into a pile of rocks, when there was a flash out of nowhere. [Fox] at first assumed that it was a torch, perhaps some approaching Inuit. [Fox] pulled [their] head from the rock ...

1 For the purpose of this report, *Southern* refers to individuals and institutions that reside in the southern regions of Canada.

And was blinded.

Squinting, [their] eyes at last adjusting, [Fox] could see that the entire world had become lit up. [Fox] shuddered, feeling naked and exposed. After [their] initial confusion came anger. [Fox's] power rose like waves within [them], so that [they] willed the light away. It obeyed, and went out like a torch tossed into water.

Then it went on again. Fox hissed at the brightness of it.

Tensing, the baffled Fox sent Strength pouring from [them]self, across the world, smothering the light with [their] will.

It went on again.

Fox let out a scream of frustration.

“Oh, so you’re the one doing that!” called a voice from above.

Fox looked up to see Raven. [Raven's] feathers were black as soot and [they] wheeled through the air overhead. Fox hissed again. [Fox] knew of the annoying bird. Said to be the most ancient of animal folk, it was rumoured that Raven might have created all others (though the bird [themselves] had not bothered to remember how).

Fox had always questioned the wisdom of such a creature, a bird whose greatest power was to annoy others. Raven's feathers were said to have started out white. The bird had offended someone who had tossed soot at [them]. The blackness had been with Raven ever since.

Raven settled on a nearby rock, cocking [their] head to regard Fox through one pebble-like eye.

“If you say sorry,” said Raven, “I’ll forgive you. But stop mucking with my light.”

Fox stood atop his rock pile, shaking with fury.

“So you’re admitting it!” Fox seethed. “You’re the one who keeps throwing this ugly glow over everything!”

Raven said, “I’m just trying to touch things up a bit.”

“Well, it’s not going to continue,” spat Fox. “Do you think I want people to catch me stealing their food?”

“So your crimes are my problem?” Raven asked, turning [their] head to gauge Fox with the opposite eye. “I like eating, too, you know. And I miss half the things that fall dead around here, because it’s so dim. Besides, don’t you find it a bit ... depressing?”

But Fox, by now, was tired of feeling belittled by Raven. [Fox] again lashed out with [their] Strength. Raven's world trailed off into shadow.

The darkness, however, was brief.

Raven piped out [their] own words of power, [their] Strength spreading new light across the Land.

And so it went, with bird against beast against bird. Will and words began to flow and intertwine, like currents struggling over the course of a river.

It seemed, after a while, that the Strength was like a whirlpool between them. They battled by song.

Raven chanted:

“Light-light-light!

Let-it-be-day!

Light-light-light!”

Fox chanted:

“Dark-dark-dark!

Let-it-be-night!

Dark-dark-dark!”

At last, the two finally withdrew from each other.

As though by some silent agreement, each animal returned to [their] lonely ways. Each was exhausted, nearly broken in Strength.

And it is said, in the rumours of those times now beyond any creature’s memory, that Raven’s will was the greater of the two—though not by much. Through the Strength of [their] song, [Raven] overcame the ancient darkness.

So light was given permanence in the world.

Fox’s power has left its mark, though. When light grows weary, and the Strength from the Raven wavers, the world falls back into that darkness of old.

Then there is the dark of Winter.

Then comes the long night.

1

An Invitation to Gather at the Community Fire



The *Battle of Day and Night* describes the creation of the world. The version shared originates from the Qikiqtaaluk (Baffin) Region of Nunavut. Raven is a recurring and central figure to many narratives across the North, as the common raven (*Corvus corax*) is found across much of the northern hemisphere. Ravens are an enduring aspect of the landscape in the North, since they do not migrate south in the winter months. For Inuit, Raven—Tulugaq—is especially important, having created the world and brought forth daylight into what was perpetual night. Raven is intelligent, clever, curious, persistent in the face of challenges, and always willing to face up to the consequences of their actions. Bringing humour to even the starkest of lessons, Raven’s cynical and mercurial nature allows them to face the world with a certain level of mental acuity and flexibility, not taking anything too seriously and knowing that things will largely work out in the end due to their prior efforts. Because of these traits, in many stories of Raven’s life, they are described as a trickster. Often, these narratives also highlight Raven’s deep and meaningful relationship with nature, teaching their audience the importance of respecting the more-than-human world and the relations beyond.

While Raven is a central feature in numerous Inuit narratives, many Northern First Nations communities also share narratives of similar import centred on the common crow (*Corvus brachyrhynchos*) and wolf (*Canis lupus*). The moiety system of the southern Yukon, for example, uses Crow and Wolf to recognize kinship and relational connections with and beyond blood relationships (Castillo *et al.*, 2020). Such systems are often expressed as two halves of a whole, with each side representing groupings of clans or families (Castillo *et al.*, 2020). Stories of one cannot be represented without the other, and the moieties of Crow and Wolf are both required for a holistic understanding of the surroundings. Crow, in many of these stories, is characterized much like Raven—the creator of an Indigenous world, the sentient being who brings light, and who is funny, intelligent, and cynical. However, the teachings of Wolf that accompany Crow highlight essential messages for listeners and readers, as well. Wolf teaches the consequences of human actions on other members of the community, as well as the importance of listening to and respecting our Elders.

Raven, who brought light to the world and is witty, intelligent, and deeply cynical, balances the grounded nature of Wolf. Both perspectives are critical to a well-functioning community; however, one never overshadows the other. To Indigenous Peoples, the co-existence of Raven and Wolf serves as a reminder about balance, much in the same way night and day become balanced in *The Battle of Day and Night*. Yet, balance is never static, especially in the Northern context. Night and day are dynamic; at some times of the year, the light outlasts the dark, while at others, the dark outlasts the light. The different perspectives brought by Raven and Wolf function in much the same way—not a true binary, always dynamic and changing, yet necessary all the same. Such perspectives are shared by many Indigenous communities in Northern Canada—where issues and relationships in physical, social, and spiritual realms matter deeply—and set the standard to arrive at higher levels of thinking in order to engender equity, improve relationships, and make pathways for a better future.

Throughout this report, the Panel relies on the teachings of Raven and Wolf to guide its discussion, insights, and analysis, in order to bring together different lenses and knowledge systems to produce a collective and holistic application of Arctic and Northern research.

Foundational Documents: *The United Nations Declaration on the Rights of Indigenous Peoples* and the Final Report of the Truth and Reconciliation Commission

Alongside the narratives of Raven and Wolf, the Panel recognizes that the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) serves as the legal underpinning for all relationships with Indigenous Peoples in Canada today. As such, the Panel views UNDRIP as both the guiding framework and an affirmation of the underlying rights and principles for this report. The final report released by the Truth and Reconciliation Commission (TRC) of Canada is also deemed of great importance by the Panel.

Responding to the continued and enduring negative effects of ongoing colonial legacies faced by Indigenous Peoples (Darian-Smith, 2013), UNDRIP codified the recognition of the rights of Indigenous Peoples at federal and international levels.²

2 UNDRIP was enacted into Canadian federal law as the *United Nations Declaration on the Rights of Indigenous Peoples Act* in 2021 (GC, 2021a).

UNDRIP, therefore, is a call to action that seeks to amend past wrongs and establish the norms and conditions necessary for Indigenous self-determination and cultural resurgence across the globe (Flavel & Coates, 2016; Ignace *et al.*, 2023). UNDRIP reflects the interrelated minimum standards necessary for Indigenous Peoples to maintain their distinct status, rights, role, and place in the family of Nations that make up a portion of the global community. While the Panel emphasizes that UNDRIP must be understood as a single cohesive framework for action, the following important standards are critical to equitable research:

- the right to self-determination in all regards (Article 3);
- the recognition of and requirement for the free, prior, and informed consent of Indigenous Peoples involved in or impacted by any project or research (Articles 19, 32.2);
- the right to decision-making authority and control over lands, waters, and resources (Articles 23, 26, 29.1, 32.1); and
- the right to determine and foster ways of being and knowing that are appropriate to the context of the community, as well as the right to educate community members accordingly (Articles 11.1, 13.1, 14, 18, 31).

UN (2007)

These articles affirm the rights of Indigenous Peoples to self-determination for research activities that affect them, and to decide and control what happens on Indigenous Lands. These articles are foundational for the Panel throughout the report, because a research system that upholds these elements sustains the “minimum standards for the survival, dignity, and well-being of the Indigenous Peoples of the world” (UN, 2007). In the Panel’s view, anything below this standard fails to be inclusive and collaborative and will not stimulate an effective research system.

The work of the TRC highlights actions the federal, territorial, and provincial governments must take in order to support the self-determination of Indigenous Peoples and communities while simultaneously encouraging other people to develop an awareness of the privileges they hold in society (Czyzewski, 2011; TRC,

2015). The Calls to Action 7, 8, 10, 11, 12, 21, 62, and 67 in the final report of the TRC are of particular interest in the context of developing a research system that involves the direct participation of Indigenous Peoples in Canada. Each of these calls refers to the need for increased funding to support Indigenous capacity-building in some way, whether to address education and employment gaps or foster healing and support for communities (TRC, 2015).



In the Panel's view, a research system is understood broadly as the landscape of moving parts that support and carry out research, such as funding structures and processes, research and community infrastructure, data and knowledges, and all levels of education.

The Panel believes that the rights affirmed and reflected in UNDRIP and the TRC report, and the call for equity that underpins them, must encompass all elements of any research system, including the socioeconomic and sociopolitical relations that influence research systems; the ways of knowing that guide research; the procurement of knowledge and data that stem from research; and, most importantly, how research is carried out. These documents highlight and build on the strengths of Indigenous Peoples and cultures and are essential to the balance of strength exhibited in the opening narrative. As such, the values and principles espoused in these documents are central to the Panel's analysis. In each chapter, the Panel returns to UNDRIP and the TRC

report, using Raven and Wolf to inform the direction of its analysis and the key takeaways. The Panel felt that transformational change can only occur when the rights proclaimed by UNDRIP and the TRC are actively recognized and affirmed by everyone involved in Arctic and Northern research.

The Panel's Approach

An Invitation to a Meeting Place

Decolonization isn't asking for a seat at the table. It's chopping up the table and using it as kindling for a community fire.

@DrBlackDeer (2023)

Transformational change occurs when and where space is intentionally made for relationships and dialogue, and where diverse perspectives meet with no moral or normative imperative. In creating transformational change, space is made for learning and sharing. Such space-making fosters respect and recognition, and

strengthens relationships among participants. This space is not always one of ease or comfort (nor does it have to be); it brings people together to meet, grapple, learn, and grow. The community fire—common to many Indigenous Peoples and known by many names, including *kwan'* (Gwich'in), and *kó* (Tłı̨chǫ)—is a space where contrasting opinions are expressed, heard, and worked through, where individual allegiances and desires are shed for a greater community good, and where the collective must actively choose to remain through both comfort and discomfort. Such gatherings of diverse individuals are exactly what the Wolf addresses.

While gathering around and tending fires has profound meaning to the various peoples living in what is presently called the Northwest Territories, Yukon, and parts of Labrador, in places throughout the Arctic without ready access to wood,



Inuktut is the language spoken across the Arctic with many regional dialects and subdialects, such as Inuktitut, Inuvialuktun, Inuttitut, and Nunavimmiutitut.

gathering together on Nuna (the Land) evokes the same sentiments. For example, Inuit often associate their Lands with the term *avatit*—an extension of oneself through the extremities of hands and legs to the Lands. *Avatitsinni*—on our Lands—animates the reverence and tender love to the Lands, the spirits, and all the living through the diversity of animals. Such sentiment beckons human beings to be ethical, respectful, and conscientiously cognizant that the Lands of the Arctic are capable of providing life without human help. *Avatitsinni*, as a term, assumes that the human being commits to a responsibility for allowing the spirits to evoke gratifying life for all sentient beings beyond human life. Gatherings around

the community fire and that of being on the Land evoke human responsibility and sensibility that train you to be in awe of nature—to experience the incredible beauty of the Land, the inner peace, and the generosity that cannot be reproduced by human beings alone. In this way, they implicate the narcissistic tendencies of human thoughts that are devoid of the Lands and the associated lives that the Lands so generously provide.

Recalling the concepts of *kwan'* and *kó*, Inuit used a *qulliq* (oil lamp) for centuries across Inuit Nunangat to provide light and warmth, and to act as a stove. Today, *qulliq* lighting can be seen as initiating formal gatherings by evoking deep respect and appreciation of the Inuit ancestral strength that allows for such gatherings to take place.

The metaphors of the community fire and that of being on the Land were chosen by the Panel to describe an invited space where decolonization processes, rooted in the rights outlined in UNDRIP, can begin and progress. This space is where diverse peoples, cultures, perspectives, and ways of knowing may be brought together through research and for the goal of furthering self-determination. It also nurtures the well-being, resilience, and leadership of the people of the North and across the Arctic.

The Panel brought a breadth of expertise across the physical, social, and health sciences. Each member holds diverse lived, cultural, and research experiences, and significant research portfolios related to the Northern regions of Canada and elsewhere. The Panel itself was a gathering—a moment of coming together, engaging, and discussing issues that require the sharing of perspectives. A majority of its members are originally from—or currently reside in—the Arctic or Subarctic areas and brought with them the values, perspectives, and priorities of communities in the Yukon, the Northwest Territories (N.W.T.), Nunavut, Labrador, Alaska, and Greenland. These Northern perspectives were shared with those from the southern Canadian provinces, including British Columbia, Alberta, Saskatchewan, Ontario, and Quebec. The Panel viewed itself as a place where North and South could meet for open and honest dialogue, and where perspectives were shared to find a more ethical, equitable, and just future in Arctic and Northern research. The Panel strove to weave the divergent perspectives from the North and the South, and agreed that Arctic and Northern rights, needs, and priorities were central to and guided this work. It is Indigenous Peoples' Lands, cultures, communities, and lives that are impacted most directly by research activities, now and into the future. By adopting a *from the North* perspective and, more specifically, the lens of Raven and Wolf, the Panel created a space where the perspectives of the North—Indigenous perspectives, in particular—can be elevated and centred, while acknowledging and valuing input from the South and the need for respectful and continued partnerships, both North to North and North to South. The Panel hopes this report brings the reader to the community fire; whether you are from the North or the South, the Panel invites you, the reader, into this space, into this conversation, and into a future ripe with the possibility of equitable change and the opportunity to shift the asymmetry and resulting power imbalances from a Southern-driven research approach into a Northern-led research future.

The Meeting Place as a Cross-Cultural Conversation Between the North and the South

Building on the idea of the community fire as a meeting place, the Panel viewed its work as an opportunity to exercise ethical and equitable space creation in which contrasting worldviews and perspectives were brought together, respected, and celebrated. Ethical and equitable space is an arena for cross-cultural conversations and outcomes in the pursuit of equity and justice (Ermine, 2007). When divergent perspectives meet, a new space is created among partners, where each is poised to engage with others in a way that has not been encountered before, reflecting the balance exemplified by the co-existence of Raven and Wolf. For the Panel, the report represents this cross-cultural conversation between



Language choice is a key component of accessible and relational research.

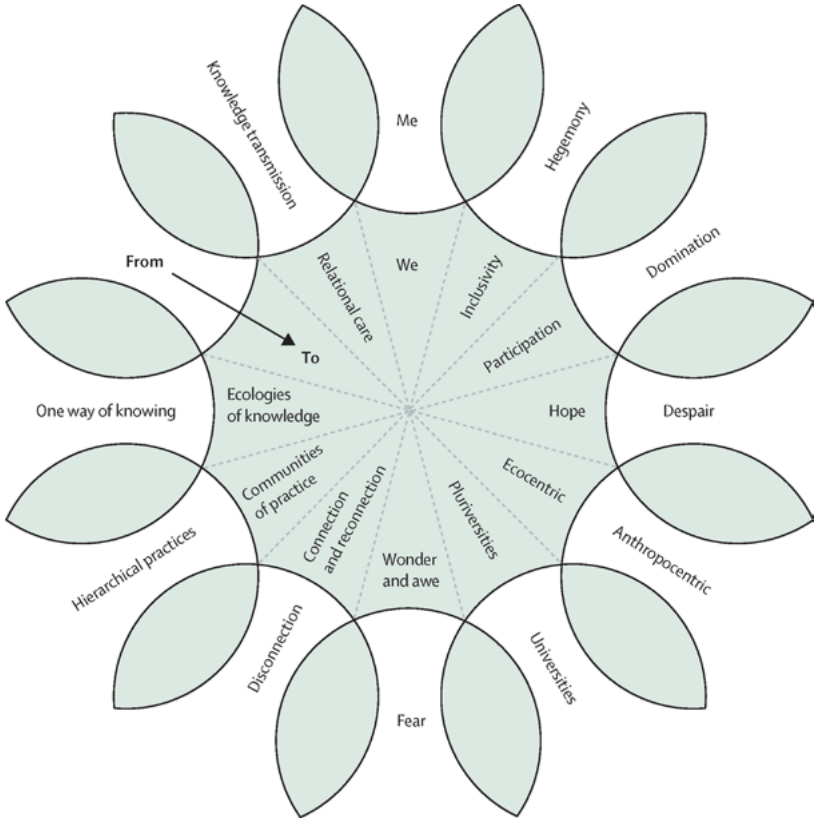
two distinct perspectives and, more specifically, the inequitable and asymmetrical space between the research community in the South and that of the Indigenous Peoples and communities in the North who are essential to research about the region.

The Panel was composed of Arctic and Northern Indigenous researchers and scholars from several Indigenous Peoples and Nations,³ as well as non-Indigenous researchers and scholars, representing a further layer of contrasting cultures in a single

space. As such, the coming together—or meeting—of the Panel itself and the Southern-based CCA staff reflects a moment of cross-cultural conversation and ethical engagement, mirroring many of the above-identified elements of Raven and Wolf. The Panel's work and the report itself are the result of moments of ethical and equitable space creation, which you, the reader, are now invited to share in. A key element of creating and sharing in ethical space is recognizing and respecting lived experience. Throughout the report, Panel members drew on their individual lived experiences, often citing personal challenges or examples in support of opinion and best practices.

In line with the view of Fagan (2002), the Panel notes that calling for the inclusion of diverse and often marginalized voices involves a shift in language, with those voices acting as the drivers of change. The language used throughout the report focuses on reader accessibility and culturally relevant phrasing. Figure 1.1 highlights the shift toward a more relational way of communicating that requires many terminology considerations when focusing on a Land-centred methodology and associated ways of learning and sharing (Redvers *et al.*, 2023). This report will adopt similar terminology shifts throughout.

3 Deninu Kuę First Nation, Naskapi Nation, and Inuit from Nunavut, Alaska, and Greenland.



Reproduced with permission from Redvers *et al.* (2023)⁴

Figure 1.1 Language Shifts Required for Increased Relationality in Research

A series of language shifts are required for an integrative approach to understanding stewardship of the planet as a whole. This language shift reflects a broader perspective that can help support researchers in understanding their positionality, relations, and roles in decolonial discourses in their research and work.

4 Reprinted from: *The Lancet Planetary Health*, Vol. 7 / edition 1, Redvers, N., Faerron Guzmán, C. A., & Parkes, M. W., Towards an educational praxis for planetary health: A call for transformative, inclusive, and integrative approaches for learning and relearning in the Anthropocene, e77–e85. Copyright 2023, with permission from Elsevier. License number 5596040425510. Creative Commons — Attribution-NonCommercial-NoDerivatives 4.0 International — CC BY-NC-ND 4.0. DOI link: [https://doi.org/10.1016/S2542-5196\(22\)00332-1](https://doi.org/10.1016/S2542-5196(22)00332-1).

One such term that needs a shift in mindset is *Land*. For many who operate solely in the realm of Western knowledge systems, the term *land* refers to the parts of Earth's surface not covered by water, and it is limited in scope to spatial considerations. In contrast, *Land*, as referenced by the Panel, is broader, encompassing not only the physical and spatial—including the physical land as well as the lakes, rivers, ocean, ice, and air that make up one's home—but also the cosmological and ontological. For example, Nuna, the Inuktitut word roughly translating to *Land*, refers to “the inhabited Land and the place where humans and animals grow and where they die. Nuna has plants, food, people in great numbers and variety; it is full of [different] language groups” (Qumaq, 1991 as cited in Dorais, 2008; translated by Pong  rard, 2017). Whereas *land* in a geographic sense is knowable, Nuna is *nalunaqtuq*, or “that which causes confusion” due to its uncanny or inexpressible nature (Qitsualik, 2013). The uncanny nature of Land means that one cannot ever know it in its entirety; it is where learning takes place as well as the teacher itself (Qitsualik, 2013; Ljubicic *et al.*, 2022). Moreover, understanding Land as Nuna requires a nuanced understanding of our relationship, as humans, with the world around us. As Inuit leader and writer John Amagoalik (2001) describes in his poem, *What is this land?*

The land is cold. The land is immense. It is a desert. It is unforgiving? It can be cruel? The land is also home. It sustains life. It breathes. It can bleed. It is part of our mother, the earth. It is beautiful. It nourishes our culture. We are part of it as it is part of us. We are one!

However, Land is more than a teacher. For the Dene, Land is also a mother. In the South Slavey dialectic, “*de* means flow, *ne* means land; flowing from the Land. The Dene have a relationship with the Land, their very being flows from the Land, and the Land from its people” (KFN, 2015 as cited in Thunderbird Partnership Foundation, 2016). As Ren   Lamothe noted in his statement to the Mackenzie Valley Pipeline Inquiry in 1975,

The Land is seen as mother because she gives life, because she is the provider, the protector, the comforter. She is constant in a changing world, yet changing in regular cycles. She is a story-teller, a listener, a traveller, yet she is still, and when she suffers we all suffer with her; and very often in many parts of the world, whether they believe this or not, many people suffer because they have abused their Land. She is a teacher who punishes swiftly when we err, yet a benefactress who blesses abundantly when we live with integrity, respect her, and love the life she gives.

Watkins (1977)

Land, for the Panel, embodies the many facets described in this view. It is capitalized throughout the report to express and respect this totalizing nature. The Panel believes this is foundational to any discussions relating to research conducted in, by, and for the North.

An additional language consideration important to the framing of this report is the use of the term *knowledge*. In the Panel's view, knowledge is not a singular concept that individuals or groups either have or do not have, but rather a multifaceted relationship of observations that ultimately aid in the attaining of wisdom, which exists in a variety of forms. As such, the Panel chose to base its discussion of Arctic and Northern research on diverse knowledge systems, representing the diversity of people who call the Arctic their home. However, in recognizing the historical and ongoing tensions between the knowledge systems of Indigenous Peoples and the West, the Panel is specific when discussing either of these, referring to Indigenous knowledge systems and Western knowledge systems where applicable. For further discussion on what comprises these different knowledge systems, see Chapter 3.

The Charge and Report Structure

ArcticNet, with the support of more than 40 organizations, universities, and government bodies interested in the future of Arctic research (hereafter, “the Sponsor”),⁵ commissioned this coming together by asking the CCA to convene an expert panel to assess the foundational elements needed for building an effective, equitable, and world-class Arctic research system. Specifically, the Panel was asked to answer the following question and sub-questions:

5 The full list of sponsors: ArcticNet, Amundsen Science, Arctic Institute of North America (AINA)/University of Calgary, Arctic Research Foundation (ARF), Aurora College/Aurora Research Institute (ARI), Canadian Museum of Nature, Carleton University, Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Dalhousie University, Environment and Climate Change Canada (ECCC), Fisheries and Oceans Canada (DFO), Government of Northwest Territories, Government of the Yukon, Inuit Circumpolar Council (ICC) Canada, Inuit Tapiriit Kanatami (ITK), Inuvialuit Regional Corporation, Kativik Regional Government, Makivvik Corporation, McGill University, Memorial University (Labrador Campus), MEOPAR, Natural Resources Canada (NRCan)/Polar Continental Shelf Program (PCSP), National Research Council Canada, Natural Sciences and Engineering Research Council of Canada (NSERC), Nunavut Arctic College, Nunavut Tunngavik Inc. (NTI), Nunatsiavut Government, Ocean Frontier Institute (OFI), Oceans North, Parks Canada, PermafrostNet, Polar Knowledge Canada, Société du Plan Nord (SPN), Université du Québec à Trois-Rivières, Université Laval, University of Alberta, University of Manitoba, University of Ottawa, University of Saskatchewan, University of Victoria, University of Waterloo, Yukon University.



Based on assessment of current knowledge and evidence, what are the key foundational elements to create an inclusive, collaborative, effective, and world-class Arctic and Northern science system⁶ in Canada?

- What are the opportunities and barriers for Canada to strengthen its research excellence, foresight, and global leadership in key areas identified in the Fundamental Science Review, Tri-Council Strategy – Strengthening Indigenous Research Capacity, the Arctic and Northern Policy Framework, the National Inuit Strategy on Research, and other major reports?
- What can be learned from other countries, regions, and frameworks (i.e., Arctic, non-Arctic, and Antarctica) that support Arctic and Northern science (e.g., funding models, research practices, research policy, infrastructure support, training, Indigenous inclusion, other)?
- Drawing on the best practices and best available evidence, what key elements are necessary to develop a state-of-the-art, innovative, and world-leading research system that addresses pressing environmental and societal issues and meets the needs of Arctic Indigenous Peoples, Northerners, Canadians, and the international community, now and into the future?

To answer these questions, the report first sets out the elements required to create an inclusive, collaborative, effective, and world-class Arctic and Northern research system, as well as the avenues identified by the Panel as means through which those elements can be implemented (Figure 1.2).

6 Early discussions with the Sponsor clarified that the term *science system* was meant to be interpreted broadly. The Panel therefore chose to use the terms *research* and *research system* throughout the report. Research in this context represents all forms of work “undertaken in order to increase the stock of knowledge — including knowledge of humankind, culture, and society” (OECD, 2015). The Panel notes that science, as it is generally understood, is included within the concept of research.

CONCEPTUAL FRAMEWORK

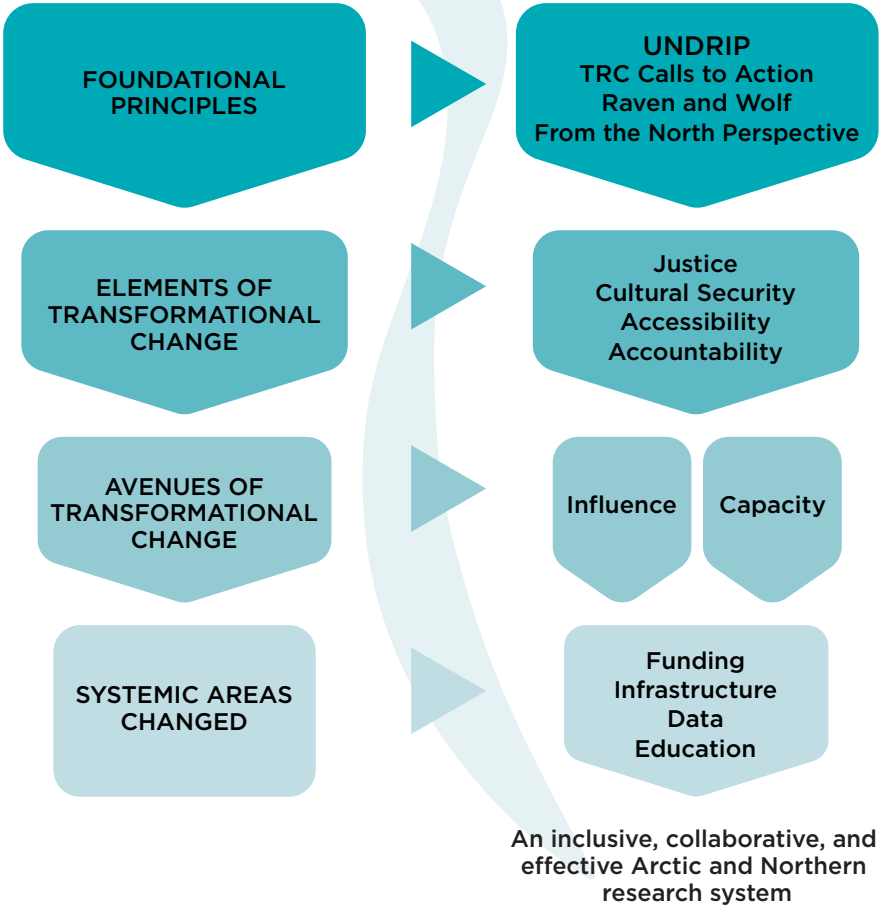


Figure 1.2 Report Approach

Building on a foundation rooted in the rights affirmed in UNDRIP and the TRC’s Calls to Action—and taking a Northern perspective guided by Raven and Wolf—this report applies the four elements of transformational change (justice, cultural security, accountability, and accessibility) by way of avenues for transformational change (influence and capacity) to four key aspects of the Arctic and Northern research system: funding, infrastructure, data, and education. In so doing, the report works through the transformational changes that, if undertaken, support a truly inclusive, collaborative, and effective Arctic and Northern research system in Canada.

Chapter 2 (Coming to the Fire in a Good Way) explores these elements and avenues, answering the questions directly by highlighting what is needed for transformational change, including how to approach those transformational elements in a way that centres ethics.

Chapter 3 (The Day and the Night) then sets the context for the rest of the report by exploring the different knowledge systems that exist in relation to Arctic and Northern research, as well as briefly discussing the impacts of colonialism.

Chapters 4 through 7 consider key components of the research system as they relate to the concept of the community fire, as well as to the Panel's elements of transformational change. **Chapter 4 (Fuelling the Fire)** discusses the current funding landscape and the Panel's vision for equitable transformation moving forward. **Chapter 5 (The Gathering Places)** considers the infrastructure in the North, including conventional research infrastructure and the supports needed for communities to survive and thrive. **Chapter 6 (Sharing Knowledges)** examines the concepts of access and benefits sharing, data sovereignty, and intellectual property as they relate to the Arctic and Northern research system. Finally, **Chapter 7 (Carrying the Embers)** looks at education in and about the North. Each of these chapters is organized around the transformational elements identified by the Panel in Chapter 2 and addresses the strengths and barriers of each concept, highlighting promising practices for change.

Chapter 8 (Tending the Fire) presents the Panel's conclusions and final reflections on the future of Arctic and Northern research, coming back to the teachings of Raven and Wolf. Although Chapter 8 represents an end to the report, the Panel emphasizes that the space this report represents—where North meets South—continues on. Rather, the chapter represents a beginning, inviting readers to carry these elements and avenues with them in their work moving forward, in order to achieve true transformational change. Chapter 8 also highlights the ongoing role of researchers—both Northern and Southern—in fighting for and acting on transformational change, even where it has already begun. This final chapter seeks to awaken in researchers their role in tending the fire, wherein the community fire is maintained with care, respect, and diligence, even where it already burns bright.

2



Coming to the Fire in a Good Way

*Raven chanted:
“Light-light-light!
Let-it-be-day!
Light-light-light!”*

Qitsualik-Tinsley &
Qitsualik-Tinsley (2015)



The charge to the Panel signals a desire for significant change in the Arctic and Northern research system in Canada. Greater inclusivity, collaboration, and effectiveness in this system requires that transformation be undertaken by the current research community. This chapter provides an overview of the characteristics identified by the Panel that enable such transformational change, rooted firmly in the perspectives of Raven and Wolf. In so doing, it answers the main question while outlining the responsibilities necessary for a world-class Arctic and Northern research system in Canada.

The chapter begins by outlining what it means to do research *in a good way*. It then discusses four elements of transformational change: *justice, cultural security, accessibility, and accountability*. Through an examination of these concepts as they relate to research, the Panel demonstrates how each element is applied to create desired changes. The next section looks at two avenues of transformational change: influence and capacity. The Panel describes how these avenues can provide the foundation for transformational change and how they may be implemented. Finally, the chapter provides an overview of the remainder of the report, outlining how these elements and avenues have been incorporated into the Panel's analysis of the current Arctic and Northern research system.

Doing Research in a Good Way

When the world was new, animals and humans held a conference to see how they would relate to each other. Yamoria used medicine power to control everyone's mind to arrive at a fair resolution. The meeting lasted a long time and involved humans and every bird, fish, and animal that lived on the earth. All agreed that humans could use animals, birds, and fish for food, providing that humans killed only what they needed to survive and treated their prey with great respect. Humans must use every part of the animal and never waste anything. It was also made law that humans take the bones of the prey and place them in a tree or scaffold high above the ground. And finally, humans were told to always think well of animals and thank the Creator for putting them on the earth.

Blondin (1997)

The Meeting Between Humans and Animals, as written above, is a Sahtu Dene narrative recorded by Elder George Blondin that describes the process and outcome of the first meeting between humans and animals, overseen by Yamória.⁷ For many Dene Peoples, Yamória is a hero and friend who travelled throughout Denendeh, differentiating humans from animals and establishing their ongoing relationship based on common understanding and mutual respect (PWNHC, n.d.). Yamória gave the Dene their laws, enabling them to live together in harmony—with each other and with their environment—and is often described similarly to Raven: humorous, clever, and a bringer of balance (Native Languages, n.d.; PWNHC, n.d.). In *The Meeting Between Humans and Animals*, Yamória reveals the underlying ethical principles of equality and interdependency that form the foundation for many other narratives (Chartrand, 2018). Equality among people, animals, and other natural elements, as well as their interdependent relationships with each other, guides the Dene to *live in a good way*, inspiring a sense of responsibility, reciprocity, and respect in day-to-day interactions and decisions (Chartrand, 2018).

In much the same way, the Panel considered the concept of *doing research in a good way*. A research system that is effective, inclusive, and collaborative involves research that is itself being done in effective, inclusive, and collaborative ways. In the Panel's view, these qualities are not end-of-activity descriptors to be applied to the outputs of the research process. Rather, they govern the entire process of research itself, including the actions and behaviours of individuals and institutions undertaking research in Canada. From this perspective, *doing research in a good way* relates to ethics—or the morals and values that guide us in deciding what is right and what is wrong. For the Panel, ethics lie at the heart of all research activities, affirming the rights outlined in the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) and the Calls to Action listed in the final report of the Truth and Reconciliation Commission (TRC). To do research in a good way is to understand one's responsibilities and to respect the natural laws of equality and interdependence. It is to approach research with a sense of responsibility, reciprocity, and respect. Most importantly, it is to ensure there is always balance in the research system—fluid and dynamic, shifting to accommodate context, but always there, guiding the process from beginning to end.

7 Yamória is the Sahtu name for The One Who Travels and is the most commonly found term referring to this being (PWNHC, n.d.). While each Dene language refers to The One Who Travels differently, all Dene Peoples recount tales of Yamória's legendary life.



Courtesy of Gita Ljubicic

Pangnirtung, Nunavut

Building the Fire: Elements of Transformational Change

For the purpose of this report, *transformational change* involves the acknowledgment and affirmation of the existence of Indigenous knowledge systems in Arctic and Northern Canada. The elements of transformational change, then, are the necessary characteristics identified by the Panel for ensuring such change can occur. They also ensure that research activities carried out in the North are done in a way that upholds Indigenous Peoples' rights as expressed in UNDRIP and the final report of the TRC (Chapter 1). These documents speak to the need for mindful responsibility, giving space to the ethical and equitable engagement of Indigenous Peoples in all aspects of research. As such, these elements of transformational change can help engender a research system that is inclusive, collaborative, effective, and ethical.

Justice: It is essential that Arctic and Northern research in Canada is just and furthers Indigenous Peoples' right to self-determination

The Panel chose to define justice in terms of self-determination for Indigenous Peoples. This notion incorporates substantive rights and procedural guarantees that further self-determination, leadership, and reconciliation. Accordingly, justice is the full realization of the rights of Indigenous Peoples, as affirmed in UNDRIP and supported by the TRC, and it underpins all aspects of the Panel's charge. To be inclusive, the research system must welcome all perspectives—Indigenous perspectives in particular—at the most fundamental level. Inclusivity, in its true sense, does not mean simply acknowledging the existence of marginalized groups. It means listening to, equitably including, and valuing them as meaningful leaders and participants. It also means making space for Indigenous leadership and transforming the entirety of the research process, which involves recognizing and meaningfully, effectively, and equitably including different knowledge systems; the dispensation and unlearning of systemic biases associated with accreditation and affiliation; and ensuring that self-determination is both realized and respected.

In exploring justice, the Panel asked itself: Who gets to ask research questions, and who gets to conduct research? What is considered *research* relates to the questioning and reframing of the current paradigm that prioritizes Western knowledge systems and approaches. Asking this question allows for a broader and more holistic conception of observation and practice. This reframing relates to an unlearning of the strict institutional boundaries around “acceptable” and “rigorous” knowledge, as it has long been defined by the Western research paradigm. It also involves an openness to incorporate more diverse knowledge systems rooted in a sense of equity, diversity, respect, and recognition. If such a reframing is realized through research and associated activities—and balance is continually maintained among perspectives—the Panel believes that Canada can become a leader in terms of research and its processes, as well as in respectful intergovernmental relationships (i.e., between the federal/territorial/provincial governments and Indigenous Nations/rights-holders).

Cultural security: Inclusivity and effectiveness of Arctic and Northern research in Canada cannot be achieved outside a system that provides cultural security

Cultural security and related terms have been largely used in health and medical practice and research (Williamson & Harrison, 2010; Downing *et al.*, 2011). It refers to recognition and respect for differing worldviews, with an emphasis on not compromising Indigenous cultural rights and values (UN, 2007; Gubhaju *et al.*, 2020). Safeguarding the cultural security of Indigenous Peoples is rooted in the right of self-determination as the prerequisite for the exercise and enjoyment of all other human rights. For Arctic and Northern Indigenous Peoples, the notion of cultural security is deeply rooted in their distinct status, rights, and roles; within Western knowledge system-based research, it is essential for the recognition of, respect for, and preservation of the interrelated rights of Indigenous Peoples. The Panel uses cultural security broadly throughout the report, extending it to all aspects of cultural protection for Indigenous knowledge systems, and focusing on the processes and actions required for upholding and respecting Indigenous rights.

In the Panel's view, fostering inclusive and collaborative Northern research that values and recognizes Indigenous knowledge systems means establishing protections to ensure cultural security for all Indigenous Peoples affected by that research system. As Battiste and Henderson (2000) note, "survival for Indigenous Peoples is more than a question of physical existence; it is an issue of preserving Indigenous knowledge systems in the face of cognitive imperialism." Cultural security is one way in which this preservation can occur.

The concept of cultural security was deemed critical by the Panel, as some current research practices continue to ignore Indigenous Peoples, their rights, and their knowledge systems (Chapter 3). It is important that Indigenous knowledge systems and worldviews are recognized and given equitable space, both intellectually and substantively. This includes control over data and intellectual property, improved ethics review processes and research practices, and a clear understanding of Indigenous sovereignty and self-determination over research. Furthermore, when Indigenous Peoples have an active voice in the research system, the research being done will be better and richer overall. Such a system—in which balance among different perspectives and approaches is maintained, albeit in a flexible and dynamic manner—is one that enables ethical and equitable research.

Accessibility: An effective, inclusive, and collaborative Arctic and Northern research system upholds accessibility for all aspects, including processes and outputs

Participating in and accessing the results of research are critical, multifaceted issues that pertain to the research system overall. In the Panel's view, accessibility in research, when understood as a whole, applies to the *processes of the system* itself (e.g., the ability to lead, guide, and/or collaborate in research; access to funding; a clear understanding of data sovereignty and ownership) as well as the *outputs of the system* at the community and decision-making levels (e.g., being able to access the results of research when needed and in forms that are desired). Accessibility also relates to a necessary balance of power; much like the balance between day and night or Raven and Wolf, power cannot be concentrated in the hands of a single institution or system if decision-making and research activities are to be accessible. To truly be inclusive and collaborative, decision-making structures and their associated systems of power must be

accessible to those who are directly impacted by their outcomes. The Panel believes that increasing accessibility for all phases and elements of the research system will bolster the strength of the system by facilitating direct involvement and, most importantly, balance.



Responsibility is the obligation one has to act in an ethical way toward others. It is rooted deeply in a sense of respect.

Reciprocity relates to the quality of relationships that engender mutual dependence and influence, based in a sense of respect and care for each party. It includes two-way sharing and learning, as well as enjoying mutual benefits.

Accountability: Effective, inclusive, and collaborative Arctic and Northern research is rooted in responsibility and reciprocity, and in a sense of accountability

Accountability relates to responsibility to and reciprocity with others. The Panel believes that responsibility and reciprocity are ongoing and related to relationship-building, comprehensive monitoring and evaluation, and constant dialogue and information sharing about research practices and related activities among all partners.

Like cultural security, accountability is necessary for true collaboration, inclusivity, and effectiveness. It is important to remember, first and foremost, that the North is home to many Indigenous and non-Indigenous people and that it is not solely an arena for

Southern research. Much of the research undertaken in the North has approached the region as though it were devoid of inhabitants; as such, the process and results often do not engage with or address the goals and priorities of the rich and diverse

communities that call the North home. Consequently, key areas of concern are not addressed, and research is not responsive or accountable to the people who will likely be impacted by it—or who may stand to benefit the most from it.

While it is important for individual researchers to be accountable to the Indigenous communities they are working within and/or with (i.e., respecting the guidance and directives of those communities), accountability is also needed at the structural or institutional level. For example, institutional accountability in this context means that governments and universities must address needs identified by communities; ensure that relevant elements of research (including conclusions and results pertaining to communities) are accessible; and maintain meaningful, ongoing relationships with the communities at all stages of the research process.

Lighting the Fire: Avenues for Transformational Change

Avenues for transformational change represent the ways in which justice, cultural security, accessibility, and accountability can be actualized, lighting the fire for sustained change and a more ethical and equitable research system. The Panel identified *influence* and *capacity* as the two critical avenues that further transformational change; however, it notes that other avenues for change also exist. Influence and capacity were chosen in the context of Arctic and Northern research because, in the experience of the Panel, they have the most immediate impact on the research system.

Influence: Transformational change in research means shifting decision-making influence from the South to the North

Influence is the ability of individuals to produce desired effects on the actions, behaviours, and opinions of others. In the research system, who conducts research, what is researched, and how the results of research are communicated and used are largely in the hands of decision-makers associated with Southern academic institutions or government agencies. As a result, influence does not often lie in the hands of those most directly impacted by research activities in the North, but rather where settlers and non-Indigenous communities enjoy the results. In the Panel's view, shifting influence to the North—and supporting Indigenous leadership in research, in particular—will ensure that the perspectives, needs, and priorities of the communities and Peoples who call the North their home are respected and accurately reflected in the research activities being conducted. In turn, shifting influence northward will also engender higher-quality research, as the research system will have a more fulsome sense of balance among perspectives.

Capacity: Equitably transforming the Arctic and Northern research system includes increasing human, financial, and infrastructural capacity

Enhancing capacity—particularly for Arctic- and Northern-based researchers, governments, organizations, and communities—would support a more effective Arctic and Northern research system as a whole. This process involves the following elements: ensuring Arctic and Northern community needs become priorities in research undertaken in the region; shoring up research infrastructure and personnel in the North; creating learning and training opportunities to support research; and making significant funding available. The Panel notes that Indigenous Peoples in the North must themselves dictate the realities, contexts, and needs in their communities, in order for capacity-building to be valuable. Capacity is also an important consideration for Southern researchers and institutions; it can enable them to undertake ethical, equitable, and accountable research. Such capacity could be enhanced through cultural security training related to the political, economic, cultural, and social dimensions of Arctic and Northern communities prior to research, in order to engender greater accountability and support more meaningful community engagement.

However, the Panel notes that capacity must also be increased in the systems supporting the survival (and thriving) of Northern communities and Indigenous Peoples. Strengthening the capacity of these systems—including the education, health, food, and socioeconomic systems and structures of the North—will further enable transformational change to flourish. Where there is capacity, there is room for increased accessibility and accountability, which in turn positively influence justice and cultural security. Capacity enables the centring of work done *in a good way*, as outlined above—this can support and further the self-determination of Indigenous Peoples and, in turn, support an ethical, inclusive, collaborative, and effective research system.

Together at the Fire: Enacting Transformational Change

An Arctic and Northern research system that is inclusive, collaborative, and effective will only be achieved through a dramatic paradigm shift that ensures significant and transformational change. The Panel believes that effective and ethical transformational change, rooted in a foundation of ethics and care, focuses on the aspects of justice, cultural security, accessibility, and accountability. While the realization of each of these elements—carried out

in a good way—is critical, true transformation cannot occur without the support of influence and capacity. Shifting influence to privilege the perspectives, needs, and priorities of Arctic and Northern communities, as well as increasing capacity across all elements of the research system (which further bolsters influence), are both needed to enable transformational change to take root. In the Panel’s view, these elements and avenues of change—along with the guiding ethics of doing work in a good way—provide the framework necessary for addressing the charge.

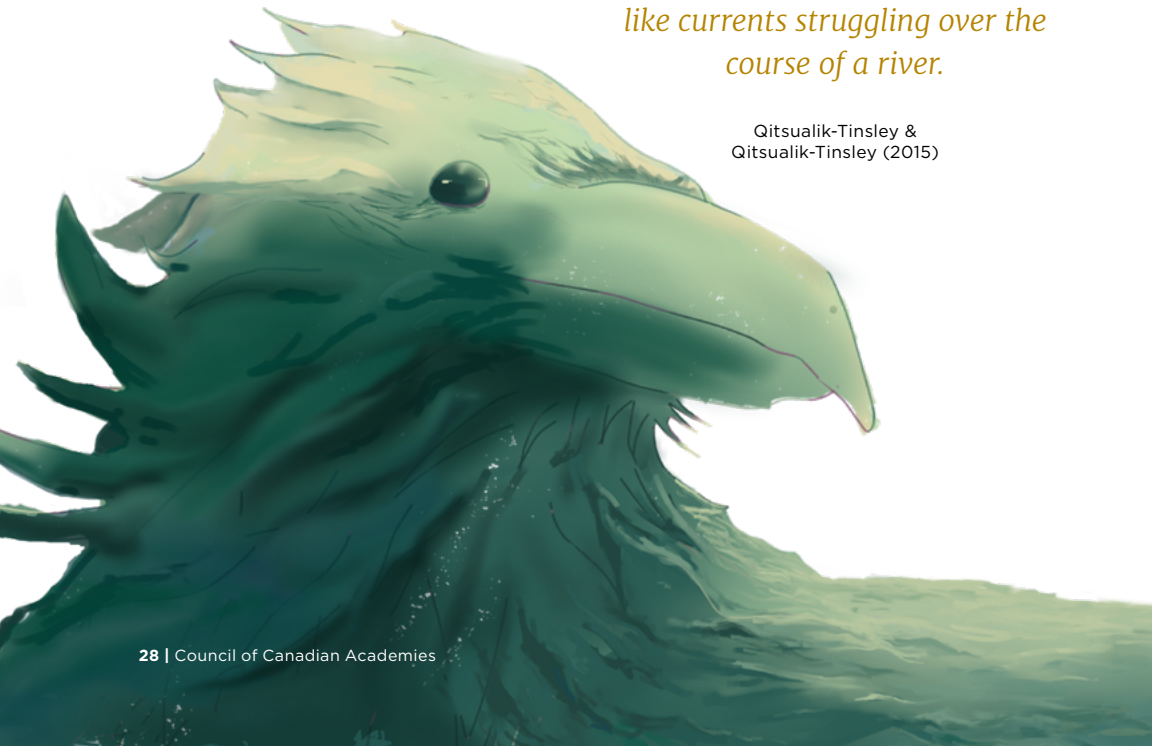
3



The Day and the Night: Report Context

*And so it went, with bird against
beast against bird. Will and words
began to flow and intertwine,
like currents struggling over the
course of a river.*

Qitsualik-Tinsley &
Qitsualik-Tinsley (2015)



An examination of the values, relationships, and activities that animate knowledge—a key element in the research process—as well as the relationships that exist between Indigenous Peoples and the state is needed to support truly transformational change in the research system. This chapter builds a foundation for the report by contextualizing the Panel’s work, in order to provide a common understanding by which the elements of Canada’s Arctic and Northern research system can be assessed. In Chapter 2, the Panel agreed on the elements of transformational change that are urgently needed. Chapter 3 discusses how understanding the contexts and histories of knowledge and colonialism in Northern Canada is needed to bring about transformational change, which includes making significant and positive changes to research systems.

The chapter begins by outlining the different knowledge systems that act as frameworks for Arctic and Northern research in Canada. Through an examination of the two predominant knowledge systems—Indigenous and Western—in Arctic and Northern research in Canada, the Panel demonstrates the considerable benefits and opportunities that can stem from a system that supports knowledge co-production and co-existence. The Panel acknowledges that certain fields demand a more dynamic balance between knowledge systems. The barriers to achieving meaningful co-production and co-existence are also discussed, with evidence demonstrating the current tensions between Indigenous and Western knowledge systems—a result of privileging Western knowledge systems at the expense of others.

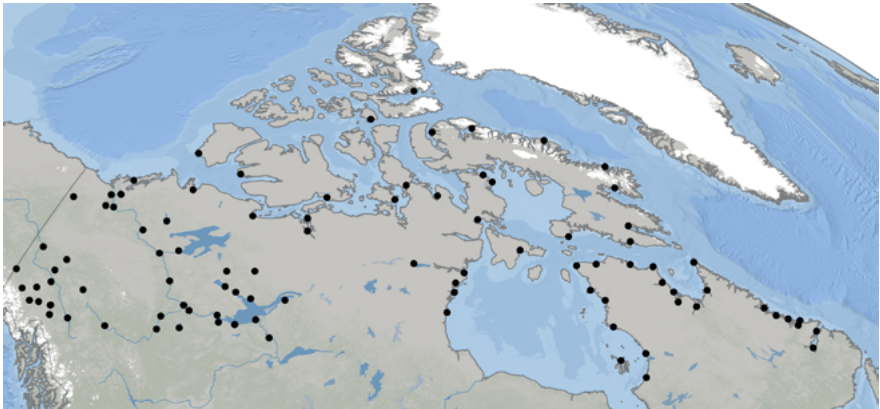
The following section provides an overview of colonialism and inequity in what is now known as Canada, which serves to lay out the contextual foundation for the remainder of the report. The Panel highlights some of the key policies and practices relevant to the Arctic and Northern research system that have entrenched colonial beliefs and values in Canadian society and outlines where these persist today. Finally, the chapter provides a conceptual overview of what is to come, tying together the Panel’s call for equity that will follow through in subsequent chapters and their key messages.

Ways of Knowing

As noted in Chapter 1, the Panel based its work on the rights affirmed by the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) and the Calls to Action that emerged from Canada’s Truth and Reconciliation Commission (TRC). These rights and actions include recognizing and valuing Indigenous knowledge systems as well as understanding how knowledge systems interact. Within the context of Arctic and Northern research, this refers to Indigenous and Western knowledge systems, the ways in which they interact, and the value both bring to a research system that is effective, inclusive, and collaborative.

Defining Indigenous knowledge systems limits understanding of their diversity and multifaceted natures, especially as they pertain to the North

Indigenous knowledge systems comprise multiple and complex sets of information and technologies that have been developed and sustained by Indigenous communities for millennia. While these knowledge systems are often generalized and discussed as a single, homogenous entity (e.g., Indigenous knowledge, traditional ecological knowledge), there is no single basis upon which these knowledge systems are founded. Northern Canada alone is home to approximately 50 Indigenous Nations (ISC, 2023a, 2023b; Whose Land, n.d.), each of which has distinct cultural practices and knowledges (Figure 3.1).



Data Source: ISC (2023a, 2023b)

Figure 3.1 First Nations and Inuit Communities Across Northern Canada

The homelands of many First Nations and Inuit Peoples are found in the Northern regions of the lands now known as Canada. First Nations and Inuit communities in the Yukon, Northwest Territories, Inuit Nunangat (Nunavut, Inuvialuit Settlement Region, Nunavik, and Nunatsiavut), and Labrador are plotted on this map. Community location data were sourced from Indigenous Services Canada; the Panel notes they do not represent the full extent of the places Indigenous Peoples have called or continue to call home. The Panel also notes that there are many First Nations and Métis Peoples who are part of Northern Indigenous communities (i.e., in the Northern regions of the provinces) but whose communities are not included on this map.

As a result, *Indigenous knowledge systems*, as used by the Panel, represents a vast and diverse set of knowledges held by Indigenous Peoples across Canada. Despite this diversity, however, common elements have been identified among the

various knowledges that comprise Indigenous knowledge systems. For example, the Inuit Circumpolar Council (ICC, 2022) highlights how Indigenous knowledge systems relate to:

a systematic way of thinking applied to phenomena across biological, physical, cultural, and spiritual systems. [These systems include] insights based on evidence and acquired through direct and long-term experiences and extensive and multigenerational observation, lessons, and skills. [They have] developed over millennia and [are] still developing in a living process, including knowledge acquired today and in the future, and it is passed on from generation to generation.

Indigenous knowledge systems are relational and intergenerational, found in elements that can include “theories, philosophies, histories, ceremonies, and stories as ways of knowing” (Battiste, 2002). Often described as contextual and rooted in the subjective experience of emotion, Indigenous knowledge systems are maintained and shared through activities such as storytelling, mediation, talking and sharing circles, ceremonies, dialogues, participant observation, experiential learning, modelling, and prayer (Ermine, 1995; Battiste, 2002; Iseke, 2013; Betasamosake Simpson, 2014; Bartolomé, 2020). They may also be kinetic, associated with the movements of everyday life (Betasamosake Simpson, 2014). Within the epistemological framework of Inuit in Canada, for example, central elements include collaboration, storytelling, and all-knowing coming together as one (Healey & Tagak Sr., 2014).

Indigenous science is another example of how Indigenous knowledge systems may be applied. Indigenous science—rooted in emotional experience, intuition (especially regarding Land), and observation—is often described as symbolic and non-linear (e.g., Redvers *et al.*, 2022), and it uses narratives to explain observed phenomena (Bartolomé, 2020). Inuit Qaujimajatuqangit (IQ), for instance, refers to the various ways of collecting and understanding information about the world around us, while simultaneously including elements of relationship development and maintenance (Box 3.1). According to Inuk teacher, translator, and storyteller Mark Kalluak (2017), IQ is:

wisdom gained from extensive experience, passed from generation to generation. [It] means knowing the land, names, locations and their history. It also means knowledge of the Arctic environment—of snow, ice, water, weather and the environment we share. It encompasses being in harmony with people, land and living things—and respecting them. It implies life skills, alertness and the ability to train others for a strong healthy life. Knowledge of language, culture, traditional beliefs and worldview are essential. Inuit Qaujimajatuqangit is, for Inuit, the truth through which we live a good life in our world.

Other key similarities among the multitude of knowledges that comprise Indigenous knowledge systems include, according to Battiste (2005):

- a holistic understanding in which all knowledges are both embedded in the context of the learner and connected with all other knowledges, so as to provide a more comprehensive understanding of the world;
- an awareness of the interdependence of all things, which often prioritizes Land and care for the natural world; and
- a focus on community values.

The Panel also notes that many Indigenous knowledge systems, including IQ, are not held equally by all members of a community; in many instances, they are held by certain members of a community (e.g., knowledge holders, Elders) and shared when deemed appropriate. For example, some aspects of Indigenous knowledge systems are often deeply gender-based (Jessen Williamson *et al.*, 2021).

Box 3.1 Inuit Ways of Knowing: Key Concepts and Guiding Principles

In their work on health science methodology in the North, Gwen Healey and Andrew Tagak Sr. combined Western science goals with Inuit epistemology in an attempt to outline best practices that work toward the common good for all—researchers and community members alike. In doing so, they highlighted several key concepts that guide Inuit ways of knowing:

Inuuqatigiittiarniq: “respecting others, building positive relationships and caring for others.”

Unikkaaqatigiinniq: a concept related to storytelling that encompasses “the power of story and the role of stories in Inuit ways of being,” as well as the contexts in which stories are shared.

Iqqaumaqatigiinniq: “all thought, or all knowing, coming into one.”

Pittiarniq: “being good” (both morally and in terms of one’s behaviour).

Piliriqatigiinniq: “working in a collaborative way for the common good.”

(Healey & Tagak Sr., 2014)

(Continues)

(Continued)

Further guiding principles have been identified by the Government of Nunavut in its description of IQ. These include:

Pijitsirniq: “serving and providing for family and/or community.”

Pilimmaksarniq/Pijariuqsarniq: “development of skills through observation, mentoring, practice, and effort.”

Tunnganarniq: “fostering good spirits by being open, welcoming, and inclusive.”

Aajiliqatigiinni: “decision-making through discussion and consensus.”

Ganuqtuurniq: “being innovative and resourceful.”

Avatittinnik Kamatsiarniq: “respect and care for the land, animals, and the environment.”

(Gov. of NU, n.d.)

Western knowledge systems occupy a privileged place in Northern research; a balance between knowledge systems is essential

In Canada, discussions relating to research (including but not limited to Arctic and Northern science) have been firmly centred on the Eurocentric belief in the necessity and superiority of objectivity, rigour, and reproducibility (Steinhauer *et al.*, 2020). Often referred to as *Eurocentric*, *Western*, or *modern* science, this perspective is rooted in the acceptance (either implicit or explicit) and elevation of the colonial beliefs of objectivity and hierarchy (Wojciechowski, 2010; ITK, 2018a; Lavallee, 2020). Problematic impacts can occur where Western knowledge systems are elevated or privileged over Indigenous knowledge systems. In terms of research, these dominant practices have been found to diminish Indigenous Peoples, at times viewing them as bystanders to the research process or objects to be studied (ITK, 2018a).

Western knowledge systems are not inherently injurious, however. In the Panel's view, the problematic nature of Western knowledge systems has historically been in how they have been deployed as well as the cultures and systems that surround them. Western knowledge systems have provided, and continue to provide, value across the Northern research landscape. Technical innovations in environmental monitoring, for example, have improved the efficiency and efficacy of community-based monitoring initiatives and have aided in the development of foundational knowledge (e.g., SmartICE, 2021; Kutz Research Group, 2022). Thus, the Panel emphasizes the importance of Western knowledge systems to the Arctic and Northern research system—true benefit is gleaned when they are used in meaningful ways rather than as a means to supplant, silence, or conquer Indigenous knowledge systems. Many of the concepts, instruments, and methods that originate in Western thought are used widely across the Arctic science landscape by Indigenous and non-Indigenous people alike. What is required (but is not sufficient in and of itself) for an equitable and inclusive research system is a greater sense of balance, wherein Western knowledge systems co-exist respectfully and dynamically alongside Indigenous knowledge systems, in much the same way that Raven and Wolf do: two halves of a well-functioning whole.

Knowledge co-production and co-existence are critical to inclusive and collaborative Arctic and Northern research

The history of privileging Western knowledge systems has resulted in tension, disparity, and racism in the current Arctic and Northern research system. In contrast, a research system that is inclusive, collaborative, and effective has space and need for all forms of knowledge production. Respect for Indigenous knowledge systems, the co-existence of knowledges, and the co-production of new knowledge from the strengths of both Indigenous and Western knowledge systems should be the default framework for the Arctic and Northern research system in Canada. This meaningful interaction will benefit both researchers and research users, and it will help stop the perpetuation of colonialism as it is associated with Western research. Further, the co-production of knowledge lends itself to improved efficiency and efficacy in the research process (e.g., Carter *et al.*, 2019).

In many instances, Indigenous and Western knowledge systems include similar considerations, albeit from differing perspectives (Miner *et al.*, 2023). Often, these similarities are overlooked due to distinct methodological underpinnings; however, the Panel notes that balance between perspectives, especially where co-production of knowledge is involved, is achievable where these similarities are recognized. As such, the Panel emphasizes that recognition of, respect for, and engagement with this diversity of knowledges is needed to enable a more fulsome research development and review process. This includes different



Knowledge co-production “is the process of bringing together two different knowledge systems in true partnership and equity, to enhance, learn, and create new understandings on a specific topic. In this context, it specifically refers to bringing Arctic Indigenous Peoples’ knowledge systems and Western [knowledge systems] together” (Yua *et al.*, 2022).

perspectives and methodologies, ultimately resulting in higher-quality outcomes that increase Canada’s international standing in research and enhance knowledge production overall.

One example of successful knowledge co-production is the Land and Peoples Relationship Model developed by Indigenous Land planner and Dan Ke knowledge holder Joe Copper Jack (2020). This model is based on the three key laws of Respect, Care, and Share, as well as decision-making tools such as No Voice (i.e., “includ[ing] the perspective of all affected parties such as future generations, non-person relations and Mother Earth”) and Knowledge Stream Tree (Box 3.2). The Land and Peoples Relationship Model aims to be “a collaborative knowledge-building process that respects both Yukon First Nations’ Long-Ago Peoples’ Way and Western knowledge.” When implemented in decision-making processes, the model acts as a guideline, directing individuals to resolve issues and ultimately reach a consensus. However, it is important to note that, while the Land and Peoples

Relationship Model aims to actively engage with two different knowledge systems and includes “respect between people, where no knowledge system, gender, or group is superior to another,” the use of the No Voice Perspective and Knowledge Stream Tree as key decision-making tools centres Indigenous knowledges and uses them as the baseline (Jack, 2020).

Box 3.2 The Parable of the Knowledge Stream Tree

The parable of the Knowledge Stream Tree illustrates how different knowledge systems or worldviews can function collaboratively without privileging one over the other. The parable can be described as follows:

The watershed framework of the stream tree consists of tributaries (branches) that allow life-giving water (knowledge) to flow into the main waterway (trunk). As water is life, knowledge is sacred, and should be shared with care and respect. The area between the waterway banks, above the water, is the ethical space needed for meaningful dialogue to take place. A mountain stream with long ago peoples' knowledge on one side, and Western knowledge on the other side, respect each other's system. As one travels upstream, there will be certain places where crossing is possible. At these narrows, collaborative knowledge could be shared.

This method of co-production, which encourages individuals to seek out commonalities between the different knowledge systems, does not aim to merge knowledge systems or concepts but rather seeks out where interconnections can be made, in order to better resolve issues for all parties involved.

(Jack, 2020)

Another example of knowledge co-production is the Aajiiqatigiingniq research model developed and employed by the Aqqiumavvik Society (n.d.-a) in Arviat, Nunavut. The model is grounded in the IQ principle of aajiiqatigiingniq (Box 3.1), or “building agreement together through a group process,” and is composed of four stages:

- piliriqatigiingniq (building relationships/meaningful community engagement);
- inuuqatigiitsiarniq (building understanding);
- aivaqatigiit/uqamanggatigiit (lived experiences/personal data collection); and
- qanurtururangniq (validation/relationship consensus-building).

Aqqiumavvik Society (n.d.-a)

By using this model, the Aqqiumavvik Society aims to ensure a research process that is based on respect and trust, one involving the full commitment of researchers to improving well-being for all with their results (Ferrazzi *et al.*, 2019; Aqqiumavvik Society, n.d.-a).



Courtesy of 'My Word' Storytelling & Digital Media Lab

Harvesting and plucking partridge on the sea ice near Rigolet, Nunatsiavut, Labrador

Similarly, the Qaggiq model, developed by Janet Tamalik McGrath and Mariano Aupilarjuk, uses the metaphor of a qaggiq as a way of bringing people together and renewing relationships (McGrath, 2018). A qaggiq is a large iglu (snow house) built around the foundation of four smaller igluit (plural of *iglu*). The qaggiq represents a gathering place in Inuit culture and “is a space for ... renewing relationships, building skills through games; it is a place where stories and songs are shared, and community is affirmed” (McGrath, 2018). It is discussed by McGrath in much the same way as the Panel is using the metaphor of the community fire to encourage coming together in a good way. The Qaggiq model

emphasizes the foundations of Inuit knowledge as Nuna (homeland), uqausiq (language), unipkaat (living histories), and iliqqusiq (culture). By considering these four pillars in research with Inuit communities, the model supports the development and maintenance of relationships that are both meaningful and ethical (McGrath, 2018).

Sea ice monitoring is an example that highlights the value of knowledge co-existence. At large scales, changes to Arctic sea ice and the resulting impacts (in the Arctic and elsewhere) rely on satellite data, climate models, and atmospheric re-analysis datasets. Such research, deeply rooted in Western knowledge systems and approaches, provides great value to the national and international climate science communities. However, on a regional basis, where changes to sea ice must also be adapted to—and understood in relation to—the local ecosystem, the intersection of Inuit communities' knowledge systems with the Western knowledge system can, in the Panel's view, provide the greatest impact in terms of research value. For example, SmartICE, a community-based social enterprise, couples Inuit knowledge of sea ice with Western science instrumentation (SmartICE, n.d.). In so doing, SmartICE conducts community-based environmental monitoring that is meaningful to the communities that use the data and feed vital observations to the science community (Wilson *et al.*, 2021). Similar work using both Indigenous and Western knowledge systems is also being conducted in the study of Arctic ecosystems and wildlife (e.g., Breton-Honeyman *et al.*, 2021; Houde *et al.*, 2022; Kutz Research Group, 2022).

Balancing and harmonizing various knowledge systems and perspectives are often challenging; however, this need not be the case

From some Western perspectives, the view of Indigenous knowledge systems has been over-generalized through the (mis)representation of it as traditional knowledge, a body of data that is unchanged as it is communicated down from generation to generation. This view stems, in part, from some Western researchers grappling with concepts (including methodologies, evidence bases, and conclusions) that are unfamiliar (Battiste, 2002). However, it can also be attributed to the colonial desire for misrecognition (when the absence of recognition is no longer permissible). Misrecognition—the purposeful act of discrediting or minimizing—is an unbalancing force, much like Fox's attempts to be rid of light in the opening narrative of this report. Glen Coulthard, a Yellowknives Dene scholar, argues that, despite the increasing discourse of recognition within liberal society, “Canadian settler-colonialism remains structurally oriented around ... the dispossession of Indigenous Peoples of their Lands and self-determining authority” (Coulthard, 2014).

By ignoring the potential of the diverse and rich Indigenous knowledge systems, Western science further entrenches the colonial belief in the hierarchy of knowledge practices, wherein “traditional” may be used as a euphemism for “old” or “out-of-date” (Battiste, 2002). This context relegates it to a supporting, often culturally based role in disciplines such as natural or health sciences, which view *new* or *recent* as a prerequisite for accuracy. Ignorance about Indigenous Peoples and their knowledge systems acts overtly as a form of oppression and exploitation in those cases where Western knowledge systems or research explicitly categorize and value information according to “accepted” knowledge and that which is “other.” This oppression of one form of knowledge over another has been called *epistemicide* or “the systematic destruction of rival forms of knowledge” (Bennett, 2007), including “the killing of knowledge systems [as a whole]” (Hall & Tandon, 2017).

A holistic and contextual understanding of the diversity and breadth of Indigenous knowledge systems highlights how all knowledge systems, including Western-based views of knowledge, have limits and weaknesses. While there are important similarities across different knowledge systems, the competing epistemological frameworks are, in many cases, directly at odds with one another, with Indigenous knowledge systems “benchmark[ing] the limitations of Eurocentric theory” (Battiste, 2002). This disparity between the ways of knowing (and associated ways of teaching), combined with the uneven distribution of power and resources, has led to the marginalization and devaluation of Indigenous epistemologies. This inequity and disparity is part of a larger, systemic issue, however. In the Panel’s experience, many researchers are unaware of these systems of power at work. The recognition and respect of Indigenous knowledge systems at all levels, including the institutional level—and Indigenous Peoples’ right to their own knowledge systems—is a critical first step toward greater awareness and equity within the research system overall.

Research efforts based in Indigenous knowledge systems and led by Indigenous Peoples are particularly relevant in the Northern context and provide increased capacity, cultural security in terms of control, safekeeping, and ownership of data, as well as the elevation of Indigenous worldviews and values. Such programs exist and are finding success. For example, the *Qanuippitaa? National Inuit Health Survey* (QNIHS, n.d.) and the work of the Pikialasorsuaq Commission (2017) place Indigenous values, priorities, and teachings at the centre of their work. When Indigenous teachings are centred, they can produce valuable insights into relevant research questions while simultaneously “carving out space where practices which build self-determination strengthen” (Ballantyne, 2014).

Recognizing the Realities of Colonialism and Inequity in Canada

For Arctic and Northern research systems to move forward in Canada in a way that upholds UNDRIP and TRC objectives, a newfound sense of equity is required, one grounded firmly in a recognition of the realities of colonialism. As Czyzewski (2011) notes, “reconciliation will only be possible ... if racism is recognized as structural, pervasive, and ongoing; but is also addressed as impactful, and inherently linked to other forms of discrimination.” Accordingly, the Panel believes that an understanding of colonialism, and the ongoing impacts and inequities that stem from it, are important contextual elements necessary to comprehensively address the charge.



Indigenous Peoples have suffered from historic injustices as a result of, inter alia, their colonization and dispossession of their lands, territories, and resources, thus preventing them from exercising, in particular, their right to development in accordance with their own needs and interests.

(UN, 2007)

Although a full overview of the ill-treatment of Indigenous communities is beyond the scope of this report, the Panel highlights the importance of understanding Canada’s history and using that understanding as a foundation for more equitable and meaningful relationships between everyone in the research community and Indigenous Peoples moving forward. In the words of Donald Warne, a member of the Oglala Lakota Tribe in the United States, and a physician and Indigenous health scholar, “if we are ever going to get to equity, we have to walk through truth, even when it’s unpleasant. Even when it makes us uncomfortable” (UW SPH, 2019).

Colonialism has long existed in what is now known as Canada and these realities persist, negatively impacting Arctic and Northern research

The intense history of colonialism and the subsequent subjugation, domination, and exploitation of Indigenous Peoples in the Lands now known as Canada have been well documented. While this violence is undeniable and ongoing,⁸ it has been

8 The *Indian Act*, which is still in effect today (GC, 1876, 1985), as well as the *Indian Advancement Act* of 1884, granted the federal government the power to define what it means to be First Nations, extending to elements such as the development (or lack thereof) of critical infrastructure and education systems (Dussault et al., 1996; CIRNAC, 2013).

shown that governments have always systematically worked to normalize and socialize narratives of colonization, with “the official record of Canada’s past ... ignor[ing] and negat[ing Indigenous] People’s view of themselves and their encounters with settler society” (Dussault *et al.*, 1996).

Some policies still enforce the marginalization and alienation of Indigenous Peoples across the country. Physically, Indigenous Peoples and their communities were displaced from their traditional territories and required to move to pre-selected new locations determined by colonial authorities (Dussault *et al.*, 1996); Inuit in particular were forcibly removed from their traditional territories and ways of life, and relocated to permanent settlements (Dussault *et al.*, 1994; QTC, 2014; Anowtalik *et al.*, 2020; Audlaluk, 2020). Displacement was supported by policies such as the Ordinance Respecting Dogs—which resulted in the mass extermination of qimmiit (sled dogs) in Inuit settlements (QTC, 2014)—and residential schools, which inhibited Indigenous Peoples’ “ability to pass on traditional values to their children, imposed male-oriented Victorian values, and attacked traditional activities” (Dussault *et al.*, 1996).

Beyond the negative impacts of forced relocation and cultural policing, children within the residential school system were subjected to chronic neglect and repeated abuse. They were underfed and under-clothed in an unhealthy environment with little to no medical support (Dussault *et al.*, 1996; TRC, 2015), and they were forced to remain in the care of staff who physically, sexually, and emotionally abused them (Jack Anawak as cited in Hudson, 2022; Piita Irniq as cited in Li, 2021). Although the last residential school closed in the same year that the final report by the Royal Commission on Aboriginal Peoples was submitted (1996), the intergenerational trauma of residential school experiences are still felt in families and communities today (TRC, 2015).

In 1982, with the passage of the *Canadian Charter of Rights and Freedoms*, the rights of Indigenous Peoples were legally recognized and affirmed (GC, 1982). Despite this affirmation, however, they continued to find themselves living with the extreme negative consequences of Canada’s colonial era. In the North, this colonial legacy is especially prevalent. A comparative analysis undertaken by Inuit Tapiriit Kanatami (ITK) (Figure 3.2) shows that the social and economic inequities that Inuit in Inuit Nunangat face are in stark contrast to the realities of the general population of Canada. For example, the median individual income varies substantially between Inuit (\$23,485) and non-Indigenous residents (\$92,011).

SOCIAL AND ECONOMIC INEQUITY IN INUIT NUNANGAT

Many Inuit face social and economic inequities that impact our health and wellbeing

Inuit Nunangat

52% of Inuit in Inuit Nunangat live in crowded homes*¹



34% of Inuit aged 25 to 64 in Inuit Nunangat have earned a high school diploma¹



70% of Inuit households in Nunavut are food insecure²



\$23,485 The median before tax individual income for Inuit in Inuit Nunangat¹



30 The number of physicians per 100,000 population in Nunavut⁴



47.5% of Inuit in Inuit Nunangat are employed¹



72.4 years The projected life expectancy for Inuit in Canada †⁵



12.3 The infant mortality rate per 1,000 for Inuit infants in Canada.⁶

IMR

All Canadians

9% of all Canadians live in crowded homes*¹

86% of all Canadians aged 25 to 64 have earned a high school diploma¹

8% of all households in Canada are food insecure³

\$92,011 The median before tax individual income for non-Indigenous people in Inuit Nunangat¹

119 The number of physicians per 100,000 population in Urban Health Authorities⁴

60.2% of all Canadians are employed¹

82.9 years The projected life expectancy for non-Indigenous people in Canada⁵

4.4 The non-indigenous infant mortality rate per 1,000 for Canada.⁶

* Should not be compared with crowding data for previous years. Based on the suitability definition (whether the dwelling has enough bedrooms for the size and composition of the household). The previous figure was based on the number of persons per room definition.

† Should not be compared with previous life expectancy data. The figure is a national 2017 projection of life expectancy for Inuit. Previous figures were for 2004-2008 for all residents of Inuit Nunangat, including non-Inuit.

¹ Statistics Canada, 2016 Census, [crowded homes: 98-400-X2016163, high school diploma 98-400-X2016265, income: unpublished custom table provided to ITK, employment: 98-400-X2016266]

² Grace M. Egeland, *Inuit Health Survey 2007-2008: Nunavut* (St-Anne-de-Bellevue, QC: Centre for Indigenous Peoples' Nutrition and Environment, May 2010), 12.

³ Shirin Roshanfar and Emma Hawkins, *Health at a Glance: Food Insecurity in Canada* (Ottawa, ON: Statistics Canada, March 25, 2015).

⁴ Canadian Institute for Health Information, *Supply, Distribution and Migration of Physicians in Canada, 2014* (Ottawa, ON: Canadian Institute for Health Information, September 2015).

⁵ Custom table based on Statistics Canada's *Projections of the Aboriginal Population and Households in Canada, 2011 to 2036*.

⁶ Sheppard et al 2017, "Birth outcomes among First Nations, Inuit and Metis populations." *Health Reports* Vol. 28, No. 11

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Figure 3.2 Social and Economic Inequality in Inuit Nunangat

Results from a 2018 comparative analysis undertaken by ITK outlining the social and economic inequalities between Inuit living in Inuit Nunangat and people who live mostly in the Southern regions of the country. This infographic was provided by ITK and is an update from the figure appearing in ITK (2018b).

There are also substantial inequities in terms of educational attainment. Educational attainment rates in the North are low when compared to Southern Canada (StatCan, 2023a), and inequities also exist between Indigenous and non-Indigenous people (StatCan, 2023b). Overall, fewer Indigenous people attend university or other post-secondary institutions (StatCan, 2023c), or receive training in Western knowledge systems, which many bodies view as the prerequisite for research funding (Chapter 4). This gap in education is compounded by the fact that there is currently a lack of higher-education opportunities in the North (Chapter 7). Moreover, in its current form, the Canadian research system values certain (typically Western) ways of knowing over others; this is to the detriment of Indigenous knowledges, further entrenching the colonial legacy and harming Indigenous researchers and communities.

These examples represent only a small fraction of the inequities Indigenous Peoples in Canada experience, perpetuating the continued privileging of Western knowledge systems. Further, they illustrate how the policies and legislation governing Indigenous Peoples in Canada continue to uphold the legacy of colonialism and entrench racist outcomes.

Looking Forward

This chapter outlined key elements that the Panel considers to be the contextual foundation upon which Canada's Arctic and Northern research system is based. It began with an exploration of the different knowledge systems that frame Arctic and Northern research in Canada, as well as the opportunities and benefits of knowledge co-production between these different systems and the current barriers to achieving co-production. It next explored the colonial context of what is now known as Canada, highlighting some of the policies and practices that have entrenched social inequities, both past and present. This history of colonialism has, in large part, created the existing inequity between knowledge systems and the holders of varying knowledges, as outlined in the beginning of the chapter. Taken as a whole, Chapter 3 provides a foundational understanding of some of the values, relationships, and activities that encompass the Arctic and Northern research system—an understanding necessary to approaching the charge meaningfully.

With this foundation, and with the Panel's elements of transformational change (Chapter 2) as a guide, Chapters 4 through 7 explore critical components of the Arctic and Northern research system: funding, infrastructure, data, and education. These chapters examine these key aspects of the research system through an equity-centric lens, acknowledging and actively working against structural and ongoing forms of racism in order to truly be inclusive and collaborative.



Fuelling the Fire: Funding

*I like eating, too, you know.
And I miss half the things that
fall dead around here, because
it's so dim. Besides, don't you
find it a bit ... depressing?*

Qitsualik-Tinsley &
Qitsualik-Tinsley (2015)





Responsibilities Moving Forward

- A cohesive, long-term vision for Arctic and Northern research, jointly created by all actors, would enable more appropriate and effective investment.
- Ongoing monitoring of research practices—and their economic and social outcomes—by funders and decision-making bodies would enable the accountability of Arctic and Northern research.
- Funding programs that are flexible and tailored to the Northern context would support a more diverse population of researchers and allow for the time and resources needed for effective and accountable research, including essential relationship-building.
- Funders can promote Indigenous-led and culturally secure research by expanding eligibility criteria and ensuring that Indigenous Peoples' perspectives and priorities are represented within decision-making bodies.
- Shifting influence over research funding to Indigenous Peoples is critical for supporting Indigenous self-determination in research.
- Specialized funding streams accompanied by capacity-building would support Indigenous-led research in an accessible and culturally secure way.

Funding systems impact all aspects of the research life cycle—the priorities of funders dictate what type of research is undertaken, what activities are allowed, who gets to conduct that research, and what the outputs of that research need to be. Furthermore, funders (particularly public funding agencies) set standards and expectations for how certain research is done, imposing ethical values on research involving humans and animals.

This chapter explores the funding system and how it can support an inclusive, collaborative, and effective Arctic and Northern research system. It begins by examining how to use funding to fuel the fire in a good way by explicitly linking funder mandates to the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) across Canada, and to the Inuit Nunangat Policy where it applies. It then explores the concepts of justice and cultural security within research funding, particularly how current funding structures can be altered to better support Indigenous self-determination in research. This can be achieved by increasing capacity within funding institutions to support Indigenous-led research, and by shifting the responsibility for equitable and ethical oversight to

Indigenous communities themselves. The chapter then examines the extent to which the current system is accountable to the North and to Indigenous Peoples, in terms of appropriations related to Arctic and Northern research, and the socioeconomic outcomes of funded research. Finally, the Panel reflects on the accessibility of research funding, including eligibility requirements for accessing various funding streams, ease of application, flexibility in both awarding and maintaining funds, and the use of specialized funding streams as a tool to improve accessibility for specific groups. The Panel finds that shifting influence over funding decisions to Northerners and Indigenous Peoples, improving flexibility within funding structures, and expanding the pool of funding options directly aimed at Northern research—or Indigenous and Northern researchers themselves—could improve research accountability and accessibility of research funding for all.

Fuelling the Fire in a Good Way

The control that funding exerts over every aspect of the research system requires deep consideration of how ethics and values drive decision-making. Ensuring that the fire is fuelled in a good way—that funding abides by the rights of Indigenous Peoples as established in UNDRIP—is necessary to advance Arctic and Northern research in an effective, inclusive, and collaborative fashion. In the Panel's experience, research funding has long supported a narrow definition of research, rooted firmly in Western knowledge systems and approaches.

Much of the research funding in Canada stems from the federal government, including the Tri-Agencies (Box 4.1). The Tri-Agencies are publicly funded and responsible for ensuring that all funds are invested in a manner that provides demonstrable benefit to the people of Canada (GC, 2000; SSHRC, 2020; NSERC, 2022a). Accordingly, each Agency is tasked with examining research projects at every stage of the process to ensure funds are being used in an appropriate way during: the application phase (by determining which projects receive funding), the research phase (by regulating the use of funds and ensuring the project adheres to ethical conduct and research integrity guidelines), and the post-research phase (through the promotion of research findings to the public) (SSHRC, 2020; CIHR *et al.*, 2022; GC, 2022a; NSERC, 2022a). Yet, much as Raven could not see many of the tasty treats available, the Panel believes that, despite the efforts being made to ensure funded research is done in a good way, much is still overlooked.

Box 4.1 Primary Sources of Arctic and Northern Research Funding in Canada

A large portion of research funding in Canada comes from the federal government, often through the publicly funded Tri-Agencies. Each Agency (Natural Sciences and Engineering Research Council of Canada, or NSERC; Social Sciences and Humanities Research Council, or SSHRC; Canadian Institutes of Health Research, or CIHR) has a distinct mandate for evaluating research proposals and allocating funds that correspond to its specific area(s) of study.

Various government agencies and departments also conduct Arctic and Northern research through the operating budgets of their research groups, as well as by providing dedicated funding to external researchers (e.g., CIRNAC, 2021a; NRCan, 2021; ECCC, 2022a; GC, 2022b; NRC, 2022). In particular, Polar Knowledge Canada (POLAR) has a mandate to advance Canadian knowledge of the Arctic; it operates the Canadian High Arctic Research Station (CHARS) and facilitates relationships among other entities, both domestic and foreign (GC, 2022c). POLAR provides various funding opportunities to fulfill its research priorities, such as the Polar Knowledge Canada Fellowship Program, as well as the Northern Science and Technology Program and the Polar Knowledge Application Program (GC, 2022b). Support is also provided through the Northern Scientific Training Program (NSTP), which funds students across Canada to conduct research in the North (GC, 2022b). While programs such as these support Arctic research broadly, they are generally not Northern-led or well integrated into communities, in the Panel's experience. Externally, the federal government distributes funds primarily through the Tri-Agencies or funding organizations such as ArcticNet, which in turn distribute funds to researchers and organizations (e.g., ArcticNet, n.d.-a).

Other orders of government also fund research endeavours. Indigenous governments conduct and internally fund their own research by establishing dedicated research positions, or by commissioning or participating in environmental impact assessment work (e.g., The Firelight Group, 2022; Nunatsiavut Research Centre, n.d.). Additionally, territories and provinces operate and fund research activities, both internally and through partnerships with communities and academic institutions (e.g., Gov. of NT, 2022; Gov. of YT, 2022a). Funding can also come from private sources—for example, some philanthropic organizations contribute to Northern and Arctic research in Canada (e.g., MakeWay, n.d.; Weston Family Foundation, n.d.).

The Tri-Agencies and other government funders can fuel the fire in a good way by shedding light into the dark corners of the research system, directly linking their mandates to UNDRIP and the Calls to Action that emerged from Canada's Truth and Reconciliation Commission (TRC). For research concerning Inuit, this is consistent with the Inuit Nunangat Policy, which applies to all federal departments and agencies, acting as a guide in the "design, development and delivery of all new or renewed federal policies, programs, services, and initiatives that apply in Inuit Nunangat and/or benefit Inuit, including programs of general application, and to support Inuit self-determination" (GC, 2022d). Key here is the recognition of socioeconomic and cultural inequity facing Inuit in Canada, and the need to achieve equity through transformational change. Although there are no similarly expansive First Nations or Métis policies, the Panel is aware of the existence of community-level agreements and memoranda of understanding (MOUs), though most are not publicly available.

The right of Indigenous Peoples to develop and pass on their knowledges (UNDRIP Article 13.1) directly ties to the right to participate in decision-making related to their rights (Article 18) (UN, 2007). These rights reflect the Panel's view that Indigenous Peoples must have increased influence over the distribution of research funding as it pertains to Land, communities, and people. A genuine commitment to achieving equity through good funding governance in favour of Arctic and Northern Indigenous Peoples and their communities supports transformational change in the funding system.



UNDRIP Article 13: 1. Indigenous Peoples have the right to revitalize, use, develop and transmit to future generations their histories, languages, oral traditions, philosophies, writing systems and literatures, and to designate and retain their own names for communities, places and persons.

UNDRIP Article 18: Indigenous Peoples have the right to participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedures, as well as to maintain and develop their own Indigenous decision-making institutions.

Justice and Cultural Security in Funding

Nothing about us without us is the standard in Indigenous research, especially when it impacts Indigenous Peoples and their communities (e.g., ICC, 2022). The phrase is particularly important for research funding. Along with the organizations tasked with approving research licences (Chapter 5), funders hold considerable power; they dictate the type of research being funded, who is eligible to apply for and access funding, and what sorts of outputs are valued as the end results of research. In Canada, funders are also the avenues by which research is deemed *ethical* through the stipulation that certain types of research be approved by ethics boards (Chapter 5).

When it comes to research funding, in the Panel’s view, justice refers to processes and activities that support self-determination and thereby reconciliation, ensuring that Indigenous Peoples play an active decision-making role in determining what type of research is funded, and a leadership role in conducting the research itself. Justice and cultural security are particularly intertwined here; promoting self-determination in research and identifying more culturally secure research methods and projects can be jointly achieved by shifting decision-making power to Indigenous Peoples through practices such as targeted funding portfolios and Indigenous participation in funding bodies. Justice and cultural security in research funding also involve the elevation of Indigenous knowledge systems. In providing evidence for *Setting New Directions to Support Indigenous Research and Research Training in Canada: Strategic Plan 2019–2022*, Indigenous scholars have “emphasized that reconciliation in research also means reconciling Western scientific traditions with Indigenous worldviews and cultural practices, as well as recognizing and understanding the vast diversity that exists among Indigenous groups in Canada” (GC, 2019a).

An effective and inclusive research system involves greater Indigenous governance over research funding

Creating opportunities for Northern Indigenous Peoples to increase control over what type of research gets funded advances self-determination, emphasizes culturally appropriate methods and projects, and prioritizes topics of import to Arctic and Northern communities. The Inuit Tapiriit Kanatami (ITK) *National Inuit Strategy on Research* (NISR) identifies the key actions for advancing Inuit self-determination in research, including “when Inuit representational organizations

are engaged as partners in setting the research agenda, have equitable opportunities to access funding to conduct Inuit-led research, and are engaged as partners with researchers in the design, implementation, and dissemination of research” (ITK, 2018a). The Inuit Research Network, funded by CIHR (\$6.4 million over three years) and coordinated by ITK, exemplifies these goals (CBC News, 2022; ITK, 2023). The fund will be administered by ITK and granted to the four Inuit land claim organizations to “strengthen capacity for Inuit-led research and support existing and new research initiatives that address Inuit needs and foster inter-disciplinary connections” (GC, 2022e).

More generally, having dedicated bodies within funding agencies with the expertise needed to appropriately evaluate Indigenous research has been highlighted as a way to increase Indigenous oversight of research (Wong *et al.*, 2020; CCA, 2021a). The Indigenous Leadership Circle in Research, for example, was created to advise the presidents of the Agencies on the implementation of the interagency strategic plan and is composed of individuals recommended by First Nations, Inuit, and Métis scholars and community members (Oosthoek, 2022; GC, 2023a). Another initiative is the Reference Group for the Appropriate Review of Indigenous Research, which is composed of First Nations, Inuit, and Métis members who collectively provide advice on “ethically and culturally safe peer review processes;” it focuses on examining existing models of review, developing culturally safe protocols and policies, and analyzing capacity to increase the number of appropriately trained reviewers in culturally safe project evaluations (GC, 2020). A further step would be Indigenous review of research proposals within specific research funding programs (discussed below). In the Panel’s experience, groups such as these improve accountability; however, alone they are not enough to bring about the structural changes needed to create a truly equitable and ethical research funding system. Changes to research licensing (Chapter 5) can also help improve accountability and cultural security in research, for both domestic and foreign researchers working in Canada.

Specialized funding streams can effectively support Indigenous-led research

Programs that include special evaluation criteria and sustained funding for community-based research could be applied to better support Indigenous research (Gittelsohn *et al.*, 2020; Williams *et al.*, 2020; Wong *et al.*, 2020). There are several funding initiatives that support research at the regional level. One such

example is Inuit Qaujisarnirmut Pilirijjutit (IQP), a pan-Canadian Arctic research funding program that is the first and only “Inuit-led, governed, and directed research funding program” globally (ArcticNet, n.d.-a). Led by the four Inuit regions of Inuit Nunangat, funding support from IQP is targeted at research “for Inuit, by Inuit” without the need for formal academic affiliation (ArcticNet, n.d.-a, n.d.-b). This Inuit-centred perspective is supported by the IQP proposal review process. Proposals are first reviewed by a regional committee, then evaluated at the national level by the ArcticNet Inuit Research Management Committee (ArcticNet, n.d.-b). The committee is composed of representatives from the major governance bodies of the four regions of Inuit Nunangat (ArcticNet, n.d.-b).

In 2022, IQP provided approximately \$1.8 million in funding to successful research applicants, who received between \$40,000 and \$240,000 per project over two years (ArcticNet, n.d.-b). IQP funds are restricted to projects that are led by Inuit researchers, and the majority of funds go to Inuit communities and organizations (rather than individuals) (ArcticNet, n.d.-b). Proposal evaluation at both the regional and national scales ensures that research is culturally appropriate and benefits the region in which it is set to take place.

Another alternative funding mechanism is the Canada–Inuit Nunangat–United Kingdom Arctic Research Programme (CINUK), which launched in 2021 (FRQ, n.d.). A partnership among Fonds de Recherche du Québec, ITK, National Research Council Canada (NRC), Parks Canada, POLAR, and UK Research and Innovation, CINUK funds research focused on “changing Arctic ecosystems and the impacts to Inuit communities and beyond” (POLAR, 2022). All research teams applying to the CINUK program must consist of principal investigators from both the United Kingdom and Canada, with the latter encouraged to be a beneficiary of Inuit land claims or part of the Inuit Nunangat community (FRQ, n.d.). If they are not, the program requires that “an Inuit partner must be a funded co-investigator in the Research Team and involved from the outset in the co-development of the research proposal” (FRQ, n.d.).

As of October 2022, the total funding available through the CINUK program was approximately \$18.2 million (POLAR, 2022).⁹ For the 2021–2025 funding award period, 13 projects were chosen covering a variety of areas, including wildlife and ecosystem health, community health, and shipping (NERC, 2022; POLAR, 2022). Despite the program’s recognition of the importance of Inuit-led research, uneven funding amounts along with policies dictating how funds may be used are

9 Applicants in Canada are limited to a maximum yearly amount of \$150,000, with an additional yearly supplement of \$50,000 for Quebec residents (FRQ, n.d.). The total amount a project may receive cannot surpass \$600,000 over a three-year period. No annual funding cap is applied to U.K. applicants; however, an overall funding cap exists at £545,000 over the three-year period of the project (FRQ, n.d.).

perpetuating inequities between Canadian and British researchers. For example, providing honoraria is not an eligible expense under the U.K. guidelines (FRQ, n.d.); in the Panel's experience, this means Canada-based partners must use their funds to cover these essential costs, and any movement of money from collaborators in the United Kingdom to those in Canada is heavily taxed. Ensuring multijurisdictional and especially multinational funding initiatives are equitable requires mechanisms that provide a common philosophical and ethical approach to conducting research in the North.

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) provides targeted research funds directly to Northern Indigenous Peoples and communities. For example, monitoring of fauna and flora, determining the impacts of permafrost thaw, and projects to replace diesel fuel with clean energy have been funded with the goal of advancing Indigenous self-determination and leadership in climate solutions (CIRNAC, 2023). Another example is a partnership between Memorial University (MUN) and the Inuit Circumpolar Council (ICC) to create the Qanittaq Clean Arctic Shipping Initiative (ICC, 2023). The project—funded by the Canada First Research Excellence Fund at \$91.6 million over seven years—is intended to address issues around Arctic shipping and related environmental and community impacts (ICC, 2023). On a smaller scale, the Nunavut Wildlife Management Board funds wildlife research projects undertaken by non-governmental organizations and individuals (e.g., hunter and trapper organizations) through the Nunavut Wildlife Studies Fund (NWMB, n.d.-a). This fund encourages Inuit organizations to lead research projects that specifically address community-identified wildlife management needs (NWMB, n.d.-b). The funding recognizes the unique needs of research in the North by allowing expenditures for community contracts, honoraria, fuel, shipping, and translation (NWMB, n.d.-b).



Courtesy of Kimberly Fairman

Shoreline near Taloyoak, Nunavut

Allowing Indigenous communities to decide the level of partnership with external research entities is another method by which self-determination can be supported. The Government of Yukon COVID-19 Recovery Research Program is open to a wide range of applicants, including all orders of government, Indigenous organizations, universities, businesses, and individual researchers (Gov. of YT, 2022b). Crucially, this program recognizes the spectrum of collaboration and partnership reflected in research, and requires that applicants place themselves in one of three categories: Indigenous-led, partnership-based, or researcher-led (Gov. of YT, 2022b, n.d.-a). These categories of application are evaluated using different criteria to reflect the differences in values or contexts inherent to the

various modes (e.g., level of community connection) (Gov. of YT, n.d.-a), and to emphasize the critical importance of community engagement at the onset of research endeavours (Gov. of YT, n.d.-b).

Private funders also provide specialized funding streams for Northern research. Organizations such as MakeWay have dedicated programming for the North, with initiatives spanning sustainability, Indigenous cultural resurgence, and community-led environmental monitoring and stewardship (MakeWay, n.d.). These funds are largely targeted at community initiatives that may engage with research, many of which are not eligible for funding through the Tri-Agencies or other academic-oriented sources. Large philanthropic donors such as the Oak Foundation or the Pew Charitable Trusts provide funding to organizations that focus on Northern priorities (e.g., Oceans North), which then further fund specific community or academic projects (Oceans North, 2021). The Arctic Inspiration Prize (AIP) is another key philanthropic funding source for projects beyond research, supporting Northern leadership in “education, sustainable housing, health, performing arts, Traditional knowledge, language, and science” (AIP, n.d.-a). Each year, \$3 million in seed money is awarded to novel projects, which must be led by a Northerner and primarily benefit the North (AIP, n.d.-a, n.d.-b). Diversity within project teams is encouraged so that they might include community organizations, Elders, youth, private sector companies, and scientific partners (AIP, n.d.-b). However, the AIP also requires buy-in from partners and team members, in the form of in-kind or cash contributions totalling at least 20% of the AIP request (AIP, 2023)—this limits the participation of institutions or individuals lacking adequate funds in the first place.

Critical Indigenous research priorities can only be addressed through transdisciplinary and collaborative approaches to funding and research

Many research topics in the North are inherently transdisciplinary,¹⁰ requiring collaboration among Indigenous groups, academics, governments, and other actors. The holistic nature of Indigenous knowledge systems—and, by proxy, Indigenous research—does not often fit squarely within any one academic stream. Applying for funding through the Tri-Agencies imposes restrictions, forcing applicants to tailor their research questions to fit into the focus of the targeted Agency. Canada’s funding support system, in short, has been criticized for not being well designed for multi-, inter-, and transdisciplinary approaches, which are increasingly necessary to respond to critical challenges (GC, 2023b).

10 *Transdisciplinarity* refers to the “integration of knowledge from different science disciplines and (non-academic) stakeholder communities” (OECD, 2020).

In the Panel's experience, it is difficult to obtain funding when proposed research does not neatly fit within the established silos; this can undermine the self-determination of Indigenous researchers. Even where multi- or transdisciplinary proposals are accepted, reviewers must assess them relative to more traditional proposals in competition and may not be well equipped to determine proposal quality or judge applicants external to their disciplines (CCA, 2021a). Progress is being made, however; the New Frontiers in Research Fund has held competitions outside of Tri-Agency boundaries to support interdisciplinary and trans-sectoral research, including for climate change mitigation and adaptation research for vulnerable groups (CRCC, 2023). All eligible projects "are required to partner with [a] participating community or communities in the co-creation, implementation and ownership of the research and outcomes, and to develop approaches related to policy implementation and knowledge mobilization" (CRCC, 2023).

There is evidence of successful transdisciplinary programs operating across governments. For instance, the Northern Contaminants Program (NCP) is a long-term federal government initiative based on meaningful, ongoing collaboration that has been effective in achieving its goals (GC, 2018a). The NCP investigates Arctic contaminants in the context of health, science, and communication and is run by a committee that includes representatives from the Council of Yukon First Nations, the Dene Nation, Fisheries and Oceans Canada (DFO), Environment and Climate Change Canada (ECCC), Health Canada, ICC, ITK, and the territorial governments. The NCP was created in 1991 as a response to elevated levels of contaminants in plants and animals comprising the traditional diets of Northern Indigenous Peoples. Transdisciplinary research is a key facet of the NCP, where scientists with expertise in contaminants collaborate with experts in natural and social sciences, community-based monitors, and Indigenous knowledge holders. Collaborations specifically related to climate change, human health, and communications are encouraged, as are international partnerships (GC, 2018a). In the Panel's view, similar transdisciplinary and collaborative approaches would help address critical research gaps, such as the health effects of climate change.

Accountability and Accessibility in Funding

In the context of research funding, accountability encompasses a range of different concepts. It is concerned with *who* research funding and funded research is accountable to, including Northerners and Northern Indigenous communities, researchers within Canada, the global research community, and residents of Canada

more broadly. Crucially, accountability asks whether the research funding system is achieving its stated goals and being evaluated appropriately. Accountability further encompasses questions about *where* money is going, specifically, Who is being funded? and What proportion of funding stays with Indigenous Peoples and in Northern communities? Furthermore, measuring how much money is spent on Arctic and Northern research is critical for understanding where Canada stands in terms of its international responsibilities and commitments to advancing Northern research. Accessibility in research funding also concerns itself with questions of how easy the application process is and how the current system exacerbates certain challenges, such as limited capacities and resources.

Reflecting the collaborative nature of Arctic and Northern research includes prioritizing social accountability in research evaluations, processes, and outcomes

The current funding system is largely based on non-Indigenous and Southern priorities. Interpretations and the subjectivity of the benefits of research vary greatly among groups; for example, citation numbers and bibliometrics are highly valued research outputs in academia but perceived to have little or no relevance to Indigenous Peoples (Bainbridge *et al.*, 2015; Gittelsohn *et al.*, 2020). Indigenous Peoples, however, consider impacts, ethical positions, and tangible benefits (e.g., solutions meaningful to their lives) or intangible aspects related to cultural preservation, concepts of well-being, or translation of knowledge to future generations (Bainbridge *et al.*, 2015). Although many Western researchers value tangible benefits for the Indigenous Peoples with whom they work, the funding system does not reward these outputs at the same level as more standard metrics.

Currently, funders assess the scientific merit of research through evaluation criteria oriented around the specific objectives of individual programs; in most cases, however, publications and citations are more highly valued than other types of contributions (CCA, 2021a). Traditional metrics for evaluating the impacts of research on society may not be designed to capture the value of Indigenous research, which prioritizes local community impacts over society more generally (Gifford & Boulton, 2007; Gittelsohn *et al.*, 2020). It has been recommended that the federal funding system review its practices for merit review and strengthen guidelines to “ensure that researchers are accountable to Indigenous [Peoples and their] communities, and that First Nations, Métis and Inuit knowledge systems ... are recognized and contribute to scientific/scholarly excellence” (GC, 2019a). The Panel stresses that relationship-building is a positive and desired outcome in and of itself, enabling future research relationships and enriching experiences for all involved.

Many researchers working on collaborative projects with Northern Indigenous communities understand the importance of broader knowledge sharing. One Southern PhD student working in the North has noted that:

this type of work requires extensive consultation, collaboration, multiple workshops, and plain-language summaries between transdisciplinary research partners. In the last year and a half, we have met the Hunters and Trappers Committee 11 times; the amount of information sharing this project requires is much higher, and so too are the resources and time necessary to effectively and ethically implement this collaborative research.

K. Ovitz, personal communication (2022)

Through the application of Inuit-centred methodological frameworks—such as the Qaggiq model (McGrath, 2018), the Sikumiut model (Wilson *et al.*, 2020), and the Aajiiqatigiingniq research methodology (Aqqiumavvik Society, n.d.-a)—critical dialogue and reflection are promoted in relation to the ways cross-cultural research teams can participate in relational accountability based in Inuit context and values (Healey & Tagak Sr., 2014; Ljubicic *et al.*, 2022). These models, however, demand time, effort, and fundamental shifts in thinking if they are to be implemented in respectful and reciprocal ways. Many institutional schedules do not allow researchers sufficient time to appropriately engage in Indigenous research (Gittelsohn *et al.*, 2020). In the Panel's experience, this can lead to researchers approaching their work with little to no understanding of the North or without engaging in the work needed to create meaningful relationships.

This inability to engage in research in a good way is a common concern among many researchers who, despite a desire to work respectfully with Indigenous communities, are pressured by deliverables associated with academic deadlines (Gittelsohn *et al.*, 2020). For example, one former post-doctoral fellow at the MUN Labrador Campus noted that “trying to finish a degree places you on a timeline that might not align with community work. You need a lot of time to dedicate to relationship building and doing the work properly, and this time is often not afforded to you” (D. Borish, personal communication, 2022). In the Panel's view, more flexible timelines for deliverables would allow researchers to actively solicit feedback from the communities they are working with, in order to ensure outcomes are beneficial and align with community priorities.

Instead of producing academic articles or monographs as the outputs of doctoral research, some programs are proposing alternative, non-traditional thesis products. For example, the University of British Columbia's Public Scholars Initiative supports doctoral research that contributes to the public good and diversifies scholarly outputs while encouraging engagement with sectors outside the academic sphere (UBC, n.d.). Contributions such as interactive websites, policy

papers, and teaching syllabi are eligible products of a PhD thesis (UBC, n.d.). Similar approaches for valuing the creation of outputs beneficial to Northern Indigenous Peoples and their communities can appropriately centre the work put in by researchers trying to work in a good way. For example, graduate degrees in Arctic and Subarctic Futures at MUN require that students partner with Northern and Indigenous communities or organizations to ensure their research meets community needs and priorities, or contributes more broadly across Labrador and the North (MUN, n.d.-a). The outputs of these projects are encouraged to be accessible and useful to partnering communities.

Furthermore, generating a publication record is more challenging for Southern-based researchers who spend significant time engaging with Indigenous communities and building necessary relationships, compared to those who do not (Gewen, 2021). In the Panel's view, valuing research impacts and outputs outside of the norm helps recognize the additional work of relationship-building and improves benefits for Indigenous communities that may be participating in or leading research projects. Improved monitoring of research outcomes with targeted inclusion of social and cultural indicators, featuring diverse perspectives, can be used to help evaluate the current system and create pathways for improvement.

Linking funding to tangible outcomes is another way Arctic and Northern research can remain accountable to Northerners. In the Panel's experience, research is sometimes used as a replacement for long-term, sustained funding and associated action in policy and operations; repeated calls for research projects on similar topics can instead be channelled into sustained funding for Northern communities, so they can conduct critical research themselves on topics of high priority, or implement policy to act on existing research. For example, the CIRNAC Indigenous Community-Based Climate Monitoring Program funds community-led projects that monitor the effects of climate change (CIRNAC, 2021b). This program is funded for 10 years starting in 2018 (at \$6 million per year), and supports activities such as the development of a monitoring plan; the acquisition of monitoring equipment; communications and outreach; data management; and training of community members (CIRNAC, 2021b). On a larger scale, long-term campaigning by Indigenous institutions such as the ICC has resulted in the banning of persistent organic pollutants (POPs) through the *Stockholm Convention on Persistent Organic Pollutants* (ICC, n.d.-a). Ongoing monitoring of existing and novel POPs is now conducted through the NCP with the goal of reducing and eliminating contaminants throughout the North (ECCC, 2023).

Providing dedicated funds for training and capacity-building for researchers can reduce research fatigue within communities

Indigenous people, especially Elders and Indigenous knowledge holders, experience a high volume of requests to collaborate and participate in research to varying degrees (GC, 2019a). The elevation of community-based research and the co-production of knowledge comes with a risk of potential maladaptation, contributing to research fatigue brought on by lack of coherence among various projects, duplication of data collection and engagement processes, or extension of significant resources on projects that are ultimately unfunded (Ford *et al.*, 2016). One method researchers from Southern institutions use to minimize research fatigue within communities is to rely more heavily on the participation of youth. For example, the Arctic Corridors and Northern Voices project (which involved 14 communities across Inuit Nunangat) found that youth cultural liaisons could pre-emptively answer general questions that are often repeated across research projects, allowing participants to focus on more specific questions (Carter *et al.*, 2019). Engaging youth also allowed the research team to better understand community context and Inuit cultural protocols, resulting in more respectful and effective communication (Carter *et al.*, 2019). No matter the strategy, however, the Panel believes that the level of engagement needed to conduct community-based research demands transformative changes in how the academic system functions, with an emphasis on training and capacity-building.

Furthermore, some research timelines do not enable communities to meaningfully engage, and not all proposed external projects can be undertaken because of a lack of community capacity, even if they are ethical and useful for the community (GC, 2019a; Yua *et al.*, 2022). Creating dedicated, full-time research coordinator positions within communities could provide a sustainable path forward (Brunger & Wall, 2016), while dedicated core funding to address administrative costs would allow communities to more easily undertake their own research (GC, 2019a). Gaps in funding timelines also increase challenges and can be a deterrent for Indigenous communities engaging in research. End-of-project funding termination does not lend itself to maintaining relationships, or to monitoring activities, which can lead to burnout (Gittelsohn *et al.*, 2020). Providing bridge funds to cover the span of time between funding cycles can ease the burden on those participating in research (Gittelsohn *et al.*, 2020).

A long-term vision for Arctic and Northern research would expand coordination among research entities and funders, reduce overlap, and improve accountability to Northerners

Canada’s research support system is significantly fragmented, with the Tri-Agencies and other entities often working on similar topics but with uncoordinated mandates, and with a lack of clarity on respective institutional responsibilities (e.g., NRCan, 2019; ECCC, 2022b; DFO, 2023). This can lead to substantial administrative burdens for researchers (GC, 2023b). The fragmentation is reflected in the sheer number of agencies and organizations supporting research at the national level, lending complexity to the landscape of Arctic and Northern research in Canada (Box 4.1). In the Panel’s experience, such program distribution and lack of coordination prevent a full understanding of the true amount and direction of Arctic and Northern research funding, adding further difficulty in determining future steps for improvement.



Courtesy of Naomi Dedon/Yukon University

Yukon River near Whitehorse, Yukon

In the Panel's view, a long-term vision and framework for Arctic and Northern research could enable coordination among various research entities and funders, reducing overlap and improving accountability. Furthermore, dedicated Arctic and Northern science funding streams that include the input and influence of Northern Indigenous Peoples could be used to focus and harmonize research on critical topics. For example, the Navigating the New Arctic (NNA) program administered by the U.S. National Science Foundation, though no longer accepting new applications, is intended to "[tackle] convergent scientific challenges in the rapidly changing Arctic, that are needed to inform the economy, security and resilience of the Nation" (NSF, 2023). Canada could implement a similarly targeted funding pool to advance Arctic and Northern research, particularly for transdisciplinary topics that do not fit within Tri-Agency silos. There is also opportunity to learn from the challenges faced by the NNA to ensure better knowledge co-production and collaborative research with Indigenous Peoples (e.g., Bahnke *et al.*, 2020, 2021). The NNA request for proposals process was criticized for not allowing sufficient time to build relationships with communities, and there was a lack of coordination with existing projects led by the communities themselves (Bahnke *et al.*, 2020). Most critically, Tribes lacked capacity to apply for these funds and were not part of the grant design and review processes (Bahnke *et al.*, 2020, 2021); any such program in Canada would require strong participation from Indigenous Peoples to be truly equitable and inclusive. This is supported by the *Advisory Panel on the Federal Research Support System* report, which emphasizes the need for representation from the Indigenous research community:

For Canada to lead the pack in the global science and innovation race and address key societal challenges, we need to foster a truly inclusive research environment. In particular, addressing complex problems requires a broad range of perspectives and experiences. Achieving this necessitates eliminating barriers to entry and success.

GC (2023b)

Adjusting eligibility criteria within existing funding structures can promote inclusivity and enable strong partnerships

A key barrier to inclusive research is that Indigenous Peoples, institutions, and research organizations are often ineligible for existing funding (GC, 2019a). This results in the majority of federal research funding being unavailable to organizations outside academia, which means that academic and largely Southern-based researchers can acquire funding and prosper both professionally and economically, while Indigenous Peoples are considered a source of data (AILC, 1999 as cited in FNIGC, 2016). While there are some dedicated funding

opportunities available to communities and organizations, there are few avenues to access funds from the Tri-Agencies for those not associated with an academic institution. These challenges are summarized in the *Setting New Directions to Support Indigenous Research and Research Training in Canada* report:

Current funding models were seen as enabling institutions to control the research agenda and further enabling the extraction of data from Indigenous communities with inadequate attention to potential negative impacts. Indigenous organizations with a research mandate seek eligibility criteria that recognize Indigenous ways of knowing, and called for more transparency and accountability in the adjudication of funding proposals, including appropriate mechanisms for verifying Indigenous identity.

GC (2019a)

This issue was also raised in the report released by the *Advisory Panel on the Federal Research Support System*, in which the authors recognized the need to create pathways to help the federal government work effectively with Indigenous partners, as well as territories and provinces (GC, 2023b). Although there is great value in maintaining rigorous scientific evaluation of research in order to adhere to international standards of academic credibility, the Panel emphasizes that this approach should stand *alongside* new pathways for welcoming Indigenous research methodologies.

In the Panel's experience, on an individual level, a lack of Western academic credentials precludes collaborators such as Elders and Indigenous knowledge holders from being listed as co-applicants for certain streams of funding and being appropriately compensated for their time. There is some progress being made, however: the Canada Research Coordinating Committee has been working with Indigenous Peoples to understand their research needs, and the Government of Canada intends to revise eligibility guidelines to ensure support for Indigenous research organizations (GC, 2019a), at least in terms of access to CIHR project grants (CIHR, 2023). When it comes to expanding accreditation, the Yukon University collective agreement recognizes Indigenous knowledge holders as experts in their own right and does not require a master's or doctoral degree for assistant professor, associate professor, or professor appointments (YukonU, n.d.-a). Instead, appointments are made after applicants' home communities confirm their qualifications. Knowledge holders' experience may stem from "lived experience; active and lengthy participation in Indigenous forms of self-determination and governance, cultural structures, and processes; and a careful study of and reflection on their philosophical underpinnings" (YukonU, n.d.-a). Other examples include the novel funding streams of CINUK and IQP as discussed earlier.

Northern research institutions cannot achieve their full potential as leaders in Arctic and Northern research without additional funding

In general, the total value of funding amounts from the Tri-Agencies to Northern post-secondary institutions is at or below the million-dollar-per-year mark, with the exception of large investments made by CIHR in 2019 and 2020¹¹ (CIHR, 2022; NSERC, 2022b; SSHRC, 2023). Furthermore, there are fewer resources available for the development of research grant proposals and the administration of research funding at Canada's Northern post-secondary institutions; many Southern universities host research administration offices and staff whose express purpose is to aid researchers in applying for, managing, and renewing grants (Ries, 2016; Acker *et al.*, 2019; Reardon, 2021). These offices recognize the complex processes, rules, and regulations associated with research funding and provide guidance on how to comply with them (Reardon, 2021). At the time of this report's writing, none of the three post-secondary institutions fully based in Northern Canada (Aurora Research Institute, Nunavut Arctic College, Yukon University) have dedicated capacity to support proposal or grant development, or grant administration. This means that, even before a funding proposal is submitted, Northern institutions are disadvantaged, since the burden falls to individual researchers.

Similarly, these institutions have limited resources to dedicate to “prioritizing research leadership, capacity development and research infrastructure (equipment and research space) in support of student learning and experience,” and inadequate internal capacity to meet the needs of Northerners and increasing research demands from both the North and South (Bennett *et al.*, 2022). In the Panel's experience, this impacts the ability of Northern institutions to compete for and secure research funding and has cascading effects on other responsibilities held by these institutions (e.g., the development of complementary approaches to culturally appropriate research ethics that are also Tri-Agency-compliant).

In 2020, the Minister of Northern Affairs convened the Task Force on Northern Post-Secondary Education with a mandate to investigate ways of improving post-secondary education in Northern Canada (Bennett *et al.*, 2022). In reference to research funding, a joint submission to the task force from Aurora College, Nunavut Arctic College, and Yukon University indicated that greater resources from funders are required to aid these institutions in enhancing research leadership, developing capacity, and improving research infrastructure to support students. Another joint submission from Aurora College, Collège nordique francophone, and the Dechinta Centre for Research and Learning emphasized that

¹¹ These five-year operating grants went to regional health centres: \$3.5 million to the Qaujigiartiit Health Research Centre (NU) in 2019, \$3.3 million to the Institute for Circumpolar Health Research (NT) in 2019, and \$5.2 million to the Yukon SPOR SUPPORT Unit (YT) (CIHR, 2022).

“Northern research ought to be conducted primarily by Northerners and that the results and benefits of research should be shared locally” (Bennett *et al.*, 2022). This submission supports the request for the federal government to review funding guidelines in order to be more inclusive of Northern priorities and Indigenous knowledge systems, and that Southern institutions receiving funding must also invest in the North (Bennett *et al.*, 2022). True support of Northern institutions includes investments in infrastructure (Chapter 5) and education (Chapter 7).

The task force recommendations contain a request for federal funders to expand eligibility requirements “to include Northern post-secondary institutions and Northern and Indigenous research organizations in funding opportunities” (Bennett *et al.*, 2022). Structural barriers and inequities disqualify many of these institutions from receiving funding from federal entities in the same way as counterparts in the South. By significantly adjusting eligibility requirements, funding can better address Northern priorities and needs while directly engaging Northerners and Indigenous research organizations that are best placed to produce “desirable, accessible, usable, and timely research for Northern and Indigenous communities and regions” (Bennett *et al.*, 2022).

Outside of the Tri-Agencies, the Canada Foundation for Innovation (CFI) has launched the Northern Fund to improve access to research equipment and associated logistical needs for Northern researchers and communities (CFI, 2023). Crucially, these funds must be linked to research priorities identified by Northern communities, and the projects themselves will be created, managed, and led by Northern institutions. CFI intends to invest \$25 million over five years for building, operating, and maintaining research infrastructure in the North. This program sets aside dedicated funds for associated costs such as shipping, repairs, paying the salaries of technicians who set up equipment, renovating spaces to house equipment, and developing the proposal, including allowing expenses for travel, accommodation, and grant-writing support for applicants. However, only 50% of the eligible costs are covered; the remainder must be provided by the applicant or other funding partners (CFI, 2023).

Streamlining and simplifying funding applications reduces the burden on individuals and communities

Typical grant application processes have been criticized for placing a large burden on both applicants and reviewers across the board (CCA, 2021a). Large application packages with lengthy proposals demand additional time for assembly on the part of candidates, while those reviewing proposals are subject to fatigue and large

time investment due to the volume of proposals (CCA, 2021a). The time and resources spent compiling applications includes both preparing a suitable research question and fulfilling administrative requirements (e.g., Herbert *et al.*, 2013); the former component has intellectual merit and can be the result of community or researcher collaboration, while the latter takes substantial time with limited benefit for the applicant (Roorda, 2009).

In the Panel's experience, the existing system of public-sphere grant applications places a high burden on Indigenous researchers and communities, where capacity is lacking to expend a great deal of effort to create these applications. This issue has been recognized specifically in the context of Indigenous research, and simplification of application procedures has been recommended to lessen administrative burdens for Indigenous organizations and individuals (Wong *et al.*, 2020; Doering *et al.*, 2022). Canada's strategic plan to increase Indigenous research capacity explicitly recommends that tools and resources be built to make understanding and applying to funding programs more user-friendly, largely through the simplification of language and administrative processes (GC, 2019a).

When creating accessible funding application processes, other organizations have emphasized the importance of a relational approach. For example, Pawankafund, which directly supports community-led Indigenous organizations worldwide in rejuvenating and recovering Indigenous knowledge systems, will “go the extra length to ensure that the application process is accessible and feasible” (Pawankafund, n.d.). The application process for IQP similarly allowed for applications in oral or alternative formats (in English, French, or Inuktitut); moreover, because specific research priorities were not predetermined, Inuit communities were able to identify their own (ArcticNet, n.d.-c). Applying a relational approach employs varied and novel types of funding application processes, which can cater to the specific preferences of the applicant and the context for the proposed research.

Greater flexibility in research funding acknowledges Arctic and Northern research realities

In the Panel's experience, those evaluating the funding needed for effective Northern research are often unaware of its context and challenges. As noted in *Setting New Directions to Support Indigenous Research and Research Training in Canada*, “research conducted in remote communities in Canada, and notably in the ... North, generates substantial additional costs and time commitments, which require special consideration for funding and supports” (GC, 2019a). A lack of understanding of these factors presents a barrier to conducting Arctic and Northern research in a good way.

As noted, longer funding timeframes and changes to allowable expenses have been highlighted as methods to improve support for Indigenous research (Wong *et al.*, 2020; CCA, 2021a; Doering *et al.*, 2022). Flexibility in funding arrangements, such as those prompted by the COVID-19 pandemic (e.g., SSHRC, 2021; NSERC, 2022c)—namely, grant extensions that allow researchers to lengthen the deadline for spending funds—is one method to help address the complexity and unpredictability of conducting research in the North. Allowing for longer timeframes for community-led or collaborative research, as well as adjusting the timing of milestones or deliverables, could accommodate for the realities of Arctic and Northern research (e.g., Moore *et al.*, 2017; CCA, 2021a).

Community engagement, relationship-building, and salaries for support staff and external aid (e.g., technicians, Elders, community members) are all important research components that are sometimes not covered by funding packages (Gittelsohn *et al.*, 2020; Williams *et al.*, 2020). Sharing resources with community partners can additionally be challenging due to the requirement that indirect funds (e.g., overhead) be used by institutions, not researchers or community groups. Although Tri-Agency grants do not generally come with the stipulation of indirect cost payment (GC, 2022a), in the Panel's experience, other funding sources funnelled through universities can result in significant overhead demands that take considerable time and effort on the part of researchers to negotiate down. Ensuring that funding can be used for honoraria and hospitality (e.g., GC, 2022a) is also critical to align with and respect cultural protocols and customs. For example, serving food at community meetings and gatherings honours cultural practices, but some funding streams do not consider it an eligible expense (Gittelsohn *et al.*, 2020). Funders can additionally provide dedicated funding envelopes for living wages for Indigenous Peoples, including Elders and Indigenous knowledge holders, as well as funds for building capacity within communities to support research (Williams *et al.*, 2020).

The use of “people-based” awards, where funding is provided to researchers to be put toward one or more projects of their choice (and that allows for short-term strategic shifts), has been suggested as a flexible funding approach (OECD, 2018). For example, the ArcticNet Northern Research Leaders Program, which “supports pillar research programs and funds the recruitment of research leaders” at post-secondary institutions in the North (ArcticNet, n.d.-d). Another example is IQP, where researchers can apply to put up to 15% of their budget toward research support funds that can be used for many of the above-mentioned uses (ArcticNet, n.d.-b).

In some situations, philanthropic sources of funding provide more flexibility than government funding, which is seen as more bureaucratic and difficult to access. For certain organizations that are ineligible for Tri-Agency funds, “the philanthropic community is much easier to work with in terms of applying, reporting, and flexibility, which is key for certain types of work. Many challenges will come up requiring a change in direction which is difficult or impossible with government or university-based funding” (unnamed Northern-based researcher, personal communication, 2022). In the Panel’s view, this does not indicate that those seeking research funding should increasingly look to philanthropic organizations but that all research funders improve accessibility by adopting more flexible practices.

Some programs do offer supplementary funds to address the inherent logistical challenges with conducting research in the North. For example, the NSTP operated by POLAR defrays costs for such things as transportation, accommodation, shipping, and translator fees for Canadian students enrolled at Canadian universities (GC, 2023c). The Polar Continental Shelf Program also provides logistical support for Northern research, including coordination of transportation, shipping, field equipment loans, and other related costs (NRCan, 2023). Researchers from governments, universities, and Northern research organizations are all eligible to apply, with special consideration given to projects involving Indigenous knowledge systems (NRCan, 2023).

Better and more consistent accounting of all funding sources would enable greater targeting of resources and support the case for increased funding for Arctic and Northern research

Funding for Arctic and Northern research comes from a variety of places in Canada and abroad, with no single catalogue of sources available. Data are often inconsistently labelled as Northern or Arctic and, in many cases, cannot be disaggregated by the location of the recipient. This makes it impossible to accurately account for all funding streams contributing to Arctic and Northern research. As the Panel could not determine the total amount of funding spent on Arctic and Northern research in Canada, it could not directly compare funding levels to other areas of interest for Canada. Indeed, providing a baseline for the resources devoted to Northern research would be valuable given the urgency of addressing climate change, and human and environmental health in the North.

Despite the paucity of data, some research has been done to compare the funding of Arctic research domestically and internationally. Ibarguchi *et al.* (2018) found that, between 2003 and 2014, Arctic and Northern research proposals received, on average, less than 1.5% of the total annual budget of each Tri-Agency and no greater than 3% in any year, including during the most recent International Polar

Year (2007–2008). This trend does not appear to have changed since 2014—between 2015 and 2020, spending on Arctic research by NSERC added up to ~1% of the Agency’s total investments.¹² Similarly, CIHR and SSHRC spending on Arctic research was ~1.3% of each of their total awards spending. In the Panel’s view, stagnant spending on Arctic and Northern research is concerning; multiple reports have highlighted the critical issues occurring in the North (e.g., climate change), with acute and far-reaching effects for both Northerners and other residents of Canada (e.g., Meredith *et al.*, 2019; IPCC, 2023). Investments in research overall have stagnated in Canada, signalling a broader issue with how research is funded in Canada compared to other countries (GC, 2023b).

The federal government reports on how much money is spent on science and technology, including for research and development (R&D) and related scientific activities (RSAs) (StatCan, 2022a).¹³ These data allow for the separation of expenditures by organizations located in the territories (StatCan, 2022b). In the case of Canada as a whole, most funds for science and technology go toward R&D. In contrast, the majority of federal expenditures in the territories are for RSAs. Further, only a small proportion of federal research funding is earmarked for the North (StatCan, 2022b).

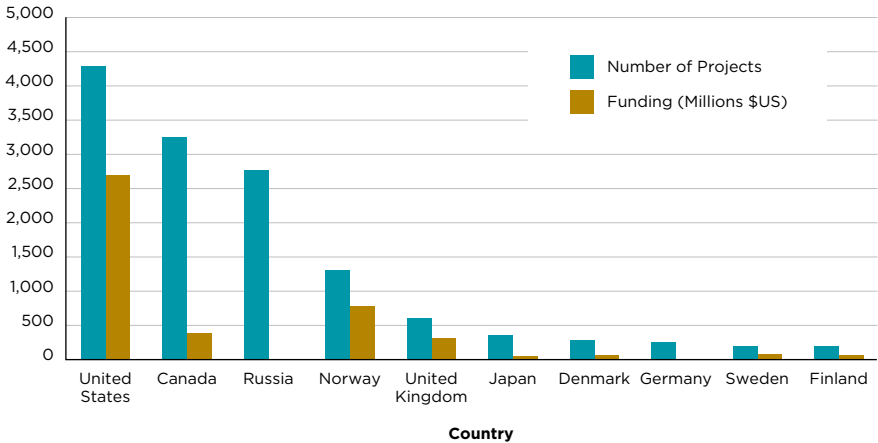
In the Panel’s view, the unpredictable nature of funding from year to year in the territories may be indicative of a lack of prioritization for R&D in the North in contrast to the rest of Canada. The focus on RSAs rather than R&D may relate to the need for more support for baseline data-gathering exercises, or perhaps to the difficulty of acquiring funding for larger-scale R&D projects. The data presented in StatCan (2022b) are aggregate and not broken down by agencies and departments; this points to a lack of transparency in how money is being spent and who receives it. Monitoring and tracking the flow of funds from all sources across project lifecycles would provide a more fulsome understanding of the baseline for how Canada’s research system is currently operating, in order to better support decision-making on novel and transformative funding structures that can benefit researchers, organizations, and communities in the North.

12 The NSERC percentage was calculated using approximate investment totals reported by NSERC (2022d) and estimated spending on Arctic research using NSERC (2022b). For CIHR and SSHRC, the percentages were calculated using data from CIHR (2022) and SSHRC (2023), respectively. These totals may be underestimated due to the use of only “Arctic” and “polar” as search terms, as opposed to “Arctic,” “polar,” and “Northern,” as was done by Iburguchi *et al.* (2018); using the term “Northern” with no attached location allows for the inclusion of research on other regions or topics and would thus inflate the funding amounts assumed to apply to Arctic research in Canada alone.

13 R&D is defined as work to create new knowledge and devise new applications of existing knowledge, while RSA includes general-purpose data collection, information services, surveys, and educational supports. The entities included in this reporting are “federal government departments, agencies, commissions, boards and crown corporations either performing Science & Technology (S&T) activities or [having] a budgetary allocation to fund S&T” (StatCan, 2022a).

Canada will not be competitive on the international stage without increased total funding for Arctic and Northern research

As with Canadian research data, publicly available information is lacking when it comes to the exact amounts allocated and the specific goals of research funded by foreign jurisdictions. The best available data identified by the Panel are from a 2017 University of the Arctic-led partnership to analyze global funding for Arctic and Northern research using the Dimensions AI funding database (Osipov *et al.*, 2017). Although the analysis is subject to some uncertainty and data gaps (e.g., Russian funders do not provide funding totals, only the number of projects funded), the results provide an overview of the international funding landscape for Arctic¹⁴ research up until 2017. The authors found that Arctic research accounts for approximately less than 1% of all funded research in the database, and that the United States, Canada, Russia, and Norway funded the largest number of projects, respectively (Figure 4.1). Interestingly, the total amount of funding provided by Canada is less than that of Norway, even though more than twice as many projects are funded. These results are consistent with the observation that Canadian funding agencies spread funding across many projects but with smaller individual grant sizes (Osipov *et al.*, 2017); however, these data also demonstrate that Canada is not a global leader in Arctic and Northern research investment.



Adapted with permission from Osipov *et al.* (2017)

Figure 4.1 Arctic Funding by Jurisdiction of Funder, Grants Starting 2007-2016

Top contributors for Arctic funding in both dollar value (millions of \$US) and the number of projects funded.

14 The use of the term Arctic here is specifically in reference to the language used by Osipov *et al.* (2017).

Improved accountability relating to local socioeconomic impacts of research cannot be achieved without publicly accessible tracking and monitoring data on outcomes and spending

Robust evaluation of programs and policies by research funders would improve accountability and demonstrate the outcomes of expenditures (CCA, 2021a). Currently, there are limited data on how research money is being spent in Canada and whether funded studies yield any benefits for Indigenous communities. Some work has been undertaken to calculate the economic impacts of research in the territories; a study by Carr *et al.* (2013) sought to establish an “empirical estimate of the economic contribution of publicly funded research” in the territories from 2000 to 2009. Using the *Access to Information Act* together with Statistics Canada input-output multipliers¹⁵ to compile research expenditure data, the authors calculated a rise in public investment in research, which in turn increased the territorial GDP by 0.04%, income by 0.09%, and employment by 0.11% (Carr *et al.*, 2013). However, these numbers do not include foreign expenditures on research in the North, or private industry, environmental impact assessments, philanthropy, or the work of certain departments (e.g., Department of National Defence, DFO) that conduct Northern research as part of general research portfolios (Carr *et al.*, 2013). This once again points to the difficulty in collating the full picture of funding for Arctic and Northern research. The Panel suggests that licensing bodies in the North (Chapter 5) may be able to contribute to the tracking of research outcomes in the territories they oversee (in addition to funding sources, amounts, and investments); however, this is not currently included in their responsibilities.

Coherence and transparency in research funding sources supports effective and equitable distribution of funds

As shown above, it is extremely challenging to list all funding sources available for Arctic and Northern research and to quantify how much money is being spent, let alone list the recipients and itemize expenditures. This complicated landscape is not limited to Northern research; the diversity and number of Canadian research funders, in general, have been highlighted as difficult to navigate (Canada’s Fundamental Science Review, 2017; GC, 2023b). In the Panel’s experience, this lack of transparency creates barriers to the effective coordination of, and access to, research funds for both academics and Northern Indigenous individuals and communities outside the traditional research sphere. The onus is put on the researcher to navigate this complicated system, which benefits those who already have experience, connections, and considerable resources while further disadvantaging smaller research entities, non-academics, and early career researchers.

15 *Input-output multipliers* “provide estimates of economic impact per dollar of output delivered to final demand (final consumption expenditures, capital formation, or exports)” (StatCan, 2023d).

Together at the Fire: Reflections on Funding

Funding is a critical component of the research system; it exerts control over priorities and capacity, and it determines who gets to conduct research. Shifting influence over research funding to Northerners and Indigenous Peoples would contribute to making the landscape accountable to the needs and desires of Northern Indigenous Peoples—creating a more inclusive, equitable, and innovative Arctic and Northern research system. Striving for an innovative system includes tracking research spending as well as the economic and social implications of research for Northerners and Indigenous Peoples and their communities. Improving the accessibility, flexibility, and eligibility of funding applications and grants would better reflect the reality of conducting research in the North and support Indigenous-led research. Recognizing the unique nature of Arctic and Northern research requires capacity-building so that both Indigenous Peoples and non-Indigenous researchers (based in the North or South) can undertake collaborative, appropriate, respectful, and impactful research.

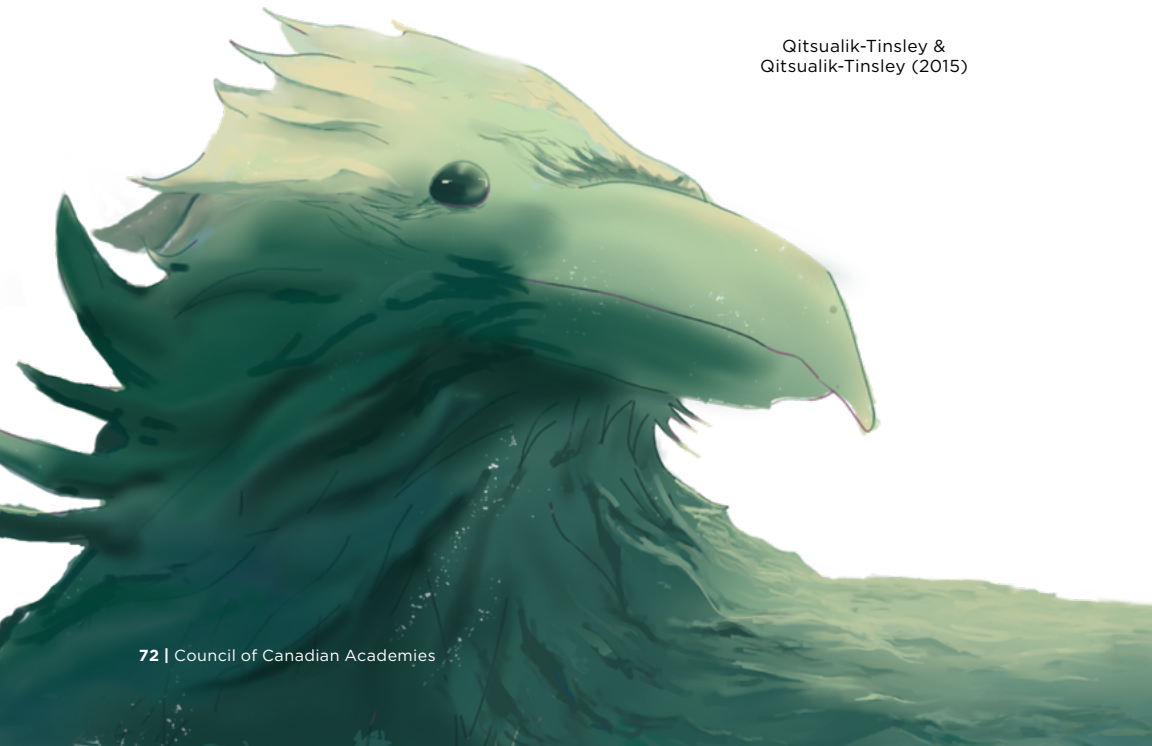
5



The Gathering Places: Infrastructure

*Raven said,
“I’m just trying to touch
things up a bit.”*

Qitsualik-Tinsley &
Qitsualik-Tinsley (2015)





Responsibilities Moving Forward

- Development of infrastructure that embodies the tenets of respect, responsibility, and reciprocity is rooted in community well-being.
- Shifting the responsibility of ethics review and research approvals to Indigenous Peoples or their institutions provides culturally appropriate review and supports self-determination.
- Shifting influence over review and approval processes to Indigenous Peoples and their institutions requires filling the human, financial, and infrastructural capacity needs they identify. At the same time, there is a need for non-Indigenous researchers to increase their capacity to respect and recognize Indigenous rights and ethically engage with Indigenous knowledge systems.
- There exists considerable guidance on how to ensure research projects are done in ways that appropriately consult, collaborate with, and benefit Indigenous Peoples. Institutionalization and normalization of such guidance would ensure broader compliance by researchers across the system as a whole.
- Well-supported and effective social, cultural, and health services are critical for an inclusive and collaborative Arctic and Northern research system.

Infrastructure—understood as the physical structures within which we gather to do research, as well as the services that make this gathering possible—is part of the foundation of an effective research system. This chapter examines the elements that comprise infrastructure in the Arctic and Northern research system, explores the ways in which they support collaborative and inclusive research, and highlights opportunities for improvement.

This chapter begins by addressing what it means to gather in a good way, returning to the concepts of responsibility, respect, and reciprocity. It then discusses the role of Indigenous Peoples in ethics reviews and research licensing processes. As a means of supporting self-determination, shifting influence over research approvals to Indigenous Peoples is a critical component of an equitable and just research system. However, such a transition requires a similar change in terms of control over and access to physical research infrastructure, as well. As such, the chapter also explores opportunities for strengthening partnerships with, and shifting influence to, Northern institutions and Indigenous communities.

The latter half of the chapter addresses questions related to the accessibility of research infrastructure and the implications that arise in terms of accountability. The Panel focuses on the accessibility of social, cultural, and health services, arguing these are critical but often overlooked elements of a research system that can support transformational change. The chapter concludes with a discussion of Canada's responsibility for advancing equity in Arctic and Northern research, highlighting its position on the Arctic Council as one avenue for international leadership.

Gathering in a Good Way

Returning to the idea of gathering around the community fire, the Panel notes that care and maintenance of the structures and spaces that facilitate this gathering ought to be done in a good way. This means not only tending to the fire itself but also ensuring the space around the fire is welcoming and well-kept—an inviting place for community to gather. Similarly, the structures and spaces that comprise the Arctic and Northern research system must also be cared for. In many cases, they are; the Panel notes that research infrastructure in the North is extensive (if fragmented), providing the spaces and services many Southern and international researchers rely on. However, gathering in a good way requires going a step further and placing Northern communities—and Northern Indigenous Peoples in particular—at this gathering's centre. To gather in a good way is to centre the ideas of respect, responsibility, and reciprocity. It is to understand how the structures and spaces that facilitate this gathering influence the well-being of those who have gathered. To gather in a good way is to come together with a sense of duty and care for others.

In terms of Northern research infrastructure, this sense of duty and care links directly to the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP), which outlines the rights to participate in and consent to any and all decision-making that impacts Indigenous Peoples' communities and Land (UN, 2007).



UNDRIP Article 18: Indigenous Peoples have the right to participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedures, as well as to maintain and develop their own Indigenous decision-making institutions.

UNDRIP Article 19: States shall consult and cooperate in good faith with the Indigenous peoples concerned through their own representative institutions in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them

UNDRIP Article 23: Indigenous Peoples have the right to determine and develop priorities and strategies for exercising their right to development. In particular, Indigenous Peoples have the right to be actively involved in developing and determining health, housing and other economic and social programmes affecting them and, as far as possible, to administer such programmes through their own institutions.

UNDRIP Article 26: 1. Indigenous Peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired. 2. Indigenous Peoples have the right to own, use, develop and control the lands, territories and resources that they possess by reason of traditional ownership or other traditional occupation or use, as well as those which they have otherwise acquired. 3. States shall give legal recognition and protection to these lands, territories and resources. Such recognition shall be conducted with due respect to the customs, traditions and land tenure systems of the indigenous Peoples concerned.

UNDRIP Article 29: 1. Indigenous Peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources. States shall establish and implement assistance programmes for Indigenous Peoples for such conservation and protection, without discrimination.

Many institutions are working to uphold and implement the care and respect for Indigenous Peoples' well-being identified in UNDRIP through the creation of committees that re-define what it means to support research in a good way. At the University of the Arctic, the Avatitsinni Committee is one such body, whose name derives from the Inuit word *avatit*—the hands and feet of a person (UARctic, n.d.). Hands and feet allow the body to extend beyond itself and onto the Land (becoming the noun *avativut*). By extending onto the Land in a way that centres “reverence and tender love to the Lands, the spirits, [and] the animals” (UARctic, n.d.), *avativut*, or becoming *avatitsinni*, embodies the way in which one directly shows care and respect for the world around us. In much the same way, infrastructure represents the extension of the researcher onto the Land. Centring “reverence and tender love” in infrastructure is to uphold the rights affirmed by UNDRIP.

As such, the Panel approaches its discussion of infrastructure—of gathering in a good way—in a similar way to Raven. Structures and spaces that support and facilitate research exist. What is required, however, is a bit of “touching up.” Research infrastructure in the North, when reimagined, has the potential to support the well-being of Northern communities. Where well-being is cared for and grounded in respect, responsibility, and reciprocity, the Panel believes effective, inclusive, and collaborative research can thrive.

Justice and Cultural Security in Infrastructure

When understood in terms of self-determination, justice in research infrastructure relates most directly to who is aware of the research being conducted and who has authority over approving (or denying) that research. This authority extends to determining whether proposed research activities are ethical—it is directly linked to questions of cultural security. In this context, infrastructure can be seen as the collection of mechanisms put in place to govern research, including ethics reviews and research licensing, as well as who owns and guides the use of research infrastructure (including community infrastructure) in the North.

The current system of ethics review does not adequately recognize the rights and priorities of Indigenous Peoples

It is widely acknowledged that research concerned with humans and animals must be conducted ethically by respecting and protecting participants and subjects (CIHR *et al.*, 2022; CCAC, n.d.). Ethical principles and guidelines seek to prevent harm stemming from research and are critical components of the existing research system worldwide. In Canada, concrete guidance on research ethics is provided by the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (TCPS 2), which researchers must adhere to if they are receiving Tri-Agency funding for research involving humans (CIHR *et al.*, 2022). TCPS 2,

however, has been criticized for not aligning with Indigenous Peoples' values and potentially alienating researchers attempting to work with Indigenous knowledge systems (e.g., Bergier, 2022). Such criticisms reflect the Panel's experience and highlight an important opportunity for review—the Panel believes that revised ethical guidelines created in partnership with Indigenous Peoples (by which all researchers, in Canada and abroad, abide) can further support inclusivity and collaboration in research.

TCPS 2 provides standards for research ethics boards (REBs; also known as institutional review boards, independent ethics committees, or ethical review boards) in Canada (CIHR *et al.*, 2022). REBs are boards that review research proposals and assess their intended methodologies to ensure they are ethical and contain steps to safeguard the well-being and rights of participants (CIHR *et al.*, 2022). Research ethics are the “unique and complex ethical, legal, social and political considerations of carrying out research that [involve] human subjects or participants” (ITK, 2018a). Complementary documentation developed by Inuit Tapiriit Kanatami (ITK) and the Nunavut Research Institute (NRI) provides additional advice for developing and managing research relationships with Inuit communities, including best practices for community engagement, licensing, and sharing of data and results (ITK & NRI, 2007). Although these documents outline best practices, the Panel notes that, for research to be done in a good way, it is the responsibility of all researchers—including international researchers who may not have the same ethics requirements in their home countries—to adhere to the ethics guidelines laid out by the federal government and Indigenous communities themselves.

The REB system in Canada has been criticized for a number of reasons—in particular, there is limited oversight of research outside the mandated REB process concerning Tri-Agency-funded research in a way that ensures researchers comply with the rules set out in TCPS 2 (ITK, 2018a). Moreover, the location of REBs are predominantly within the research institutions seeking approval, increasing chances for conflict of interest and differences in perspectives on ethical conduct and community well-being. Indeed, even the set of ethics considered within this system comes from a Western paradigm, reflecting a set of beliefs and values that emphasize individual autonomy and do not encompass Indigenous worldviews and knowledges (Glass & Kaufert, 2007). In the Panel's view, this sets up an inequitable power dynamic, authorizing specific assumptions on what kind of research is ethical. Additionally, the dominance of Southern REBs limits the inclusion of Northern Indigenous members on boards, and there are no mechanisms for the engagement of Northern Indigenous Peoples in assessing research proposals specific to Arctic and Northern contexts (ITK, 2018a). This lack

of community involvement limits the consideration of Indigenous well-being from a broader perspective.

The current REB system in Canada also constrains the ability of projects outside standard university or academic settings to receive an ethical review. For example, the Yukon University REB only reviews projects associated with Yukon University, preventing community or organization-led researchers from being able to apply (YukonU, n.d.-b). In the Panel's experience, this system is a barrier to inclusive research practices. Expanding the circle of research leaders beyond academia requires access to REBs or other ethics review bodies, which are critical for ensuring that all research is being conducted ethically.

Furthermore, Indigenous researchers proposing research within their own communities are subject to the same REB standards, which may be inappropriate and harmful to well-established relationships (Grenz, 2023). Most processes and structures within REBs are focused on non-Indigenous researchers, not accounting for the unique and deep relationships built upon years of trust fostered by Indigenous researchers. Inflexible requirements (such as fixed research methodologies and objectives) are inconsistent with Indigenous knowledge systems and do not allow for the relationality and reflexivity inherent to Indigenous worldviews. To counter standard REB procedures, Indigenous scholar Jennifer Grenz (2023) states:

Let Indigenous academics stand before our co-researchers—our Indigenous communities—and be wholly and solely accountable to them. The ethics of research projects between Indigenous researchers and Indigenous communities should be reviewed only by those communities. The mathematics of Indigenizing research-ethics processes is not simply one of addition—adding inclusive policies and diverse perspectives. It must include subtraction: it means giving up control.

Shifting the responsibility of ethics review and research approvals to Indigenous Peoples and institutions supports self-determination and ensures these processes are culturally appropriate

Ethics reviews administered by Indigenous communities or Indigenous post-secondary institutions can maintain cultural security while furthering critical research. For example, University nuhelot'įne thaiyots'į nistameyimâkanak Blue Quills (UnBQ) is a First Nations-run university in Alberta (Chapter 7) that operates an REB that governs human research at (or involving) UnBQ (BQFNC, 2009). The membership of this REB includes Elders, faculty members, a student representative, and external reviewers with graduate degrees and experience with Indigenous communities. The REB, with input from additional Elders, "review[s] each proposal to make every effort to avoid the appropriation or misrepresentation

of collective cultural knowledge, and to honour the boundary that exists between the opportunity to learn traditional knowledge and the public distribution or commercialization of that knowledge” (BQFNC, 2009). The review process for proposals is unique: each review begins with a pipe ceremony, after which the researcher presents their proposal to the ethics board members and research partners, discussing “how the research activities and results align with the spiritual laws and teachings of the nehiyawak people, and will honour and benefit generations past, present, and future” (BQFNC, 2009). The UnBQ REB can also review research proposals from the community, as well as projects conducted in the community by external researchers and institutions (BQFNC, 2009).

There are also promising practices outside of Canada. Tribal institutional review boards (TIRBs) are entities in the United States that are housed within Tribes and increasingly have a role to play in research done by and within American Indian and Alaska Native (AI/AN) communities (Kuhn *et al.*, 2020). TIRBs conduct their ethical reviews through the lens of community priorities and values, and work to “[protect] tribal knowledge systems from cultural appropriation, exploitation, and misuse” (Kuhn *et al.*, 2020). The majority of TIRBs are under the control of Tribal Nations which, through a sanctioned board or committee, undertake ethical review and the monitoring of research on behalf of the community (Around Him *et al.*, 2019). In the Panel’s view, this system of Indigenous ethical review could be applied in the Canadian context, though such mechanisms would be contingent upon adequate resourcing and capacity consistent with the values of the Indigenous Peoples concerned.

TIRBs arose in the United States, in part, as a response to how the federal definition of *research* (and therefore what needs review by such committees) does not include ethnographic research if the individual is not identified (Kelley *et al.*, 2013). This perspective is not shared by Tribal communities, which maintain that all histories are intellectual property and should be protected (Kelley *et al.*, 2013). Placing the onus on a single review process with a universal concept of consent and ethical guidelines runs the risk of devaluing individual community voices throughout the research review process (Kuhn *et al.*, 2020). TIRBs highlight the need to review research with the intent to maximize benefits to the community through increased knowledge, aligning with Tribal priorities and plans, and respecting the sovereignty of data and access to publications (Kelley *et al.*, 2013). Furthermore, the history of research on Indigenous Peoples often featured “helicopter” methods, where researchers would only be present in communities for short periods to collect their research, then leave; this process left communities with no tangible benefits, while Tribal knowledges and data were taken for the benefit of researchers and non-Tribal institutions (Schanche *et al.*, 2000). TIRBs do not necessarily have to be attached to only one

community—regional IRBs have been established among constituent Tribes to coordinate research regulation (Kelley *et al.*, 2013).

TIRBs go beyond the usual purview of IRBs and can include additional protections at the community level, cultural reviews of protocols by Elders, and the review of agreements related to financial compensation and publication (Kelley *et al.*, 2013). They may also require that researchers provide a comprehensive plan for how data will be collected, stored, reported, and owned (Kuhn *et al.*, 2020; Tuhiwai Smith, 2021; FNIGC, n.d.-a). This links to Indigenous data sovereignty (Chapter 6); the Turtle Mountain Band of Chippewa Indians (TMBCI) passed a *Research Protection Act* that provides an example of the strict regulation of research within that Tribe's Territory (Box 5.1). The TIRB model also allows Tribes to review research that goes beyond the involvement of human participants—including environmental, historical, cultural, educational, and zoological studies (Around Him *et al.*, 2019). In the Panel's view, this is more aligned with the holistic eco-centric worldview of Indigenous Peoples and allows for even greater control of data on Indigenous Lands.

The *National Inuit Strategy on Research* (NISR) has explicitly stated that, although ethical guidelines exist to protect Indigenous Peoples, “companion ethical guidelines do not exist for research involving wildlife and the environment” (ITK, 2018a). Wildlife, for example, has been identified as an area that would benefit from the creation of an enforceable ethics policy—such a policy would mitigate potential conflicts resulting from different cultures and worldviews (Nickels & Knotsch, 2012). Expanding ethics reviews to include the total environment could make research ethics a site of reconciliation (Southwick *et al.*, n.d.); in the Panel's view, such an expansion would result in reviews becoming more responsive to the cultural context of Indigenous Peoples' relationship with the natural world.

Within the current system of REBs, there is some movement to adjust research ethics to include the Land. Yukon University has initiated conversations and proposed potential avenues for expanding the role and operation of REBs based on consultations with Yukon First Nations (Southwick *et al.*, n.d.). Although only small operational changes have thus far been considered, future transformational changes would apply to external processes such as research licensing. True amalgamation of human and animal ethics with those of the total environment requires a re-envisioning of the entire research ethics structure, accompanied by clarity around the responsibilities and priorities of REBs and training for researchers unaccustomed to getting their research ethically approved (Southwick *et al.*, n.d.).

Box 5.1 The Turtle Mountain Band of Chippewa Indians' (TMBCI) *Research Protection Act*

In 2014, the TMBCI passed the *Research Protection Act*, which oversees any type of research or data collection related to the TMBCI Tribe (TNRG, n.d.). This act maintains that any and all research could be detrimental and must therefore be strictly regulated (TMBCI, 2014). This is in response to a history of inappropriate and harmful research involving members of the Tribe: “Indigenous knowledge, cultural and biogenetic resources, and intellectual property rights have been and continue to be damaged, destroyed, stolen, and misappropriated, both on and off the Reservation” (TMBCI, 2014). The establishment of this act provides a mechanism to review research to ensure that Indigenous knowledges, properties, and Peoples are protected from further abuses and that the results of research maximize benefits to the Tribe while minimizing risks. A key facet of this act is also “to improve relations between the Tribe and scientists/researchers, and to promote collaboration within the framework of mutual respect, equity, and empowerment” (TMBCI, 2014).

The current system of research approvals is complex and does not reflect the rights and priorities of Indigenous Peoples

Beyond ethics reviews, research permitting and licensing is another area in which recognizing and upholding Indigenous rights is required. While Indigenous rights-holders have some authority over whether research projects are allowed to take place on their Lands, the power primarily lies with territorial governments, which determine what research is permitted—in most cases, it cannot proceed without a territorial (or federal) licence (Gov. of NU, 1988; Gov. of NT, n.d.-a; Gov. of YT, n.d.-c). Processes to obtain the appropriate research licence are similar across the three territories, although the application and administration processes vary.

Anyone entering the Yukon for research purposes must obtain a Scientists and Explorers (S&E) Act Licence from the territorial government, with the exception of those carrying out research exclusively in national parks (which requires a research and collection permit from Parks Canada) or archaeological research (which requires an archaeological sites regulation permit from the Government of Yukon) (Gov. of YT, 2002, n.d.-c). Prior to applying for an S&E licence, researchers

are required to contact the First Nations or Inuit Peoples in whose territory they hope to work (Gov. of YT, n.d.-c). Studies undertaken in the Yukon by researchers located within the territory do not require an S&E licence (Gov. of YT, 2002), but the research is required to meet the policies and procedures of a researcher's institution (e.g., YukonU, n.d.-b).

All research undertaken in the N.W.T., including projects carried out by government agencies and organizations within the territory, requires a licence (ARI, 2019). As with the Yukon, the exact licensing requirements vary depending on the nature and scope of the proposed research, but most projects (i.e., research not involving wildlife or archaeology) require a scientific research licence administered by the territorial government.¹⁶ The guide for researchers provided by the Aurora Research Institute (ARI, 2019) states that a research licence will be denied if there has not been “appropriate communication with the community,” but notes that the level of involvement with communities differs depending on the type of research and its potential impacts. Certain types of research require additional approvals on top of a licence. For example, health-related research in the N.W.T. also requires approval from the Department of Health and Social Services. This requirement applies equally to any Indigenous Nations wanting to lead health research projects themselves (ARI, 2019).

Likewise, all research undertaken in Nunavut requires a licence, with the specific permits and authorizations depending on the nature and location of a given project (NRI, 2021a). Research in health and the physical, natural, and social sciences requires a Nunavut scientific research licence, administered through the NRI (2021a). Additional review and permitting may be required by the Nunavut Planning Commission, Nunavut Impact Review Board, and Nunavut Water Board, depending on the nature of the proposed project (Polidoro *et al.*, 2022). The review process for research licences is done to determine whether the proposed project “could be injurious to or unduly interfere with the natural or social environment of Nunavut” (NRI, 2021a). There are two stages in the review process. First, an internal review is done by the territorial Science Advisor, who evaluates the quality, feasibility, ethics, and safety of the proposal. This step is followed by consultation with “select community groups, Inuit organizations, government departments, and any other representative groups that may be impacted by [the] proposed research project.” Consulted groups are asked to recommend or reject proposals and may suggest modifications (NRI, 2021a).

¹⁶ Wildlife research permits are issued by the Northwest Territories Department of Environment and Climate Change, while applications for archaeological permits are submitted to the Prince of Wales Northern Heritage Centre (ARI, 2019).

Despite NRI being the administering body of the *Scientists Act*, the licensing process is not entirely coordinated; in the Panel’s experience, it is not uncommon for community governments and organizations that review research proposals to receive multiple applications for the same project. According to NRI (2021a), licence-holders are “expected to share [their] research results directly with any community members and organizations in Nunavut that participated in or supported your research.” However, the follow-up process is largely unclear and the Panel underscores that there is currently little recourse available in situations where the sharing of research results falls short of community needs or expectations.

Overall, the Panel notes that policy related to research licensing in the North is cumbersome and could benefit from an update to better support the self-determination of Indigenous Peoples. Although the ability to provide feedback on proposed research is important, influence in the decision-making process may be of greater value. The power to reject incoming research proposals prior to submission to territorial licensing bodies—as well as the ability to approve projects that were rejected by these bodies—would align with UNDRIP Article 19 (the requirement for Indigenous Peoples’ free, prior, and informed consent before implementing any decision that impacts them) and Article 26 (the right to control Land and resources) (UN, 2007).

In Labrador, each Indigenous government has created its own research review and consent process, one that reflects individual research needs and approaches. The Nunatsiavut Government Research Advisory Committee is one example of an extensive research review process similar to those used by universities, which centres the priorities of Inuit in Nunatsiavut and ensures that research is done with, by, and for communities in the region (Nunatsiavut Government, n.d.-a). In Nunavut, researchers interested in working in the community of Clyde River are required to first complete a letter of intent to be submitted to the Ittaq Heritage and Research Centre (Ittaq, n.d.-a). The letter of intent—which must be submitted in both English and Inuktitut—allows the community to screen proposed research projects before the submission of a full research licence application through the NRI. This process helps the community ensure that all research proposals support community priorities and interests (Ittaq, n.d.-a).

In the N.W.T., the Łíídlıı Kúę First Nation has implemented a number of initiatives exercising their right to control their Land; as of 2022, researchers working in the traditional Dehcho territory surrounding Scotty Creek must apply directly to the Łíídlıı Kúę First Nation for a research permit and agree to co-ownership of all data gathered and/or produced (SCRS, n.d.-a). At the same time, however, authority is not absolute, since all projects still require territorial approval (Gov. of NT, n.d.-a).

Greater resources for capacity development support effective review and engagement by Indigenous organizations

Shifting influence over research approvals and ethics to Indigenous communities is critical; however, any activities require substantial and sustained resources and support to ensure adequate and ongoing capacity. Researchers seeking to work in Inuit Nunangat are expected to contact and receive permissions from the appropriate authority for the region (i.e., Inuvialuit Settlement Region, Nunatsiavut, Nunavik, Nunavut) with the specific rules and processes varying. For example, in 2022, Nunavik established a new research approval and oversight organization—Atanniuvik—as a means to enhance Nunavik Inuit self-determination (Atanniuvik, n.d.-a). The role of the organization is “approving and overseeing research;” “identifying, gathering, and communicating research priorities;” “managing and communicating research information;” “supporting community research needs;” and “supporting researchers” (Atanniuvik, n.d.-b).

The Yukon is home to 14 First Nations, 11 of which have concluded land claim agreements in accordance with the *Umbrella Final Agreement* (Gov. of YT, n.d.-d). The procedures for research applications and the capacity of each individual First Nation to review them vary substantially. For example, the Bringing Research Home project led by the Kluane First Nation aims to develop a research review process that will ensure greater control over which projects are approved within the Nation’s traditional territory (YukonU, n.d.-c). In contrast, the Carcross/Tagish First Nation has adopted an online consultation framework for activities proposed to take place within its traditional territory (CTFN, n.d.). Government, industry, and research proposals are submitted directly to the Carcross/Tagish First Nation through NationsConnect—an online consultation and engagement portal—in order to gain approval without risk of redundancy or inconsistency, which were identified issues with the previous submission process (CTFN, n.d.; NationsConnect, n.d.).

The N.W.T. are also home to a number of different First Nations, along with Inuit and Métis communities. In its guide to conducting research in the territory, ARI outlines six land claim regions: Dehcho, Gwich’in, Inuvialuit, North Slave, Sahtu, and South Slave (ARI, 2019). There are several different Indigenous communities within each land claim region, and the process by which research consultation takes place varies due to different policies and structures (ARI, 2019). For example, researchers planning projects that involve Land (including water, flora, and fauna) in the Gwich’in Settlement Area must check in with the Gwich’in Renewable Resources Board and the Gwich’in Land and Water Board (and obtain land-use or water licences, as required), as well as communicate with the relevant local Band and Renewable Resources Council (ARI, 2019).

However, each of the processes discussed here (and many of those not described) is limited wherever capacity is insufficient to review or engage with incoming research. In the Panel's experience, short timeframes, staffing limitations, duplication of processes at the territorial level, and a lack of contextual understanding about the North by Southern researchers have posed problems for effective and timely review by Indigenous organizations. Although ethics review by Indigenous organizations represents a critical shift in influence over research being conducted in the North, the Panel notes that current capacity must be supported and strengthened to engender truly transformational change.

Post-secondary institutions in the North are leading engagement in and support for Arctic and Northern research

All of the higher-education institutions in the North participate in Northern and Arctic research. Yukon University's Research Centre conducts climate change research and holds research chairs in Indigenous Knowledge, Northern Energy Innovation, Northern Mine Remediation, and Permafrost and Geoscience (YukonU, 2022a). Similarly, the Labrador Campus of Memorial University is home to the School of Arctic and Subarctic Studies, which has a mandate to conduct, support, and nurture diverse Indigenous- and Northern-led research with partners in Labrador and across the North (MUN, 2021a). ARI is the research division of Aurora College, and has a mandate to "improve the quality of life for N.W.T. residents by applying scientific, technological and Indigenous knowledge to solve Northern problems and advance social and economic goals" (ARI, n.d.-a). It facilitates research projects on a wide range of topics, including food and agriculture, environment, health, energy, geographic information systems, ethnobotany, and manufacturing (ARI, n.d.-b). NRI is a branch of Nunavut Arctic College that supports a multitude of research projects and provides technical advice, logistical support, outreach, training, and communication. It also brokers research partnerships, and facilitates collaboration among the various stakeholders in Nunavut, including communities, academic researchers, government agencies, and the private sector (NRI, 2021b).

Northern, Indigenous-led organizations provide and facilitate critical guidance, support, and research services on topics that are most meaningful to Indigenous Peoples; fulfilling this function requires ongoing support

Research is also undertaken by Indigenous-led organizations in the North. Because of their direct connections to their communities, including to Elders, these organizations are often engaged in research focused directly on local priorities. For example, the Qaujigiartiit Health Research Centre was created by Nunavummiut to prioritize research on health topics of interest to the

community; it employs seven full-time researchers and a number of contract and part-time staff (QHRC, 2019). Its mission is for “health research to be conducted locally, by Northerners, and with communities in a safe, supportive, culturally-sensitive and ethical environment as well as promote the inclusion of Inuit and Western epistemologies and methodologies (ways of knowing and doing) in addressing health concerns, creating healthy environments, and improving the health of Nunavummiut” (QHRC, 2019). The centre has successfully brought substantial funding for research and training into Nunavut (over \$20 million since 2006) and runs a range of workshops, pilot and research projects, and student initiatives—many of which have been recognized by the Canadian Institutes of Health Research (CIHR) (QHRC, 2019).

The Ittaq Heritage and Research Centre is another example of a community-led organization, as part of the Ilisaqsvik Society (Ittaq, 2021a). This centre combines Indigenous knowledge systems with cutting-edge technology to conduct research in a variety of areas, including weather, sea ice, climate change, oral history, aerial imaging and mapping, and hunting and harvesting (Ittaq, 2021b). It further supports community engagement, peer-to-peer training, research design, and research opportunities for Inuit students and early career researchers (Ittaq, 2021b).

Another Inuit-focused organization is SmartICE, a community-based Work Integration Social Enterprise that combines monitoring technologies with Inuit knowledge of sea ice (SmartICE, n.d.). Monitoring equipment is set up in communities to provide them with information on local travel conditions, and data are made available in a number of formats (SmartICE, 2021). Importantly, Inuit communities drive the direction of research and ensure that youth are offered employment and training within their communities (SmartICE, n.d.).

Most research stations in the North are not owned or operated by Northern institutions or Indigenous communities and would benefit from a shift in control

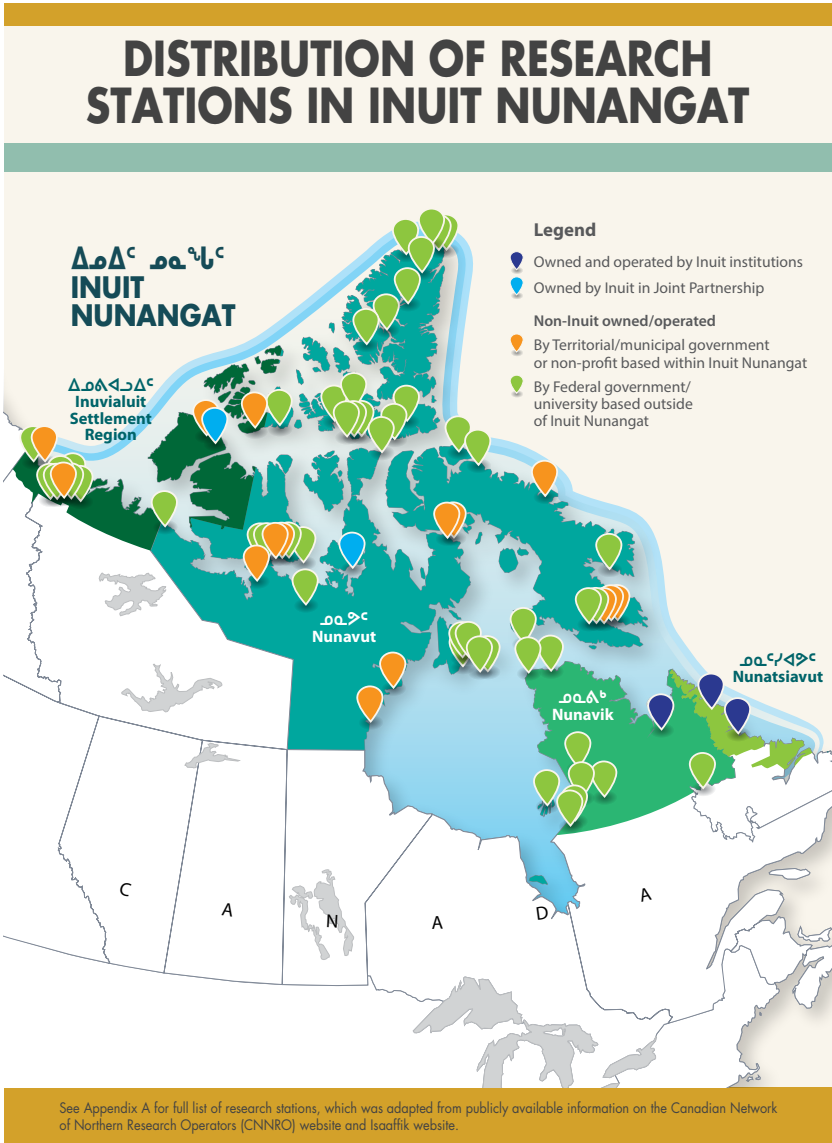
Although there are many research stations in the North, very few are owned or operated by Northern organizations or Indigenous Peoples. For example, out of the 71 research stations in Inuit Nunangat identified by ITK (2018a) using information from the Canadian Network of Northern Research Operators (CNNRO) (GC, 2016), only 3 are fully owned and operated by Inuit, while a further 2 are owned by Inuit organizations but operated by others (Figure 5.1). The Nunatsiavut Research Centre is owned and operated by the Nunatsiavut Government and facilitates both lab and field-based research (Nunatsiavut Research Centre, 2021). It contains wet and dry labs as well as data collection and analysis workstations, and it can provide accommodations and facilitate transportation rentals (Nunatsiavut Research Centre, 2021). The Nunatsiavut Government also runs

the Torngat Mountains Base Camp and Research Station, which provides access for scientific activities within Torngat Mountains National Park (The Torngats, 2022; Nunatsiavut Government, n.d.-b).

The Nunavik Research Centre is operated by the Resource Development Department of the Makivvik Corporation, employing scientists specializing in biology, toxicology, fisheries, and wildlife (Makivvik Corporation, n.d.). It focuses on research on the natural environment and wildlife (and monitoring thereof) to support policy development. Services include labs for pathology and trace metal analytics, as well as library and cartographic services (Makivvik Corporation, n.d.). Inuit-run hunters and trappers organizations also participate in research infrastructure: the Gjoa Haven Hunters and Trappers Association owns the M'Clintock Channel Polar Research Cabins in association with Queen's University (INTERACT, 2017a). Similarly, a cabin in Aulavik National Park is operated by Parks Canada but owned by the local Sachs Harbour Hunters and Trappers Committee (CNNRO, 2015).

In the N.W.T., the Scotty Creek Research Station (SCRS) is managed in collaboration with Indigenous communities in the Dehcho (SCRS, n.d.-b). Work at the SCRS is focused on permafrost thaw, including understanding its impacts and supporting the development of models to predict thaw rates and patterns in future climate scenarios. The research conducted out of the SCRS combines interdisciplinary, Western-based science with community engagement and knowledge co-development (SCRS, n.d.-b). The SCRS was one of the busiest research stations in Northern Canada before it was destroyed by wildfire in the summer of 2022 (Lamberink, 2022). In recognition of its importance, SCRS administration is currently in the process of transforming it into a Dehcho-run regional research park; this will be the first of its kind in Canada and the circumpolar region more broadly (SCRS, n.d.-b).

Many of the research stations located in the North are also important for international Arctic research and are part of international networks (Box 5.2), such as the International Network for Terrestrial Research and Monitoring in the Arctic (INTERACT, 2017b). INTERACT is currently composed of 89 terrestrial field bases across Europe, Greenland, North America, and Russia; funded by the European Union, its key objective is to build capacity for studying environmental changes in the Arctic (INTERACT, 2017b). INTERACT also facilitates international collaboration and station access for researchers through a transnational access program (INTERACT, n.d.).



Reproduced with permission from ITK (2018a)

Figure 5.1 Locations of Research Stations Throughout Inuit Nunangat

The various research stations identified by ITK using data from the CNNRO and Isaaffik. These stations are categorized by ownership and operational responsibility. The Panel notes that this map provides information for Inuit Nunangat alone and does not include critical research infrastructure in the remainder of the Arctic and Subarctic; it was also developed in 2018 and may not accurately reflect the 2023 landscape in full. Appendix A at the bottom of the figure refers to Appendix A in ITK (2018a).

Box 5.2 Non-Place-Based Arctic and Northern Research Infrastructure

Across Northern Canada, there are internationally important research facilities that may not directly link to communities. Two such research facilities of importance are the Polar Environment Atmospheric Research Laboratory (PEARL) in Eureka and the Dr. Neil Trivett Global Atmosphere Watch Observatory in Alert. These facilities are unique, since the research infrastructure is entirely housed by the Government of Canada. PEARL is operated by a network of university and government researchers (PEARL, n.d.), while the Alert observatory is operated by Environment and Climate Change Canada (ECCC) as part of the World Meteorological Organization's atmospheric monitoring program (ECCC, 2015). In the Panel's experience, despite offering important infrastructure to support Canada's international leadership in Arctic and Northern science, these facilities face ongoing funding pressure due to their operating costs (e.g., CBC News, 2013). The Panel believes that, even where infrastructure is remote and where there are no nearby communities with which to partner, facilities such as these represent critical elements of an effective research system and cannot go overlooked.

All researchers are responsible for abiding by the existing guidance on how to engage in Arctic and Northern research in an ethical and equitable way

Considerable guidance is available on how to engage in research endeavours in Inuit Nunangat in ways that appropriately consult, collaborate with, and benefit Indigenous Peoples. These resources are particularly critical given the volume of research being carried out in the Arctic by settler scientists and those based in the South. For example, the main priority of ITK is ensuring that the recent shift toward greater inclusion within the research system does not stop merely at consultation and collaboration with Inuit communities; it seeks to strengthen research in Inuit Nunangat, envisioning a system in which research is done for Inuit by Inuit (ITK, 2018a). To do so, ITK has put forth a number of reports on Northern research, the most notable of which is the NISR. Central to this strategy are action and investment priority areas identified by ITK to “enhance the efficacy, impact, and usefulness of Inuit Nunangat research for Inuit.” Of these priorities, three are directly tied to enhancing Inuit access to and participation in the research system as a whole: “advanc[ing] Inuit governance in research ...

ensur[ing] Inuit access, ownership, and control over data and information ... [and] build[ing] capacity in Inuit Nunangat research” (ITK, 2018a). The ITK implementation plan for the NISR identifies the roles and key responsibilities of communities as “represent[ing] local community interests and priorities, such as Hunters and Trappers Organizations (HTO); identif[ing] research and data needs, priorities and capacity development/training needs; review[ing] research proposals relevant to community; [and] participat[ing] in regional research advisory committees” (ITK, 2018b).

Beyond communities, roles specific to Inuit youth and Elders are also identified, particularly to address their interests; to provide a space for their perspectives; to ensure knowledge sharing and exchange; and to link to the National Inuit Youth Council and the Inuit Qaujisarvingat National Committee (ITK, 2018b). The NISR emphasizes the need to connect communities across the North to research processes at the regional, national, and international levels because “research grounded in communities is integral to advancing Inuit self-determination in research” (ITK, 2018b).

The Inuit Circumpolar Council (ICC), a non-governmental organization and Permanent Participant under the Arctic Council, represents Inuit from across Alaska, Canada, Greenland, and Russia with the principal goal of promoting Inuit rights, interests, and concerns as well as seeking full and active partnership in the future development of all circumpolar regions (ICC, n.d.-b). This role includes ensuring Inuit rights and interests are represented in all science-based Arctic programs. For example, in 2022, ICC published the *Circumpolar Inuit Protocols for Ethical and Equitable Engagement*, which outlines the minimum standards necessary for research and decision-making in the North (ICC, 2022). The eight core protocols include:

- *‘nothing about us without us’—always engage with Inuit;*
- *recognize Indigenous knowledge in its own right;*
- *practice good governance;*
- *communicate with intent;*
- *exercise accountability—building trust;*
- *build meaningful partnerships;*
- *information and data sharing, ownership, and permissions; and*
- *equitably fund Inuit representation and knowledge.*

ICC (2022)

As one of the Permanent Participants of the Arctic Council, ICC has demonstrated extraordinary influence but it cannot make its views compulsory—rather, consultations and recommendations are provided to Arctic states seeking to improve research strategies at the national level (Arctic Council, n.d.).

Multi- and transdisciplinary programs enhance research capacity and support collaborative and meaningful research

The Networks of Centres of Excellence (NCE) program—a large-scale, multidisciplinary, and academically led research program¹⁷—brought together experts and stakeholders on specific issues and strategic focus areas (GC, 2019b). It was instrumental in the creation of organizations (e.g., ArcticNet) that help mobilize and support Canadian research in the Arctic (e.g., GC, 2023d). The Panel believes that, through dedicated funding and capacity-building, the NCE program has been able to engage in activities that benefit collaborative, effective Arctic research that is beyond the capacity of individual researchers working on their own.

Several NCEs have contributed to research in the Arctic; however, Leading Operational Observations and Knowledge for the North (LOOKNorth) and ArcticNet have a specific focus on advancing Northern research. LOOKNorth focuses on advancing remote sensing capabilities in the North through collaboration with satellite small and medium-sized enterprises and Northern communities (LOOKNorth, 2020). ArcticNet (the main sponsor of this assessment) brings together Inuit organizations, Northern communities, researchers from 35 Canadian universities, and federal and territorial/provincial agencies (ArcticNet, 2021a). Key contributions made by ArcticNet include creating the North-by-North Program (which directly funds Northern-led research in Northern post-secondary institutions and Inuit communities); providing funding to projects, graduate students, and Northern research staff; training highly qualified personnel; and contributing to peer-reviewed and other publications (ArcticNet, 2021b). It also has strong partnerships with Inuit and Indigenous groups; through its Core Research Program, ArcticNet collaborates with 60 Indigenous partners in 48 communities (ArcticNet, 2021b).

¹⁷ The initiative was administered by CIHR, Innovation, Science and Economic Development Canada (ISED), the Natural Sciences and Engineering Research Council of Canada (NSERC), and the Social Sciences and Humanities Research Council (SSHRC).

Beginning in 2018, the NCE program has been gradually phased out, with funding reallocated to the New Frontiers in Research Fund (NFRF) (GC, 2019b). While the funding still exists, the Panel notes that the NFRF focus on “high-risk/high-reward, transformative and rapid-response Canadian-led research” (GC, 2023e) does not necessarily align with Arctic and Northern priorities, leaving the future of large-scale research capacity in the North highly uncertain.

Stronger partnerships between the North and the South are required to support meaningful engagement; increased capacity is needed to enable this

While there are several active Northern-based research institutions and organizations, most research efforts taking place in the Arctic are led by researchers based at Southern institutions. Many universities in Canada employ staff who conduct research in the North, and several host specific centres or institutes; the Centre for Earth Observation Science (CEOS) at the University of Manitoba is one of many examples. Although CEOS is generally concerned with how climate change will affect Earth processes, it has a particular focus on the Arctic marine system and conducts research in meteorology, glaciology, oceanography, trace metals, and many other areas (CEOS, 2022a). It also contributes to Arctic research by operating several facilities, including the Churchill Marine Observatory (CEOS, 2022b). CEOS also provides support for the Canadian Coast Guard Amundsen, which is managed by Amundsen Science and hosted at Université Laval. The Polar Continental Shelf Program (PCSP) run by Natural Resources Canada is another Southern-operated research effort related to the North. PCSP provides “expert logistics advice and coordination to Canadian government, non-government, university, and international researchers” and offers a variety of supports, including air transportation, equipment, and laboratory space (NRCan, 2015). Although PCSP provides valuable services to Northern researchers, the Panel notes the program takes an inherently colonial approach to Arctic and Northern research as it relates to remote fly-in/fly-out research activities.

Both Aurora College and Nunavut Arctic College provide physical services to researchers in the North. The former’s ARI runs two research centres (located in Inuvik and Fort Smith) that support researchers through office and laboratory access, and facilitate the hiring of local community monitors, guides, and research assistants (ARI, n.d.-c, n.d.-d). Similarly, the NRI is operated by Nunavut Arctic College and maintains research centres and support facilities in Arviat, Igloodik, and Iqaluit (NRI, 2021b, n.d.), which offer accommodations for researchers, as well as laboratory space (NRI, n.d.). In the Panel’s experience, however, these institutes are sometimes seen as little more than storage facilities

or providers of logistical support rather than partners in research endeavours. The Canadian High Arctic Research Station (CHARS) operated by Polar Knowledge Canada (POLAR) also provides researchers with accommodation and technical service support (POLAR, 2016), but the Panel has found that the CHARS campus is not always accessible, especially by local Indigenous Peoples. The Panel believes this inaccessibility is due, in part, to the top-down nature of federal government administration and is exacerbated by incompatibilities between Southern-based administrative policies and Northern realities. Despite this, CHARS has the potential to reflect a more equitable future for Arctic and Northern research, moving away from the rigid and colonial nature of programs such as PCSP.

These examples provide insight into the types of research infrastructure across the North; however, a full account is beyond the scope of this report. Existing research infrastructure is well placed to support meaningful partnerships with Indigenous Peoples and Northern communities more broadly, but capacity is often limited, hindering researchers' ability to put in the time and effort needed to strengthen existing relationships or develop new ones.



Courtesy of the Arctic Indigenous Wellness Foundation (AIWF)

The Arctic Indigenous Wellness Foundation (AIWF) urban land-based healing camp based in Yellowknife, N.W.T.

Access to community infrastructure and services directly supports the self-determination of Northern Indigenous communities

Research infrastructure is often discussed solely in terms of buildings and equipment (e.g., universities, laboratories), thereby overlooking the day-to-day supports that are also needed to maintain the system overall. These include community infrastructure¹⁸ (e.g., housing, office space, internet access, transportation) as well as social, cultural, and health services. As outlined in the next section, these forms of community infrastructure and services are often inaccessible or of insufficient quality across the North for researchers and Northerners themselves.

In the Panel's view, this goes beyond considerations of accessibility—these limitations are, at their core, issues of justice. Article 7.1 of UNDRIP states that “Indigenous individuals have the rights to life, physical and mental integrity, liberty and security of person” (UN, 2007), which necessitates access to critical community infrastructure, and social, cultural, and health services. Access to adequate and affordable housing, efficient and reliable internet, nutritious and culturally relevant food, and timely and culturally safe physical and mental health services are necessary elements that respect Indigenous Peoples' right to physical and mental integrity. As such, the Panel emphasizes the importance of infrastructural accessibility to the self-determination of Indigenous communities across the North.

Supporting whole community well-being through well-developed health and social services, as well as food security, is critical for an inclusive, collaborative, and effective Arctic and Northern research system

ITK identified the availability of health services as one of the key social determinants of health in Inuit Nunangat (ITK, 2016). Access to medical services—in particular, specialized services not available in Nunavut—was identified as a common reason for the relocation of Nunavummiut to urban centres, according to a 2022 labour force analysis (ESDC, 2022). Further, concern has been raised about the cost of medical services in Nunavut, especially for those not enrolled under the *Nunavut Agreement*—in many instances, those who are not land-claim recipients must pay out of pocket should they require transportation to an urban centre due to a medical concern (ESDC, 2022).

Mental health services are also important to support community well-being. As noted in the *ITK National Inuit Suicide Prevention Strategy* (2016), the “high rates of suicide in Inuit Nunangat are a symptom of the social and economic inequities that have existed between Inuit Nunangat and most other regions of Canada since Inuit began to be impacted by colonization and transition off the land into

18 The Panel also includes the processes needed for research approval in this category.

permanent settlements.” Male Inuit between the ages of 15 and 29, in particular, have been experiencing these negative impacts, with a suicide rate approximately 40 times higher than the national average in some regions across the North (ITK, 2016). The Panel notes that, despite comprehensive suicide-prevention strategy by ITK, as well as the right to “the highest attainable standard of physical and mental health” under UNDRIP (Article 24.2) (UN, 2007), accessible and culturally relevant mental health services across the North remain insufficient.

Adequate and affordable childcare has also been identified as a critical community infrastructural element due to its role in educational attainment (Chapter 7). A significant proportion of Inuit post-secondary students have children and are more likely to be studying away from home, with no nearby relatives to provide childcare during school days (ITK, 2020). Many Northern institutions have recognized childcare as a vital support for students and have implemented a number of successful programs (e.g., Dechinta, n.d.-a). The Panel notes that childcare programs can offer critical support to numerous sectors in the North beyond education. Such programs, if made accessible to all those who require childcare, could help foster increased inclusivity in employment and research, bolstering the socioeconomic welfare of Northern communities (e.g., Baxter-Trahair & Williams, 2017).

Food systems¹⁹ and food security are other critical components that can support well-being in the North. Food security—wherein people “have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active or healthy life” (FAO *et al.*, 2022)—impacts all aspects of the research system, supporting educational as well as professional attainment. Data from 2019 found that 46% of people in Nunavut, 23% in the N.W.T., and 15% in the Yukon live in moderately or severely food-insecure households (Caron & Plunkett-Latimer, 2022). Food insecurity is a particular problem for Inuit in Canada; according to the 2017 *Aboriginal Peoples Survey*, 76% of Inuit aged 15 or older living in Inuit Nunangat were experiencing food insecurity (StatCan, 2018; ITK, 2021). Although the prevalence of food insecurity is highest in Nunavut, it is a wide-ranging issue affecting Inuit Nunangat as a whole (Figure 5.2). Given this prevalence, research related to culturally appropriate food sources is important. For example, additional support to better understand and mitigate the impacts of climate change on local fishing and harvesting practices has been identified as a critical need in this area (ICC Alaska, 2020).

19 *Food systems* encompass “the infrastructure, environmental factors, policies, and regulatory practices that influence the quality, costs, and availability of food” throughout a region (ITK, 2021).

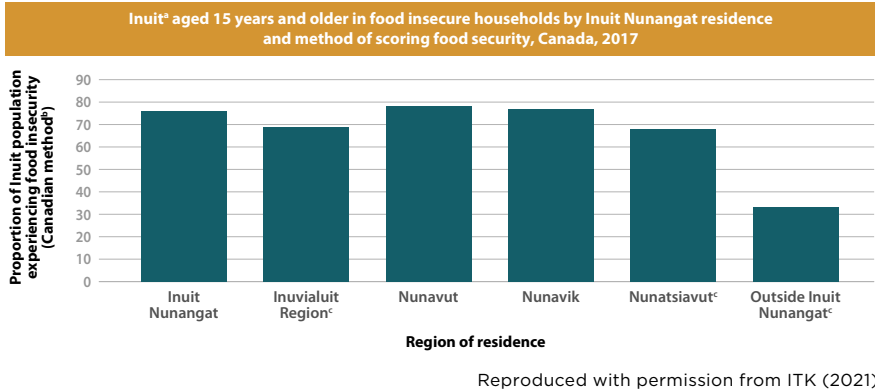


Figure 5.2 Prevalence of Inuit Food Insecurity in Inuit Nunangat by Residence

Inuit food insecurity across Inuit Nunangat for people aged 15 or older, including a breakdown of each Inuit region. Data is from StatCan (2018) (with custom tabulation for ITK).

The following notes are quoted directly from ITK (2021):

- ^a Inuit refers to individuals who identified only as Inuk (Inuit) or who identified as Inuk (Inuit) with other Indigenous identities.
- ^b In addition to combining “low food security” and “very low food security,” the Canadian method also includes “marginal food security” in the prevalence of food insecurity. This method was used for the first time in the 2017 APS.
- ^c Significantly different from reference category, 95% confidence levels do not overlap.

The Yukon First Nation Education Directorate (YFNED) Nutrition Program is one example of a program that aims to reduce food insecurity in the territory to improve community well-being (YFNED, n.d.). To help make healthy food accessible to Indigenous youth in Whitehorse, and to promote traditional food practices (e.g., seasonal harvesting, preservation), the YFNED Nutrition Program offers school-based breakfast and lunch services, monthly “family feasts” that bring together Indigenous community members, and food hampers for Indigenous families over school breaks (YFNED, n.d.). Another example is the Pye Centre for Northern Boreal Food Systems, a research, education, community, and wellness farm owned and operated by the Labrador Campus of Memorial University (Pye Centre, n.d.). With a focus on food sovereignty and food systems research, the Pye Centre conducts research with local farmers, Indigenous governments, and Northern food organizations on topics of priority for residents of Labrador (Pye Centre, n.d.).

The above examples of community infrastructure and services are the critical yet often overlooked elements required for an effective, inclusive, and collaborative Arctic and Northern research system. In the Panel's view, supporting whole community well-being should be a top priority within the research community. When communities have access to culturally appropriate and comprehensive health and social supports, longstanding inequities that have thus far served as barriers to meaningful inclusion and collaboration in research can begin to be addressed.

Accessibility and Accountability in Infrastructure

Accessibility relates to the quality and availability of research and community infrastructure, as well as social, cultural, and health services. Accountability, by contrast, relates to how infrastructure serves the communities it is in. While many of the issues discussed below are tied directly to the concepts of community accessibility and accountability, the Panel notes they are also tied to the idea of justice, since existing policies and programs linked to infrastructure have led to racist outcomes, whereby the services in Indigenous communities are of substantially lower quality than in other parts of Canada.

Connecting available laboratory infrastructure across disciplines and jurisdictions can increase Arctic and Northern research capacity

A cross-cutting issue that impacts multiple fields of Arctic and Northern research is the availability and accessibility of laboratory space. In the Panel's experience, there is currently limited laboratory infrastructure available for research use outside the purview of the territorial governments (e.g., labs associated with territorial hospitals). This poses significant challenges for sampling work that is time-limited or requires rapid response. In the N.W.T., for example, Panel members have had to find private labs willing and available to take and analyze many types of samples (e.g., human blood)—the closest often being facilities in the South.

The Panel notes that work is being done at the NRI to improve access to laboratory testing in the territory; however, that work is currently limited to animal health research. This represents a significant area of opportunity for the Arctic and Northern research system, where resources and infrastructure can be connected to improve the effectiveness of research being conducted in the North. The Panel believes that, by establishing ways to utilize the laboratory space and personnel already available in the North for all disciplines, barriers to timely research can be reduced and meaningful research results for communities can be improved.

Northern communities require adequate and available housing and professional spaces to support collaborative and inclusive Arctic and Northern research

The conditions and requirements of housing in Northern regions differ significantly from those in the South. Climatic considerations, alongside logistics related to materials, transport, and operations, result in generally higher building and maintenance costs in the North (NHF *et al.*, 2019). However, across the North, regional variance also plays a role in determining housing costs. In the western Arctic, longer building seasons and the wider road network somewhat reduce costs compared to the eastern Arctic, where costs related to the shorter construction season are further impacted by reliance on materials brought in solely by ship or plane (NHF *et al.*, 2019). Consideration must also be given to expenses associated with ongoing maintenance and heating as well as services such as water delivery and waste water collection (APPA, 2017). Moreover, the changing climate directly influences the high cost of Northern housing construction. Permafrost thaw, for example, is causing severe damage to current infrastructure and requires new housing projects be built with further thawing in mind, necessitating specific skillsets and supplies that, if available, increase costs substantially (APPA, 2017; NHF *et al.*, 2019).

High construction costs, combined with low average household income levels across the North (Chapter 3), result in a system that does not support private home ownership or market rentals (ITK, 2019). In a study assessing housing outcomes in Nunavik and Nunavut, Riva *et al.* (2020) found that approximately 78% of respondents lived in social housing (i.e., government-subsidized rentals), with 33% having spent four or more years on the social housing waitlist. Private ownership is further disincentivized by insurance companies, which often view investments in private home ownership in the North as risky and either do not provide services or provide rates that are unaffordable (NHF *et al.*, 2019).

Overcrowding is another issue facing many Northern households in Canada: over half of Inuit across Inuit Nunangat live in overcrowded housing²⁰ (ITK, 2019; NHF *et al.*, 2019; Riva *et al.*, 2020). Issues of overcrowding can exacerbate deteriorating infrastructure, especially in terms of inadequate ventilation, resulting in a high prevalence of mould in Northern homes (e.g., Riva *et al.*, 2020). In the view of the Panel, factoring rising housing costs into budget considerations at all levels of government is one way in which Northern communities can be better supported.

The lack of adequate and affordable space also applies to professional spaces, such as offices and labs. For example, Andrew Arreak, the regional operations lead for SmartICE in the Qikiqtaaluk Region, noted that “finding an office space with suitable storage for our equipment is a significant challenge” (A. Arreak,

²⁰ Overcrowded housing is defined by a ratio of more than one individual per room (Riva *et al.*, 2020).

personal communication, 2022). Such difficulties in the North are common, as Leanne Beaulieu, a Sikumik Qaujimajuti mapping specialist based in Gjoa Haven, has noted: “although office space exists, it is really expensive” (L. Beaulieu, personal communication, 2022). These quotes reflect how Northern residents involved in research must either make do with less-than-ideal conditions or move to larger centres to support the housing and office space requirements of their project or initiative.

Investments have been made to develop infrastructure devoted to supporting Northern research, such as dormitories and lab space (e.g., POLAR, 2016). However, in the Panel’s experience, such infrastructure is often inaccessible to the communities within which it is built and, as a result, provides little overall benefit. In the view of the Panel, housing and professional space should be accessible to community members if it is to support a truly inclusive research system.

An equitable Arctic and Northern research system includes access to basic transportation infrastructure and affordable, consistent, and frequent air travel

Transportation infrastructure across Northern Canada is limited, making travel to, from, and across the North expensive and time-consuming (TC, 2020). Air travel is the main mode of transportation in the North, as road and sea access are limited by weather, season, and community location. Nunavik and Nunavut, for example, have no connection to Southern Canada via roadway and have limited road linkages between many communities (TC, 2020). In the Panel’s experience, where roadways are unavailable or unusable, many Northerners choose to travel by other means (e.g., snowmobile, ATV) despite these being costly to own and operate. Travel by road is more accessible in the N.W.T. and the Yukon; both territories connect to Southern Canada via interprovincial highways (Gov. of NT, 2015; TC, 2020). However, many communities in the western part of the N.W.T. rely on winter roads, which are being negatively impacted by the warming climate (Gov. of NT, 2015). These impacts, which include melting snow cover, permafrost thaw, and declining sea ice (IPCC, 2023), subject residents of the North to significant risks when travelling (e.g., SmartICE, 2021). Transportation via sea is also an important, yet limited, mode of Northern transportation, with many coastal communities in Nunavut, Nunavik, and the N.W.T. relying on annual Arctic sealift operations²¹ to provide essential supplies for the year (TC, 2020).

21 The sealift is a system of tanker and dry cargo ships that carry out resupply activities at major ports across the North (TC, 2020).



Courtesy of Kimberly Fairman

First sunrise in Taloyoak, Nunavut after nearly 50 days of darkness (January 14, 2023)

With limited road and sea transport linkages, air travel is critical across the North. Northerners travel by air between communities, and it is how Southern researchers travel to and from the communities they are working in. Yet, despite the number of airports available—4 Northern gateway airports in Iqaluit, Rankin Inlet, Whitehorse, and Yellowknife; the international Goose Bay Airport; 80 territorially operated airports; and 13 airports located in Nunavik (TC, 2020; Goose Bay Airport, n.d.; Quebec Getaways, n.d.)—the Northern air system is expensive and often involves significant time spent in transit, as well as much uncertainty due to weather conditions. In a snapshot of flight costs at the time of writing, a one-way flight from Cambridge Bay, Nunavut to Yellowknife, N.W.T., for example, costs approximately \$540, despite having a relatively short flight time of just under three hours (Canadian North, 2023a). For researchers travelling

from the North to the South, a one-way flight from Cambridge Bay to Toronto costs, on average, greater than \$1,000, with a total travel time of anywhere between 14 and 26 hours, depending on the number and duration of layovers (Canadian North, 2023b). However, in the Panel's experience these numbers underrepresent the average cost of flying within, to, and from the North, especially when travel includes smaller communities. For example, a one-way flight from Pond Inlet to Resolute Bay, which are both in Nunavut, can cost, on average, between \$2,000 and \$4,000 (Canadian North, 2023c).

In the view of the Panel, the lack of basic transportation infrastructure and the high cost of regular air travel are significant barriers to equitable access to the research system. As noted in Chapter 3, the median individual income in 2016 for Inuit in Inuit Nunangat was \$23,485 compared to the \$92,011 made by non-Indigenous residents across the region (ITK, 2018b). This disparity influences the accessibility of the research system by limiting who can afford regular transportation between communities, especially in situations where research involves travelling to the South. Moreover, the Government of the N.W.T. has noted that the lack of transportation infrastructure across the North contributes to the territory's high cost of living (Gov. of NT, 2015)—a situation that further entrenches the inaccessibility of the research system by reinforcing income inequality. The Panel believes that affordable, comprehensive transportation to, from, and between the regions across the North is a critical component in ensuring the research system is inclusive, collaborative, and, most importantly, equitable.

Access to reliable internet service in the North supports equity in research

Broadband internet access is a critical element required to foster inclusivity within the Arctic and Northern research system. Yet, internet access across Inuit Nunangat is “universally slower, unreliable, costly, and more unpredictable than for citizens in most areas of Canada” (ITK, 2018a). The Government of Canada's national target for internet download/upload speeds is 50/10 megabits per second (Mbps); however, as of 2019, no households in Nunavut had access to internet download speeds of 25 Mbps or greater (CRTC, 2020; AEC, 2021). Slow and unreliable internet download speeds disadvantage residents and visitors to the North by further entrenching the divide between Northern and Southern Canada and limiting people's ability to access and participate in research (CCA, 2021b).

In the Panel's view, improved internet access is necessary for the development and support of an equitable Arctic and Northern research system. The Panel notes that, despite the critical role of the education system in supporting research (Chapter 7), as well as the recognized and entrenched right of Indigenous Peoples to quality education under UNDRIP, slow and unreliable internet is often cited as a significant

barrier to attaining educational goals. In a study conducted by Employment and Social Development Canada (ESDC, 2022), internet access was identified as a top factor influencing Inuit decisions to move away from Nunavut, as it is a critical factor in pursuing education. A lack of internet connectivity was also noted to impact and limit distance education programs in the territory (ESDC, 2022).

Improving access to reliable and affordable internet service would support education and employment opportunities in Northern Canada and, in turn, support Northern communities (CCA, 2021b). However, the Panel notes that improved internet service across the North would also help increase Southern researchers' capacity for meaningful relationship development in the region. When afforded the opportunity to work online reliably for extended periods of time, Southern researchers can spend more time in the North, increasing their ability to develop and foster meaningful relationships with the communities with whom they are working. Moreover, the Panel notes that reliable internet can improve data communication after a project has been completed, expanding the accessibility of research results for community members.

There have been some investments in internet connectivity in the North, with the Government of Canada allocating \$62.5 million in funding to broadband projects in N.W.T. and the Yukon in 2020 and an additional \$53.4 million to the Kativik Regional Government in Nunavik in 2021 (AEC, 2021). However, there are many communities in the North who have not received the needed supports (including funding) to improve broadband infrastructure, which the Panel believes is a significant gap that limits the development of the Arctic and Northern research system overall.

As a Permanent Participant of the Arctic Council, Canada is responsible for advancing an equitable vision for Arctic and Northern research

The Arctic Council is composed of eight founding states (Canada, the Kingdom of Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden, and the United States) and six Indigenous organizations (Aleut International Association, Arctic Athabaskan Council, Gwich'in Council International, ICC, Russian Association of Indigenous Peoples of the North, and Saami Council); these are all Permanent Participants (Arctic Council, n.d.). The Arctic Council's mandate centres on conservation, sustainable resource use, and knowledge co-production (Arctic Council, n.d.). As such, it devotes time to promoting scientific research (Arctic Council, 2021), which the Panel believes can help to further build capacity in Northern communities.

All decisions and statements made by the Arctic Council require the consensus of the eight member states; however, as a forum, it cannot enforce its guidelines,

assessments, or recommendations (Arctic Council, n.d.). Instead, its role is to help shape relevant policy discussions and research directions within the Arctic states, which are then enforced at the national level (Arctic Council, n.d.). That said, the Arctic Council has helped produce legally binding national agreements of significance, such as the *Agreement on Enhancing International Arctic Scientific Cooperation* (Arctic Council, 2017). As a member, Canada must contribute to joint science-based Arctic programs (CIRNAC, 2021c).

Together at the Fire: Reflections on Infrastructure

A more holistic understanding of infrastructure is required to support an Arctic and Northern research system that is inclusive and collaborative. The Panel believes that, extending infrastructural considerations beyond solely bolstering Northern research and strengthening community well-being overall, Arctic and Northern research infrastructure could support increased capacity, self-determination, and sovereignty within institutions and across Nations. By shifting control of spaces, services, and processes to Indigenous Peoples, rights would be respected, and opportunities would arise for more equitable and ethical partnerships between Indigenous Peoples and researchers. Furthermore, making current Northern infrastructure accessible and accountable to Indigenous Peoples is also critical to ensuring meaningful collaboration and inclusivity in research.



Sharing Knowledges: Data

*Such tasty treasures were hidden
under rock piles. Though the world
was a lightless place, it was
no challenge for Fox to sniff things
out. Under [their] blanket
of shadow, Fox raided at will.*

Qitsualik-Tinsley &
Qitsualik-Tinsley (2015)





Responsibilities Moving Forward

- Building data sharing and ownership agreements between researchers and communities into research programs maintains accountability and ensures Indigenous Peoples have access to relevant data.
- Canada has an opportunity to be a global leader in equitable, ethical, and inclusive research by shifting influence over data to Indigenous Peoples and advancing access and benefit sharing agreements with Indigenous communities and organizations.
- Supporting the data sovereignty of Northern Indigenous Peoples goes hand in hand with bi-directional capacity-building with researchers and academic institutions.
- Special considerations in terms of self-determination and cultural security are required to affirm, recognize, respect, and value Indigenous knowledge systems; intellectual property laws in Canada and internationally are ill-suited to protect Indigenous knowledge systems.
- Improved interoperability of Arctic and Northern data is a collective responsibility and required to increase accessibility; however, it must not come at the cost of Indigenous cultural security.

The goal of research is to produce, disseminate, and advance knowledge in many forms, including Western knowledge systems and Indigenous knowledge systems unique to the North (Box 6.1). This chapter examines what happens to the data created and the knowledge gained through the research process. Access, storage, protection, ownership, and control of data or information are all critical considerations for advancing ethical research in the North. The Panel discusses Indigenous data sovereignty, intellectual property, and access and benefit sharing in the context of Northern research while considering how data become accessible for the communities they concern and accountable to those who have provided them. The chapter also provides an overview of this conceptual landscape and looks at promising practices and ongoing activities that may be more broadly implemented across the research system. The Panel emphasizes the importance of upholding and supporting the rights of Indigenous Peoples to own, control, access, protect, and ensure the cultural security of data about themselves and their Land, territories, and resources.

Box 6.1 Types of Data

Many different forms of data are relevant to Arctic and Northern research, such as local-scale environmental data, gridded climate data, physical specimens (e.g., biological tissues, artefacts), Earth observation data, health data, genomics data, digital collections, and interview and oral history recordings. Indigenous data fall into this range and can extend well beyond it. Stephanie Carroll Rainie, an Indigenous scholar and expert in Indigenous data sovereignty, defines Indigenous data as “data in a wide variety of formats inclusive of digital data and data as knowledge and information. It encompasses data, information, and knowledge about Indigenous individuals, collectives, entities, lifeways, cultures, lands, and resources” (Rainie *et al.*, 2019). The Panel notes there is no singular or uniform approach to data management and sharing, and that not all promising practices discussed in Chapter 6 will apply to all types of data; however, Indigenous data sovereignty and data-sharing agreements are always important considerations in Northern research endeavours.

Sharing Knowledges and Data in a Good Way

Sharing knowledges and data in a good way includes contemplation of what type of research is being conducted, who is benefitting from it, what sorts of knowledge or data are emerging from research activities, and how those knowledges or data are being used. Much like the tasty treasures Fox sought, there is much to be learned in and from the North, but those seeking knowledge must embody Raven, giving thought to the assumptions that underpin their activities and bringing light to the darkness to ensure that data are no longer “raided at will.” Respecting others and the Land is at the root of sharing knowledges in a good way; this is reflected explicitly in Article 31 of the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) (UN, 2007).



UNDRIP Article 31: 1. Indigenous Peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions. 2. In conjunction with Indigenous Peoples, States shall take effective measures to recognize and protect the exercise of these rights.

In the Panel's view, much of the positive work in Arctic and Northern research relies on the goodwill of individuals to do research and share knowledge in a good way. Despite this, the underlying structures set up to guide data sharing, knowledge gathering, and intellectual property (IP) are not yet advanced enough to fully support these activities in a way that reflects truly good work; the voluntary nature of the application of community-oriented ethics, for example, is susceptible to disruption without adequate enforcement and capacity. The Panel notes that ways to ensure data are collected, used, and shared in a good way are impacted by the type of data considered. This chapter primarily looks at place-based data, but discussions related to non-place-based data, while beyond the scope of this report, are also important (Box 6.2).

Box 6.2 Non-Place-Based Data

As discussed in Box 6.1, the term data encompasses many types of information and knowledges. One of these types of data is non-place-based, wherein data pertaining to the North is not explicitly collected in the North. These data are typically open access and available worldwide; examples include satellite data that are freely available through the European Space Agency (ESA, n.d.), and the climate model simulations from the Coordinated Regional Climate Downscaling Experiment (CORDEX), which are widely used in Canada and internationally (WCRP, n.d.). In these datasets, the North is treated no differently than any other location on Earth; Canada as a state may not have any control over these types of data and who has access to them. Researchers, both domestic and foreign, can technically conduct Arctic and Northern research without having stepped foot in the North, nor having had any communication with Indigenous and Northern communities. This raises issues around data sovereignty and privacy, including who has a right to own and control those data if they include Indigenous Land. Moreover, some topics of global interest and importance may require researchers to be physically present in the North (e.g., atmospheric sampling, palaeoenvironmental reconstructions), yet, although they may also be of interest to Indigenous communities, they may not be a priority, since they will not lead to direct benefits or improvements to quality of life in that region.

In UNDRIP and the *Indigenous and Tribal Peoples Convention* that preceded it (ILO, 1989), Land is considered the total environment, inclusive of lands, waters, air, and other areas which Indigenous Peoples occupy or otherwise use. This creates a complicated situation where satellite data and imaging allow users across the world to monitor and assess environmental conditions in Indigenous territories (which may include sacred sites), with no oversight from the Government of Canada or considerations of privacy.

Recognizing that this is a difficult problem that demands a nuanced approach, the Panel calls on all those involved in the Arctic and Northern research system to discuss and consider solutions that recognize Indigenous Peoples' rights when creating guidelines and regulations around privacy and data sharing for all types of data, including non-place-based data or data unrelated to specific community interests.



UNDRIP Article 25: Indigenous Peoples have the right to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas and other resources and to uphold their responsibilities to future generations in this regard.

Justice and Cultural Security of Knowledges and Data

To be just, all components of data access, ownership, control, storage, and protection must respect and uphold the rights of Indigenous Peoples as enunciated by UNDRIP. This includes data gathered by researchers about Northern Indigenous Peoples, as well as the treatment and protection of Indigenous knowledge systems across the North. Research and knowledge-gathering done with the goal of addressing pressing Northern issues are increasingly including, learning from, and being led by Northern Indigenous Peoples. However, this change also poses a threat to Indigenous Peoples because of requests to share their knowledges without adequate policies in place to protect them from appropriation (de Beer & Dylan, 2015).

A just research system recognizes Indigenous Peoples' right to own and control their data

Indigenous Peoples across Canada have the right to self-determination, which thereby includes the right to decide what happens to data associated with research linked to their persons and communities (Carroll *et al.*, 2020). This right is recognized in Article 31 of UNDRIP (UN, 2007), which discusses Indigenous IP and data sovereignty (Box 6.3).

Box 6.3 What Is Data Sovereignty?

Data sovereignty is the management of information “consistent with the laws, practices and customs of the nation-state in which it is located” (Snipp, 2016). In the context of Indigenous Peoples, *data sovereignty* can be defined as “Indigenous Peoples’ right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as their right to maintain, control, protect and develop their intellectual property over these” (Kukutai & Taylor, 2016). Data sovereignty is further related to legal and ethical issues of data storage, ownership, consent, and access, taking into account the use of data in multiple contexts such as policy-making or further research (Kukutai & Taylor, 2016). Conversations around Indigenous data sovereignty are linked to IP discussions on how Indigenous knowledge systems can be protected from appropriation and misuse while being conserved in perpetuity, ensuring survival for future generations of Indigenous Peoples (de Beer & Dylan, 2015; ISED, 2020). The Panel notes that Indigenous data sovereignty extends to research being done on Indigenous Lands as well as knowledge systems.

Appropriation, misrepresentation, aggregation (a form of data erasure), inappropriate legislation, patriarchy, and imposition, as well as a lack of transparency, reciprocity, and stewardship, are historical and ongoing challenges Indigenous Peoples face when it comes to data ownership and control (Indigenous Innovation Initiative, 2021). Indigenous Peoples have been subject to extensive research that has been irrelevant or detrimental to their well-being and interests; this research has largely been carried out and paid for by non-Indigenous institutions (FNIGC, 2016; ITK, 2018a). Issues of who controls Indigenous data lead to further problems with determining who knows about it (and can access it), how data are collected, and how they are used (FNIGC, 2016). In other words, the advantage lies with those who collect and control the data rather than those who provide it; this system creates data dependencies. Using and implementing UNDRIP as a starting point to begin the practical implementation of Indigenous data sovereignty, scholars have determined that the most crucial element is “a relocation of authority over relevant information from nation-states back to Indigenous Peoples” (Kukutai & Taylor, 2016). The Panel emphasizes, however, that this shift in influence includes a complementary increase in capacity within Indigenous communities so they can manage and store data safely and appropriately.

Repatriation is a critical component of Indigenous data sovereignty and is required to uphold the rights of Indigenous Peoples

Indigenous data include physical materials and ethnographic recordings (oral, digital, and photographic), and since these cultural materials are often held in institutions far from their original homes, repatriation is linked to Indigenous data sovereignty. This is upheld in Article 12 of UNDRIP, which concerns the right of Indigenous Peoples to use, repatriate, and control their ceremonial objects, and in the 67th Call to Action in the final report of Canada’s Truth and Reconciliation Commission (TRC) asking museums and archives to revise their policies to be in line with UNDRIP (UN, 2007; TRC, 2015).



UNDRIP Article 12: 1. Indigenous Peoples have the right to manifest, practise, develop and teach their spiritual and religious traditions, customs and ceremonies; the right to maintain, protect, and have access in privacy to their religious and cultural sites; the right to the use and control of their ceremonial objects; and the right to the repatriation of their human remains. 2. States shall seek to enable the access and/or repatriation of ceremonial objects and human remains in their possession through fair, transparent and effective mechanisms developed in conjunction with Indigenous Peoples concerned.

TRC Call to Action 67: We call upon the federal government to provide funding to the Canadian Museums Association to undertake, in collaboration with Aboriginal Peoples, a national review of museum policies and best practices to determine the level of compliance with the *United Nations Declaration on the Rights of Indigenous Peoples* and to make recommendations.

In this situation, data sovereignty includes the right to decide how to best care for (or, if appropriate, destroy) materials held within archives (Reed, 2021; Christen *et al.*, 2022). Options to do this include: “providing different modes of access (e.g., for seasonal materials or for language speakers only) or providing the space and time for communities to interact with, read, listen to, and/or view materials outside of the institution—without guarantees of return” (Christen *et al.*, 2022). Critically, Western notions of care focus on physical preservation, whereas Indigenous scholars have highlighted that not all objects should be kept and maintained in perpetuity—Western practices disregard the relationality of objects (Christen *et al.*, 2022).

There are few Canadian regulations concerning the repatriation of cultural belongings, and existing legislation is piecemeal among territories, provinces, and institutions such as museums (Bourgeois, 2021). This is not necessarily a bad thing, as it allows Indigenous Peoples to tailor their negotiations for return of their belongings to best meet their needs rather than having this determined by prescribed policies. However, in the Panel’s view, it can be difficult for Indigenous communities to begin and maintain the process of repatriation, and to understand the complex landscape of legislation or policy for the relevant region(s) or institution(s). In these situations, guides such as the one developed by Bourgeois *et al.* (2021) provide background information on relevant acts and policies, as well as guidance on how to proceed; these can support Indigenous communities seeking to repatriate their cultural belongings.

Despite the considerable challenges, Indigenous Peoples across Canada are actively pursuing the repatriation of their belongings. For example, Innu Nation is negotiating the return of a significant collection of Innu cultural objects and resources from the Canadian Museum of History, including archaeological and ethnographic materials in photo, video, and document formats (Innu Nation, n.d.). To support the homecoming of these materials, Innu Nation is building a museum facility that will host and curate the objects (Innu Nation, n.d.). In an interview with CBC, archaeologist and Innu Nation cultural guardian Jodie Ashini states, “They’ll be on our land. They’ll be able to be viewed by our children. They’ll be able to be remade. They’ll be able to be touched. They’ll be able to be viewed. We’ll be able to have them home” (Atter, 2023). The return of cultural objects is linked to language renewal, as well: “our items will come back, and the language will come back with them” (J. Ashini, personal communication, 2022). The Panel notes, however, that the onus for repatriation should not sit only with Indigenous communities. As explained by Christen *et al.* (2022), museums and archives that hold cultural materials belonging to Indigenous Peoples “bear the responsibility to begin the process of reunification.” To create structural change in how archival institutions operate, Christen *et al.* (2022) state:

Restructuring archives around coming home is about letting go of systems that deny Indigenous authority and attribution, letting go of legal structures that feign neutrality, letting go of metadata schemas that define Indigenous knowledge bluntly. The only thing to hold on to is the certainty that Indigenous People’s relationships to their homelands will endure and outlast any preservation plan archives devised.

There are ongoing efforts to solidify Indigenous data sovereignty and data stewardship; however, these have not included needed support and capacity-building

There is no single organization championing Indigenous data sovereignty for all Indigenous Peoples in Canada. The most well-established organization is the First Nations Information Governance Centre (FNIGC), an independent, non-profit entity responsible for conducting surveys (including the *First Nations Regional Health Survey* and the *First Nations Labour and Employment Development Survey*) and administering ownership, control, access, and possession (OCAP®)—a set of principles to aid First Nations in asserting jurisdiction over their data (FNIGC, n.d.-b, n.d.-c) (Box 6.4).²² FNIGC also maintains the First Nations Data Centre (FNDC), a database that offers access to published and unpublished data from FNIGC surveys to those pursuing academic research, policy development, and

²² OCAP® is a registered trademark of the First Nations Information Governance Centre (FNIGC). To fully understand these principles, see their website at <https://fnigc.ca/ocap-training/>.

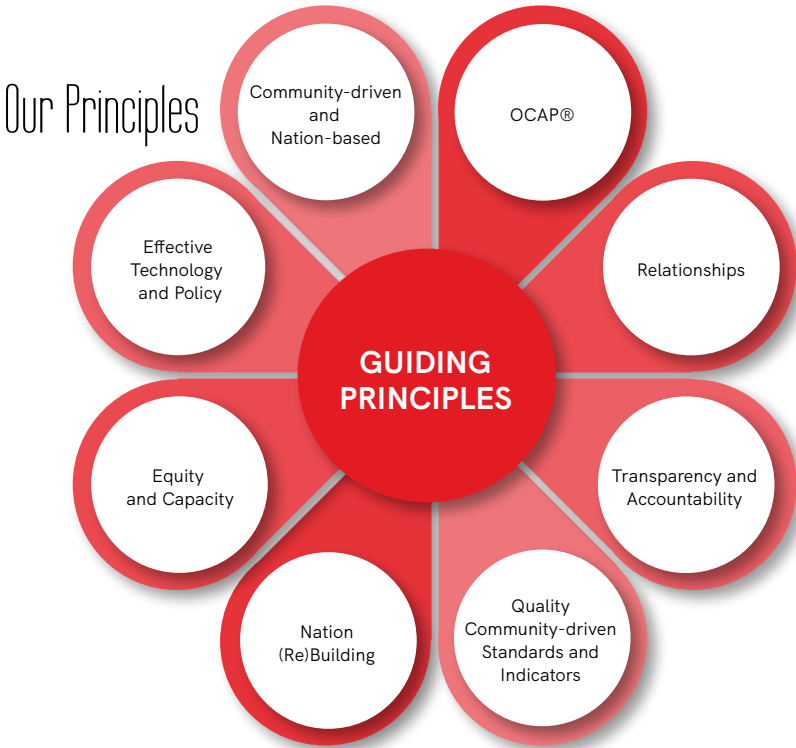
program planning (FNIGC, n.d.-d, n.d.-e); FNDC also offers free access to published data that have been curated and appropriately presented by FNIGC (FNIGC, n.d.-d), as well as a pay-per-use model to request access to raw data, which allows FNIGC to review requests and ensure appropriate use through data-sharing agreements and mandatory OCAP[®] training (FNIGC, n.d.-e).

Box 6.4 OCAP[®] Principles

In 1998, the OCAP[®] principles were established by the national steering committee that would later become FNIGC (FNIGC, n.d.-c). OCAP[®] “asserts that First Nations alone have control over data collection processes in their communities, and that they own and control how this information can be stored, interpreted, used, or shared.” Of the four principles attached to this guidance, *ownership* dictates “that a community or group owns information collectively in the same way that an individual owns his or her personal information” (FNIGC, n.d.-a). *Control* asserts “that First Nations, their communities, and representative bodies are within their rights to seek control over all aspects of research and information management processes that impact them” (FNIGC, n.d.-a). *Access* affirms that “First Nations must have access to information and data about themselves and their communities regardless of where [they are] held. The principle of access also refers to the right of First Nations’ communities and organizations to manage and make decisions regarding access to their collective information” (FNIGC, n.d.-a). Finally, *possession* relates to the state of data stewardship, described as “the mechanism by which to assert and protect ownership and control” (FNIGC, 2016, n.d.-a). These principles are intended to guide decision-making on how, why, and by whom Indigenous data are collected; they stem from the premise that “First Nations are accountable to their membership for the use and management of community information” (FNIGC, 2016), which in turn is based on inherent and treaty rights as well as the rights affirmed by UNDRIP.

FNIGC also developed the *First Nations Data Governance Strategy*, which the federal government supported with \$2.5 million over three years (beginning in 2018) to address “significant data capacity gaps that prevent many First Nations governments from achieving improved outcomes, and from serving the needs of their citizens” (FNIGC, 2020). These funds are also intended to help First Nations

establish regional data governance centres. The FNIGC strategy outlines a First Nations-specific approach to data stewardship, including “data collection and data holdings to data discovery, analysis, visualization, protection, dissemination, and consumption. It includes survey data and alternative data sources (e.g. administrative data) for statistical and research purposes to produce new insights and fill data gaps” (FNIGC, 2020). The strategy is based on several guiding principles that could, in the Panel’s opinion, be applied to strategies for Inuit and Métis, as well (Figure 6.1).



Reproduced with permission from FNIGC (2020)

Figure 6.1 Guiding Principles for the *First Nations Data Governance Strategy*

Developed by FNIGC, these guiding principles are intended to support the vision and achieve the desired outcomes outlined in the *First Nations Data Governance Strategy*.

Part of the work identified in the implementation plan for the Inuit Tapiriit Kanatami (ITK) *National Inuit Strategy on Research* (NISR) includes developing Inuit-specific guidelines on data accessibility, ownership, and control; this would be undertaken by ITK and Inuit land claim organizations and governments in partnership with several groups (ITK, 2018a, 2018c). Funding for this work was allocated in Budget 2021, which included a commitment “to support Inuit and Métis baseline data capacity and the development of distinctions-based Inuit and Métis Nation data strategies” (GC, 2021b). In 2022, ITK allocated \$4 million for the creation of an Inuit data strategy, with the goal of supporting the creation of regionally specific data strategies across Inuit Nunangat (Jamal, 2022). The NISR maintains that Inuit are best positioned to oversee the collection, use, storage, and access of data in order to maximize benefits and minimize harm (ITK, 2018a). Following this, the Panel emphasizes that Indigenous communities are best suited to determine gaps in capacity that prevent them from participating in data sovereignty, and how best to fill them.

One of the ongoing efforts to ensure Inuit control and self-determination over data is the *Qanuipitaa? National Inuit Health Survey* (QNIHS, n.d.). The QNIHS has developed a data management strategy that ensures Inuit data sovereignty and is informing the development of an Inuit data strategy by ITK (QNIHS, 2022). The health data collected by the QNIHS are owned and controlled by regional corporations across Inuit Nunangat (QNIHS, n.d.).

The lack of an ABS policy has had negative consequences for Indigenous Peoples; Canada has an opportunity to become a global leader in this area

Access and benefit sharing (ABS) “refers to the way in which genetic resources may be accessed, and how the benefits that result from their use are shared between the people or countries using the resources (users) and the people or countries that provide them (providers)” (Secretariat of the CBD, 2010). Crucially, genetic resources are inclusive of Indigenous knowledges related to plants, wildlife, microbes, and other organisms that comprise genetic materials. They are found on Indigenous Lands, where valuable knowledges have been developed and passed down through generations of Indigenous knowledge holders. Negotiating access to and use of these resources must adhere to the rights of Indigenous Peoples, in particular those outlined in UNDRIP. ABS operates on the basis of a provider granting free, prior, and informed consent to a user—in the North, providers are typically Indigenous Peoples—and the subsequent negotiations, where both parties mutually agree on terms in order to ensure an equitable distribution of benefits (Secretariat of the CBD, 2010). Benefits can be monetary or take the form of knowledge exchange or capacity-building—what is key is that benefits are equal for all parties (Geary *et al.*, 2013).

Internationally, discussions and negotiations on ABS have been ongoing since the 1990s in an attempt to combat the injustice associated with the inequitable use of biological and genetic resources (Oguamanam, 2018). The *United Nations Convention on Biological Diversity* is an international instrument with three primary goals: “the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the utilisation of genetic resources” (UN, 2011). The *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity* (hereafter, “the Nagoya Protocol”) provides further clarity to the third objective “by providing a strong basis for greater legal certainty and transparency for both providers and users of genetic resources” (UN, 2011). It also strengthens the ability of Indigenous communities “to benefit from the use of their knowledge[s], innovations, and practices” in the context of genetic resources (UN, 2011).

Canada has not yet signed onto the Nagoya Protocol, and there is an opportunity to go even further in advancing ABS with appropriate consultations and collaborations with Indigenous communities. In the Panel’s view, the lack of a national ABS policy has negative consequences for Indigenous Peoples and runs counter to the TRC Calls to Action, especially now that advanced technologies are removing the need for physical access to genetic resources, limiting Indigenous communities’ abilities to drive the conversation around ABS policy (Oguamanam & Hennings, 2021). In general, the patenting of Indigenous knowledges without appropriate safeguards in place is referred to as *biopiracy* and often associated with no, very little, or much-delayed compensation (Hoffmann, 2016). This concept is also related to the commercialization of products derived from Indigenous biospecimens, of which there has been very little conversation in the literature, especially in the context of benefit sharing (Tone-Pah-Hote & Redvers, 2022).

Canada could become a global leader by implementing a unique ABS policy that reflects how it is both a user and provider of genetic resources (Hodges & Langford, 2018). Moving beyond voluntary action and implementing legal protection for ABS on Indigenous Land was supported by Indigenous Peoples and organizations consulted prior to the creation of the Nagoya Protocol (Hodges & Langford, 2018); such an approach would also support Indigenous Peoples’ self-determination and control over resources, as required by Article 32 of UNDRIP (UN, 2007).



UNDRIP Article 32: 1. Indigenous Peoples have the right to determine and develop priorities and strategies for the development or use of their lands or territories and other resources. 2. States shall consult and cooperate in good faith with the Indigenous Peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources. 3. States shall provide effective mechanisms for just and fair redress for any such activities, and appropriate measures shall be taken to mitigate adverse environmental, economic, social, cultural or spiritual impact.

Shifting influence and decision-making power to Indigenous communities with respect to who controls access to genetic material and associated knowledges means supporting Indigenous-led training and capacity-building in those communities, so they can negotiate prior informed consent and jointly agree upon fair terms (Oguamanam, 2018; Oguamanam & Hunka, 2018). Enhanced capacity for governments is also important so they can learn how to respectfully and effectively engage and collaborate with Indigenous Peoples while recognizing their key role in ABS negotiations (ABS Canada, 2016; Oguamanam, 2018). This two-way exchange is representative of the Panel's approach to this report—creating a meeting place to come together and create something equitable for all.

Unique protections for Indigenous knowledge systems are essential for avoiding misappropriation

Without adequate protections in place, Indigenous knowledge holders have no assurance that any knowledge they share with researchers will not be misappropriated or used to benefit others, either intellectually or economically. Some of the most advanced thinking on how to implement ABS agreements and protections in Canada is being led by Indigenous communities themselves, without the involvement of other orders of government. For example, the Maritime Aboriginal Peoples Council (MAPC) has expanded the protection of Indigenous knowledge systems through its work on ABS issues: the 2011 *Iskenisk*

Declaration on the Access, Use, and Fair and Equitable Sharing of Benefits Arising Out of the Utilization of Genetic Resources and Associated Traditional Knowledge in Canada is the first major, exclusively Indigenous charter on ABS in Canada (MAPC, 2011). It was followed by the 2015 *Petkoutkoyek Statement on the Access, Use, and Fair and Equitable Sharing of Benefits Arising Out of the Utilization of Genetic Resources and Associated Traditional Knowledge in Canada* (MAPC, 2015). These declarations primarily emphasize the need for capacity-building and development to be multidirectional among all partners and state that Canada must provide adequate financial and human resources to enable communities to effectively and meaningfully participate in any forums on ABS (MAPC, 2015; Oguamanam & Hunka, 2018). By taking the initiative to start a conversation on ABS through a forum, MAPC was able to identify regional priorities and capacity needs without the involvement of other orders of government, indicating the preparedness and ability of Indigenous Peoples to advance their own rights with regard to ABS (Oguamanam & Hunka, 2018).



Courtesy of Naomi Dedon/Yukon University

Beading at the Ayamdigut Campus, Yukon University, Whitehorse, Yukon

Current avenues to recognize IP are ill-suited to legally protect Indigenous knowledge systems, which is becoming increasingly necessary as the world asks Indigenous Peoples to help address global problems (e.g., climate change) without adequately enforced protections (de Beer & Dylan, 2015). For example, copyright law in Canada only exists for the duration of the creator’s life plus 70 years (GC, 2023f); this is inapplicable to Indigenous knowledges, which are largely authored and held collectively, handed down across many generations, and often contained within an oral tradition (de Beer & Dylan, 2015; ISED, 2020). Additionally, current mechanisms for asserting copyright focus on individual creators of physical materials; the concept of ownership itself, when considered in the context of IP, contrasts with Indigenous notions of knowledge ownership (ISED, 2020).

The width and breadth of Indigenous knowledge systems, cutting across a myriad of topics—including self-determination, the environment, health, culture, food, and industry (WIPO, 2012)—have hindered efforts by governments to create a coherent and coordinated policy on protecting them (de Beer & Dylan, 2015). This is further complicated by intra-jurisdictional challenges, leading to even more widespread difficulties in creating international policies to protect Indigenous Peoples’ rights to conserve and maintain knowledges (de Beer & Dylan, 2015). Although work is ongoing to create international legal instruments for the protection of Indigenous knowledges (e.g., WIPO, 2020), no such agreements yet exist. In the Panel’s view, without meaningful political and legal mechanisms to address the aforementioned issues, and significant strides to increase the influence of Indigenous Peoples over policies, it is unlikely that the protection of Indigenous knowledge systems in Arctic and Northern regions will be sufficient.

Canada can learn from Indigenous data sovereignty efforts in other jurisdictions to support equity in its domestic research system

Although there are several country-specific networks furthering the cause of Indigenous data sovereignty and international efforts to construct guiding principles (e.g., Maiam nayri Wingara, n.d.; Te Mana Raraunga, n.d.; USIDSN, n.d.), there has been little movement by way of successful agreements or implementation strategies with governments and research institutions. In Aotearoa/New Zealand, the charter developed by the Māori data sovereignty network, Te Mana Raraunga, has been identified as a particularly comprehensive set of principles (Kukutai & Taylor, 2016). To advance Māori data sovereignty, Te Mana Raraunga (n.d.) recommends:

asserting Māori rights and interests in relation to data; ensuring data for and about Māori can be safeguarded and protected; requiring the quality and integrity of Māori data and its collection; advocating for Māori involvement in the governance of data repositories; supporting the development of Māori data infrastructure and security systems; and supporting the development of sustainable Māori digital businesses and innovations.

The Government of Aotearoa/New Zealand has also developed a set of guiding principles for the ethical use of data based on Māori Tikanga, which is a form of guiding behaviour for relationships (Gov. of New Zealand, 2020a). These principles—Ngā Tikanga Paihere—are intended to aid in determining goals, boundaries, and values to advise on ethical data practices (Gov. of New Zealand, 2020b). The five principles are: “have appropriate expertise, skills, and relationships with communities; maintain public confidence and trust to use data; use good data standards and practices; have clear purpose and action; and balance benefits and risks” (Gov. of New Zealand, 2020b). These principles were developed to help Stats NZ oversee microdata access but were found to be applicable to ethical data use in general (Gov. of New Zealand, 2020b).

In Australia, the Indigenous Data Network (established in 2018) seeks to “support and coordinate the governance of Indigenous data for Aboriginal and Torres Strait Islander peoples and empower Aboriginal and Torres Strait Islander communities to decide their own local data priorities” (IDN, n.d.). This group acts to “[provide] Aboriginal and Torres Strait Islander communities and organisations access to research expertise to facilitate their data priorities; [support] access to data held by others; and to build data capacity within Aboriginal and Torres Strait Islander communities across Australia” (IDN, n.d.). The Indigenous Data Network held the Indigenous Data Governance and Sovereignty Roundtable to discuss the practical and technical application of Indigenous data governance and sovereignty (Langton *et al.*, 2022). The Aboriginal and Torres Strait Islander Community Health Service (ATSICHS) Data Ecosystem, which acts as the technical foundation for the *ATSICHS Brisbane Data Science Roadmap*, was highlighted at that roundtable as an example of effective Indigenous data sovereignty in practice. The roadmap centres the ability of clients to govern their own data and is designed to best address community needs, all while enabling the benchmarking, reporting, and use of census data (Langton *et al.*, 2022).

Regarding ABS more specifically, there is some international movement to protect Indigenous knowledge systems from being misappropriated or patented. India’s Traditional Knowledge Digital Library documents Indigenous knowledges and is available to foreign patent offices, in order to protect traditional medicinal knowledge and prevent its external patenting (TKDL, n.d.). Since its implementation, the Traditional Knowledge Digital Library has successfully led to the withdrawal, alteration, or rejection of more than 200 potential patents (TKDL, n.d.). Similar databases that digitize, compile, and document Indigenous knowledges and genetic resources have been suggested as options for strengthening Indigenous perspectives in ABS negotiations, offering protection against patents and ensuring accountability to knowledge owners (Oguamanam, 2018). These databases can be controversial, however, due to their inability to capture the full

spectrum and nuance of Indigenous knowledges in digital formats (Oguamanam, 2009). Although databases may offer some protection and store knowledge for future generations, encouraging healthy intergenerational knowledge transfer within Indigenous communities is a more sustainable approach (Oguamanam, 2018).

Accountability and Accessibility of Knowledges and Data

The concepts of accountability and accessibility of data in research are intertwined; ensuring that data and information about Indigenous communities are accessible to those they concern is fundamentally a form of accountability. Mechanisms such as data sharing and ABS agreements are avenues by which researchers are held accountable to the communities they work with. Communities retain rights to their data and maintain control over who has access to them and how they may be used. Ensuring that research results are translated into relevant languages or that data are not held behind paywalls are methods by which data can be made accessible to communities.

Data-sharing and ownership agreements are mandatory to ensure accountability and appropriate access to data

Reaching an agreement before a project begins can ensure that data are appropriately safeguarded, relevant parties maintain access, benefits to communities are maximized, and partners comply with relevant ethical codes (Love *et al.*, 2022; The Firelight Group & ICHR, 2022). Such an agreement can even be made a stipulation of receiving funding; the Inuit Qaujisarnirmut Pilirijjutit (IQP) research program specifies that projects must ensure access, ownership, and control of data by supporting Inuit or community organizations that hold the funding (ArcticNet, n.d.-b). Elsewhere, the Dedats'eetsaa: Thchq Research and Training Institute actively participates and manages several research projects, and maintain more than 28,000 items relating to the Thchq language, culture, and way(s) of life (Dedats'eetsaa, n.d.-a, n.d.-b). These items are accessible to Thchq government staff in several locations, while public access can be requested on a case-by-base basis (Dedats'eetsaa, n.d.-a).

Individual data-sharing and ownership agreements for research also exist. For example, university researchers and the Mohawk Kahnawake community created a mutual code of ethics for the Kahnawake Schools Diabetes Prevention Project (KSDPP) in 2007, which included safeguards for the collection, access, and control of data gathered (KSDPP, 2007). Prior to dissemination, the agreement stipulates, “all research results and knowledge generated by KSDPP will be presented, discussed and approved by the Community Advisory Board, relevant organizations and/or communities participating in the research” (KSDPP, 2007).

Data sharing can also be included as a component of a more general memorandum of understanding (MOU); in the Panel's experience, MOUs can be used as precursors to binding contractual agreements and can include stipulations beyond data sharing, such as how funding is distributed among partners.

Another important example is being led by the Kluane First Nation (KFN) in the Yukon. The Bringing Research Home project "addresses how, why, and what research is conducted on KFN traditional territory, and ... also aims to increase accessibility of climate change research that has or is occurring on KFN traditional territory" (YukonU, n.d.-c). In collaboration with Yukon University, the KFN is actively constructing a website to share its history through story maps, as well as to host a mapping tool that provides access to historical and current KFN research data on climate change (YukonU, n.d.-c). Key to this partnership is capacity-building for both KFN and Yukon researchers; the objectives of the project include the development of a mutually beneficial process that will simultaneously empower KFN to have more control over research and engage with KFN "citizens to provide knowledge and guide the expression of [their] values in a protocol for research in our Traditional Territory" (CMN, n.d.).

The Panel notes, however, that the development and implementation of effective and appropriate data-sharing agreements includes pre-funding support and resources for all parties involved; many Indigenous communities do not have the capacity to fully develop data-sharing agreements, and proposals by external researchers may not appropriately reflect the rights and priorities of the communities concerned. Furthermore, despite their desire to participate in the research system (including collecting and using their own data), many Indigenous communities lack the capacity to do so across the North (e.g., The Firelight Group & ICHR, 2022). To address this gap, toolkits such as the one developed by The Firelight Group and the Institute for Circumpolar Health Research (ICHR) support communities undertaking health research and provide considerations for data collection and use. This toolkit in particular is intended to:

improve efforts in data sovereignty through supporting Northern Indigenous communities to build capacity and advance their own work in health and wellness data collection, use, and management; support integration of traditional knowledge into approaches to collecting, using, and managing data; support community informed, culturally relevant, evidence-based prioritization and decision making in community health planning; build community capacity to monitor and respond to changes in health and wellness; strengthen rationale for investments in community health and wellness initiatives; and support transparency and trust in data collection and use, and in reporting to communities.

The Firelight Group & ICHR (2022)

Other toolkits are being created by and for self-governing Indigenous governments; these provide resources and guidance so those governments can effectively manage and use socioeconomic data to benefit themselves and the communities they represent (DGMT, n.d.). The Data Governance and Management Toolkit, for instance, includes important components of data governance, such as privacy, legislation, data-sharing agreements and best practices, as well as an introduction to types of data management, how to acquire and work with data, and strategies to build capacity (DGMT, n.d.).



Courtesy of Gita Ljubicic

Fish drying at a camp near Gjoa Haven, Nunavut

Data stewardship arrangements ensure accountability to Indigenous Peoples and maintain Indigenous access to data

Supporting the development of capacity within Indigenous communities can also take the form of data stewardship agreements. Experienced organizations can act as data stewards with Indigenous communities—intermediaries that can store and provide data access to those communities while observing appropriate community and legal protocols (McBride, 2019). These organizations can reduce the burden on communities while upholding data sovereignty (McBride, 2019).

This can extend to repatriation as well; shared stewardship has been described as a mechanism to promote a just and holistic care of materials, where materials are cared for in repositories until communities are ready to bring them home (Christen *et al.*, 2022).

In the United States, data sovereignty is being advanced through the work of Tribes that are collecting their own data through surveys or censuses, as well as establishing data hubs or centres to store their data (NCAI, 2018). Some organizations working with Indigenous data have their own guidelines and protocols to maintain data sovereignty, such as Tribal Epidemiology Centers (TECs, n.d.-a). Funded by the U.S. Indian Health Service, TECs manage public health information systems for Indigenous organizations while also “investigating diseases of concern, managing disease prevention and control programs, responding to public health emergencies, and coordinating these activities with other public health authorities” (TECs, n.d.-a). These centres work toward the health status objectives of the Indian Health Service by collecting data and monitoring progress, all while ensuring the validity and reliability of data (TECs, n.d.-b). They act as data stewards for Tribal health data, maintaining trust throughout the process. TECs empower Indigenous Peoples to build knowledge and take control of their own health and well-being (TECs, n.d.-b).

Another example from the United States is the Native BioData Consortium, which is composed of Indigenous geneticists who conduct research oriented to the needs and priorities of Indigenous Peoples while building local capacity, as well as storing samples and data locally on Tribal Land (NBDC, n.d.). Its primary focus is maintaining a biobank to ensure that health advances directly benefit Indigenous Peoples while also training Indigenous students in scientific methods and preparing communities to effectively deal with emerging infectious diseases (NBDC, n.d.).

Sharing information in accessible formats supports and affirms Indigenous Peoples’ right to own and control their own data

Achieving Indigenous self-determination in research rests heavily on ensuring that communities have access to, and can understand, the data collected on themselves and the Land, including the environment and wildlife around them. As explained by The Firelight Group and ICHR (2022), “if individuals or communities cannot understand the available data, it is challenging to make informed choices based on [them].” The NISR has identified the challenges with current data practices: existing information from academic research is difficult for Inuit to access due to the expenses associated with search engines and databases within which much of the data are stored (ITK, 2018a). In addition, researchers may also be inconsistent in sharing Inuit-specific data with Inuit,

in some cases publishing data without acquiring consent from individuals or their representational organizations (ITK, 2018a). Language is also a critical component of accessibility, in terms of limiting the use of jargon (Chapter 1) and translating research into Indigenous languages (Wong *et al.*, 2020; Doering *et al.*, 2022). A series of guidelines compiled by Ikaarvik (an Inuit youth organization that aims to re-orient research to serve Inuit communities) recommend that researchers translate their work into the relevant Inuktitut dialects after completion (Pedersen *et al.*, 2020). Andrew Arreak, a regional operations lead at SmartICE and a contributor to IQ of sea ice and safe ice travel, emphasizes the importance of translation in his work:

Up in the North, language is essential for us and our Elders are unilingual. I produce my findings in both [Inuktitut and English] so folks can be aware of what's occurring out there. They can also tell me information about what knowledges they have so I can incorporate it in our work and pass on knowledge to the new generations.

A. Arreak, personal communication (2022)

An example of the negative impacts of information not being shared in formats accessible to Indigenous communities relates to the critical health information collected to respond to COVID-19. A supplementary report for the Chief Public Health Officer's *Annual Report on the State of Public Health in Canada 2020* was commissioned to summarize the results of engagement sessions with Indigenous Peoples across Canada on community approaches and experiences with COVID-19 (Mashford-Pringle *et al.*, 2021). One of the key themes identified was data collection; issues included inconsistent data collection by public health authorities and the fact that "Indigenous leadership were not provided access to data on cases disaggregated by community/First Nation according to some submissions and participants" (Mashford-Pringle *et al.*, 2021). The authors recommend a way forward for the future treatment of data:

there is a need to have Indigenous-specific statistics that are owned and controlled by Indigenous communities and/or organizations. In collaboration and through authentic relationships, it is important that the federal government engages and discusses methods that are congruent with Indigenous ownership and control of information and statistics. Data collected by Indigenous identity, gender, and disabilities in order to improve evidence-based knowledge that impacts funding, resources, policies and needs, must reflect the Indigenous groups, communities and organizations that it is intended to assist. This can only occur if discussions include First Nations, Inuit and Métis voices.

In the Panel's experience, the aggregation of data is one of the most common barriers faced by Indigenous researchers; it is a form of data erasure because it is often meaningless to communities, despite their data being included in a data collection effort (The Firelight Group & ICHR, 2022). Shifting influence over data collection to Indigenous communities can help direct research in more relevant ways.

Ongoing communication of research results helps communities and researchers establish the optimal avenues for accessible data sharing

Determining the optimal communication and reporting methods for research results should not wait until the end of a project—reporting should be ongoing and iterative to ensure the community is receiving information in the most useful and accessible way (ITK & NRI, 2007). Methods include public presentations in community centres or schools, workshops, radio shows, websites, posters, project summaries, brochures, videos, and films—though face-to-face or interactive methods are often preferred, due to the long history of oral traditions in the North. These methods can be deployed throughout the research process to keep community members informed and engaged, as well as to identify any potentially sensitive or controversial aspects prior to publication (ITK & NRI, 2007).

Given the importance of oral tradition in many Indigenous cultures, investing resources in sharing research through presentations and radio broadcasts can provide meaningful avenues for knowledge dissemination to Indigenous communities in the North (ITK & NRI, 2007; Gittelsohn *et al.*, 2020). In the Panel's experience, using radio programs that broadcast in Indigenous languages (e.g., Kalaallit Nunaata Radioa in Greenland, Taqramiut Nipingat Incorporated in northern Quebec) is an effective way to reach a wide audience (KNR, n.d.; TNI, n.d.). On a larger scale, the Northern Contaminants Program (NCP) successfully enables two-way communication between researchers and communities by convening Regional Contaminants Committees (GC, 2018b). These committees communicate findings on contaminants to Northern communities, but also receive feedback and guidance on community concerns and priorities to take back to NCP. Additionally, these committees create communications strategies, consult with relevant partners, and build capacity for research and monitoring in the North (GC, 2018b).

Indigenous data sovereignty in the North can be effectively supported by research organizations and companies through internal processes and terms of use

Several non-academic organizations are engaged in promoting and maintaining Indigenous data sovereignty, offering promising avenues to other organizations interested in doing the same. Organizations such as SIKU (The Indigenous Knowledge Social Network), a mobile and web platform for documenting and sharing

Inuit knowledges, are furthering Indigenous sovereignty and influence over data through their terms of use (Box 6.5). Other organizations such as ELOKA (Exchange for Local Observations and Knowledge of the Arctic) “partner with Indigenous communities to create online products that facilitate the collection, preservation, exchange, and use of local observations and Indigenous knowledge of the Arctic” while subscribing to Indigenous data sovereignty principles (ELOKA, n.d.).

Box 6.5 SIKU

SIKU is an Inuit-run app developed by the Arctic Eider Society that documents and shares information about the environment, including ice and weather information. Users can tag and upload information in several languages and dialects, and customize their privacy settings to prevent or allow access by various other groups and users. The primary goal of SIKU is to “provide tools and services that facilitate Indigenous self-determination in research, education and stewardship through accessible features for documenting and sharing Indigenous knowledges, to design, conduct and steward data in an informed approach, and to provide novel ways to engage in all stages of research projects.” The terms for ownership and control of data uploaded to SIKU are unique from most other social apps: SIKU does not hold a licence to use uploaded content, and permissions from users are required for external use. The uploader controls all aspects of access and permissions for the data, and any settings related to privacy and sharing can be altered on a post-by-post basis. The developer and provider of the platform is an Inuit-driven charity based in Sanikiluaq.

(SIKU, n.d.-a, n.d.-b)

Improved interoperability and cohesiveness of Arctic and Northern data would increase accessibility

Although several databases and data repositories exist at both the domestic and international levels, none are exhaustive, and the system is fragmented and lacks interoperability. Some examples of existing data repositories include the Polar Data Catalogue (containing data from policy and natural, health, and social sciences research); ArcticStat (a public, international repository aimed at facilitating comparative socioeconomic research for the circumpolar region); and INTERACT (International Network for Terrestrial Research and Monitoring in the Arctic, which hosts virtual access to data from a multitude of Arctic research

stations) (ArcticStat, n.d.; INTERACT, n.d.; PDC, n.d.). On a smaller scale, many research institutions and individual projects across the North host and provide access to a wide range of data. For example, Nunavut Arctic College holds the Igloolik Oral History Project, which is “the best documented, richest, and strongest source of oral history in Nunavut” (Qulaut, 2018). Nunavut Arctic College Media is also working to create a digital archive of research and museum materials, and on returning materials to source communities (NAC Media, n.d.).

This wide range of data repositories, with variable policies for data management and access, results in a fragmented Arctic and Northern data landscape. In the Panel’s experience, understanding where to look to find certain types of data is challenging and can be intimidating, hindering innovation and creating duplication. The Canadian Consortium for Arctic Data Interoperability aims to develop an integrated Arctic and Northern data management system by supporting enhanced collaboration both across Canada and internationally (CCADI, n.d.). However, including Indigenous knowledge systems and datasets can be difficult, and some should not be included at all. If such databases are created, consideration of Indigenous data sovereignty and the right of Indigenous Peoples to control how their data are accessed and displayed is required to ensure appropriate use.

Improving access to data cannot come at the cost of cultural security

Improving the accessibility of data is a worldwide commitment, reflected in data-sharing principles such as FAIR (findable, accessible, interoperable, reusable), which are increasingly being adopted to improve data access (GIDA, n.d.). However, these principles largely ignore ongoing power differentials, assuming that data sharing among entities can and should be uniformly increased. This point is highlighted by the Global Indigenous Data Alliance (GIDA), which notes that “the emphasis on greater data sharing alone creates a tension for Indigenous Peoples who are also asserting greater control over the application and use of Indigenous data and Indigenous knowledge for collective benefit” (GIDA, n.d.). Data sharing relates to concepts of privacy and confidentiality, which are components of data sovereignty that may be viewed differently by Indigenous communities and settler states. For example, what is considered private by Indigenous communities may extend beyond individual data to information about ceremonies, hunting and gathering practices, or other knowledges (Snipp, 2016). In some situations, depositing data into open-access repositories is a stipulation of receiving funding; for example, recipients of Canadian Institutes of Health Research (CIHR) funding must “deposit bioinformatics, atomic, and molecular coordinate data into the appropriate public database ... immediately upon publication” (GC, 2023g). In the Panel’s view, Indigenous data and knowledge systems require special consideration and potentially exception from these rules, in order to maintain Indigenous data sovereignty.

Digitization of museum archives is also subject to considerations of accessibility at the cost of cultural security. Digitization plans to increase the accessibility of collections “[privilege] non-Indigenous notions of access and previous colonial collecting paradigms, where digitization [is] seen as a stand-alone effort to create more ‘product,’ with a decreased emphasis on contextual materials, diverse sets of metadata, and the provenance of the materials” (Christen *et al.*, 2022). Digitization of cultural materials repeats historical practices of inflicting harm on Indigenous Peoples, further sharing access to objects that were never intended for the public, in person or online (Christen *et al.*, 2022).

To complement the FAIR principles, GIDA advocates for and hosts the CARE Principles for Indigenous Data Governance, which stand for Collective Benefit, Authority to Control, Responsibility, and Ethics (GIDA, n.d.). The CARE principles provide an avenue for Indigenous data to be culturally secure while ensuring that Indigenous Peoples retain control of their data and benefit from sharing it. Since the establishment of these principles in 2019, working groups have been considering how to operationalize FAIR and CARE together (Carroll *et al.*, 2021). Suggestions include the creation of assessments to determine whether research projects meet CARE, proactively immersing research communities in CARE principles, and the application of CARE to existing data repositories. However, the use of CARE is in its early stages, and researchers caution that room for further refinement and maturity of the principles is needed to ensure their usefulness for Indigenous communities (Carroll *et al.*, 2021).

Together at the Fire: Reflections on Data

Canada’s potential to be a leader in inclusive and collaborative Arctic and Northern research is contingent on transformational change that supports Indigenous data sovereignty by ensuring Indigenous Peoples can protect their data and benefit from the sharing of, and engagement with, their knowledges. Using data-sharing and ABS agreements to collaborate effectively and respectfully with Northern Indigenous Peoples will advance Canada’s leadership in equitable and fair research. Critically, data sovereignty includes adequate support and resources to build capacity for communities and individuals in a manner most useful to them, so they can explore avenues for ensuring the safety and security of their data. Shifting influence over data and research results to Indigenous communities will address many of the concepts brought forward in this chapter; however, an equivalent increase in capacity is also part of fully transforming the data landscape.

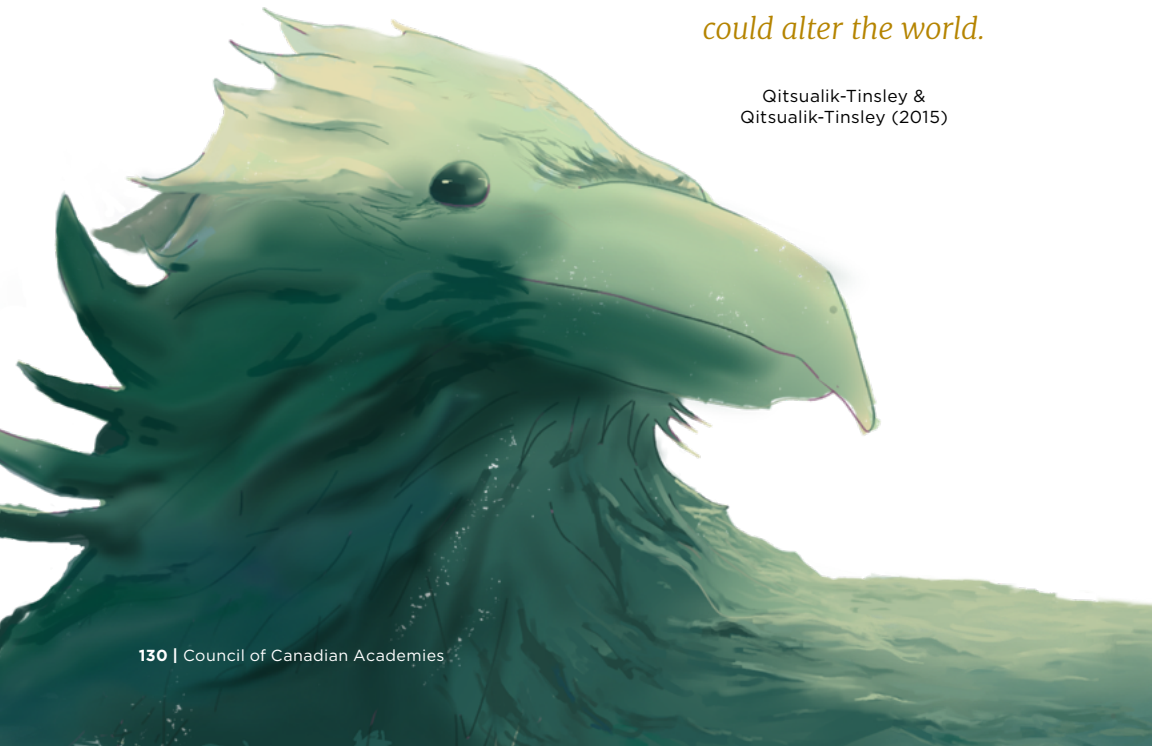
7



Carrying the Embers: Education

An idle word. An irresponsible thought. A wish. A dream. These could alter the world.

Qitsualik-Tinsley &
Qitsualik-Tinsley (2015)





Responsibilities Moving Forward

- More fulsome support for education in, and about, the North is necessary for inclusive and collaborative research.
- Inclusivity involves recognizing and affirming diverse educational approaches—including on-the-Land learning and oral information sharing—on the part of all actors in the Arctic and Northern research system.
- Shifting influence to Indigenous-led education systems in the North is a means of ensuring education and research are accessible and accountable to Indigenous Peoples.
- Education about the history, Peoples, and priorities of the North for researchers and institutions in Southern Canada is critical to advancing equitable relationships in the research system and doing research in a good way.

A research system that is effective and inclusive is rooted in a similarly effective and inclusive educational foundation. This chapter examines the factors that influence educational attainment in the North at the primary, secondary, and post-secondary levels, as well as the role of education in Southern Canada. It begins by outlining what it means to nourish the spirit through education in a good way. It then discusses the need for an educational paradigm shift toward a system that values and affirms the role of Indigenous Peoples and knowledge systems in Northern Canada. In order to foster reconciliation and self-determination, re-defining who decides what is taught, researched, and learned—while addressing the legacy of residential schools and colonialism—is a critical component in a just education system. However, such a shift in the educational paradigm necessarily raises questions of cultural security. As such, the chapter also identifies promising practices that both advance Indigenous Peoples and knowledge systems as well as safeguard them from exploitation, misappropriation, and continued oppression.

The second half of the chapter addresses questions related to accountability and accessibility. The Panel outlines the need for primary and secondary education to become culturally relevant to Northern communities, emphasizing the critical role of Indigenous Peoples, Land, and languages. Responsibility to communities at the post-secondary level is also discussed, including the ways in which effective education program development considers community needs and values, as well as the learning and understanding Southern researchers need prior to travelling

North. Next, the Panel explores the importance of—and potential strategies for—increasing accessibility to Northern education. This includes expanding program availability across the North, and tailoring programming for Northern Indigenous Peoples based in the South. The Panel argues that improving access to education in the North is a necessary step to creating a Northern research system that is truly inclusive and collaborative.

Carrying the Embers in a Good Way

Words, thoughts, dreams—all have the power to alter the world. But *how* they alter the world is just as important, if not more so. Idle words and irresponsible thoughts can lead to unintentional harms, while respect, responsibility, and reciprocity can all result in radical and transformational change. At its core, the Panel's exploration of education systems is the idea that the purpose of education is to carry the embers *in a good way*. That is, education must be approached not as a means to an end (the end being graduation rates and accreditation), but rather as a foundational element in the development and growth of ethical individuals who have a desire to understand their world. Education is a powerful, world-altering practice that comes in diverse forms. The Panel emphasizes the importance of educational diversity, noting that, where this diversity is celebrated, students flourish and research thrives. Education approached in this way is aligned with the rights established in Articles 11, 13, and 14 of the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) and Calls to Action 7, 10, 12, and 62 in the final report of Canada's Truth and Reconciliation Commission (TRC) (UN, 2007; TRC, 2015).



UNDRIP Article 11: 1. Indigenous Peoples have the right to practise and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artefacts, designs, ceremonies, technologies and visual and performing arts and literature.

UNDRIP Article 13: 1. Indigenous Peoples have the right to revitalize, use, develop and transmit to future generations their histories, languages, oral traditions, philosophies, writing systems and literatures, and to designate and retain their own names for communities, places and persons.

(Continues)

(Continued)

UNDRIP Article 14: 1. Indigenous Peoples have the right to establish and control their educational systems and institutions providing education in their own languages, in a manner appropriate to their cultural methods of teaching and learning. 2. Indigenous individuals, particularly children, have the right to all levels and forms of education of the State without discrimination. 3. States shall, in conjunction with Indigenous Peoples, take effective measures, in order for Indigenous individuals, particularly children, including those living outside their communities, to have access, when possible, to an education in their own culture and provided in their own language.

TRC Call to Action 7: We call upon the federal government to develop with Aboriginal groups a joint strategy to eliminate educational and employment gaps between Aboriginal and non-Aboriginal Canadians.

TRC Call to Action 10: We call on the federal government to draft new Aboriginal education legislation with the full participation and informed consent of Aboriginal Peoples. The new legislation would include a commitment to sufficient funding and would incorporate the following principles:

- i) Providing sufficient funding to close identified educational achievement gaps within one generation.
- ii) Improving educational attainment levels and success rates.
- iii) Developing culturally appropriate curricula.
- iv) Protecting the right to Aboriginal languages, including the teaching of Aboriginal languages as credit courses.
- v) Enabling parental and community responsibility, control, and accountability, similar to what parents enjoy in public school systems.
- vi) Enabling parents to fully participate in the education of their children.
- vii) Respecting and honouring Treaty relationships.

(Continues)

(Continued)

TRC Call to Action 12: We call upon the federal, provincial, territorial, and Aboriginal governments to develop culturally appropriate early childhood education programs for Aboriginal families.

TRC Call to Action 62: We call upon the federal, provincial, and territorial governments, in consultation and collaboration with Survivors, Aboriginal Peoples, and educators, to:

- i) Make age-appropriate curriculum on residential schools, Treaties, and Aboriginal Peoples' historical and contemporary contributions to Canada a mandatory education requirement for Kindergarten to Grade Twelve students.
- ii) Provide the necessary funding to post-secondary institutions to educate teachers on how to integrate Indigenous knowledge[s] and teaching methods in classrooms.
- iii) Provide the necessary funding to Aboriginal schools to utilize Indigenous knowledge and teaching methods in classrooms.
- iv) Establish senior-level positions in government at the assistant deputy minister level or higher dedicated to Aboriginal content in education.

To do research in a good way requires that researchers be educated in a way that nourishes them and instills the importance of ethical and equitable behaviour. As such, the Panel believes that education, when approached with a sense of respect, responsibility, and reciprocity, acts as a cornerstone to effective research. Support for educational practices that are accessible and accountable to Indigenous Peoples in the North is one of the first steps to achieving a research system that is inclusive, collaborative, and effective.

Justice and Cultural Security in Education

In the Panel’s view, justice as a means of reconciliation and self-determination in education relates to who decides what is taught and researched. It includes recognition of diverse knowledge systems and an affirmation of educational practices and programs that extend beyond those rooted in Western knowledge systems. However, this has not always been the case—nor is it still—in many regions of the North, where the legacy of the residential school system as well as ongoing colonialism influence educational attainment rates. The Panel believes that, by shifting control to Indigenous Peoples and perspectives on what education can be, justice and self-determination can be enacted through educational systems.

Yet, as engagement with Indigenous knowledge systems increases in educational programming, so too does the risk of the exploitation and misappropriation of knowledge. Measures such as Indigenous self-determination, leadership, and accreditation can help protect, maintain, and retain control over Indigenous knowledge systems, while simultaneously increasing engagement.

A fully inclusive Arctic and Northern research system recognizes and affirms all forms of education

All forms of education, including the informal, contextual learning that characterizes individuals’ day-to-day lives, are recognized and affirmed in an equitable research system. In her work on situating Land as a form of pedagogy (i.e., teaching), Leanne Betasamosake Simpson (2014), a Michi Saagiig Nishnaabeg scholar, writer, and artist, argues that the explanations that lead to understanding the world around us cannot continue to be relegated to academic discourse. Indigenous explanations and the wisdom that comprise them are the property of everyone and are “woven within kinetics, spiritual presence and emotion ... [They are] contextual and relational. [They are] intimate and personal, with individuals themselves holding the responsibilities for finding and generating meaning within their own lives” (Betasamosake Simpson, 2014). The process of how we understand the world around us, and how we generate meaning out of that understanding, is grounded in our daily lives, including the familial and community relationships that surround us (Betasamosake Simpson, 2014). It is also lifelong—expanding and adapting to new situations every day (Anuik *et al.*, 2010).



Courtesy of 'My Word' Storytelling & Digital Media Lab

Learning to clean seal skin at a land camp near Rigolet, Nunatsiavut, Labrador

Many scholars who seek to break down barriers between Indigenous and Western knowledge systems acknowledge the value of on-the-Land experience. For example, in reflecting on his time at the Dechinta Centre for Research and Learning, Glen Coulthard noted:

I had learned as much as I could in the archive, talking to people, and reading about ... history, but it was only when I started to commit myself to re-learning those practices and re-embedding myself in those social relationships with place, that I understood in a more concrete and embodied way, what was wrong with the forms of economic development that have come to be dominant in the North and elsewhere.

Betasamosake Simpson & Coulthard (2014)

Experience and relations play a valuable role in the research process. In the Panel's view, there is space for such knowledge in the future of research. To not recognize experience and relations greatly hinders the research system as a whole and, ultimately, prevents it from achieving justice, equity, ethical relations, and world-class status. This sentiment is echoed by the Task Force on Northern

Post-Secondary Education, whose final report calls for new and continued investment in Indigenous-led education and programming that respects unique and diverse ways of knowing, doing, and being (Bennett *et al.*, 2022). The Panel believes that, when the Land is understood as a form of pedagogy alongside the relationships it supports, existing and future research will be bolstered by a contextual curriculum that has provided generations of Indigenous Peoples with the knowledges they needed to sustain themselves in their unique environments and homelands.

Across the North, there are a number of successful programs that embody inclusive and contextual learning. The Aqqiumavvik Young Hunters Program, for example, brings Nunavummiut youth on the Land alongside Elders and experienced instructors to help them develop an understanding of sustainable harvesting practices (Aqqiumavvik Society, n.d.-b). Piquisilirivvik—a division of Nunavut Arctic College—is another such example. It is an Inuit cultural learning facility dedicated to the transfer of culture and knowledge between generations (NAC, n.d.-a). Programs are taught in Inuktitut and are based on the guiding principles of Inuit Qaujimagatuqangit (IQ; see Chapter 2) (NAC, n.d.-a). The Ittaq Heritage and Research Centre also runs a number of on-the-Land education programs, including Angunasuktiit (a full-time Land-based hunting apprenticeship program), Ataata Irniq Nunami (a father and son on-the-Land program), and Qimmivut (the Our Dogs program) (Ittaq, n.d.-b). These programs focus on mentorship while contributing to the ongoing environmental and cultural research being conducted by Ittaq (n.d.-b). The Knowledge Renewal and Transfer mandate of the Kitikmeot Heritage Society is another example of inclusive and contextual education. From its facility in Cambridge Bay as well as out on the Land, the Kitikmeot Heritage Society runs a number of programs and community-based projects aimed at the transfer of knowledge and experiences between Elders and youth (Kitikmeot Heritage Society, n.d.-a). Based on the ideas that knowledge is to be used and that “the ways that knowledge is learned and taught is often as important as the knowledge itself,” these programs aim to preserve Inuit knowledge and foster healthy familial and community relationships through education (Kitikmeot Heritage Society, n.d.-a).

The importance of language and oral forms of teaching and learning is another critical component of Northern education. Recognizing this, and facing the possible extinction of the Inuinnaqtun language, the Kitikmeot Heritage Society offers a variety of programs focused on language preservation and education (Kitikmeot Heritage Society, n.d.-b). Offerings include a mentor-apprentice program that pairs a student with a fluent Inuinnaqtun speaker for 300 hours of one-on-one spoken immersion over a year, and a podcast (Inuinnaujugut/“We Are Inuinnaït”) that explores Inuinnaït traditions and experiences through conversation (Kitikmeot

Heritage Society, n.d.-b). In the Panel's view, oral forms of education such as these are vital elements of an equitable and just education system. Many Indigenous knowledge systems are transmitted in part orally (Hulan & Eigenbod, 2008); as such, recognizing and affirming this critical element of Indigenous learning are part of true inclusivity and collaboration. The Panel notes that non-traditional graduate theses are one way in which the Arctic and Northern research system could actively affirm oral forms of Indigenous knowledges (Chapter 4).

The legacy of colonialism in Canada, including the intergenerational impact of residential schools, is the foremost barrier to educational attainment in the North

The last residential school²³ in Canada was closed in 1996 but the resultant trauma associated with the experiences of survivors continues to impact Indigenous Peoples. When the residential school system was shut down, however, it was not the end of the atrocities experienced by Indigenous Peoples across Canada. In predominantly white settler nations such as Canada, formal education is commonly understood in the context of the cultural and socioeconomic biases that shape the nation as a whole (Wotherspoon, 2014). These biases are founded upon the conflicting—and oftentimes fundamentally opposed—ideological tenets of democratic liberalism (e.g., equality, fairness, tolerance, individual rights) and racism (e.g., the differential treatment, discrimination, and marginalization of people of colour, including Indigenous Peoples) (Henry & Tator, 1994). As a result, formal education in Canada perpetuates what Wotherspoon (2014) calls “democratic colonialism,” in which practices and pedagogies “posed as neutral and legitimate conceal powerful social interests that contribute to social exclusion or restrict opportunities for some segments of the population.” These so-called neutral and legitimate social interests may, in turn, be understood to function in the same way as the residential school system, where Indigenous Peoples’ primary interests were subjugated for assimilation purposes (e.g., Coulthard, 2014).

In this context, the stigma surrounding institutionalized education, along with many Northern Indigenous Peoples’ hesitancy and resistance to engage with it, is easy to understand (McKechnie, 2015; ITK, 2020; Bennett *et al.*, 2022). For example, in 2022, 63% of those living in the provinces between the ages of 25 and 64 attained a post-secondary education (StatCan, 2023a). In contrast, the territorial averages for the Yukon, the N.W.T. and Nunavut were 60%, 53%, and 34%, respectively (StatCan, 2023a). Moreover, according to work done by Inuit Tapiriit Kanatami (ITK), only 14% of Inuit across Canada (between the ages of 15 and 64) held a college or university degree in 2020 (ITK, 2020).

²³ For more information about the residential school system in Canada, the Panel recommends the TRC’s final report (TRC, 2015).

Thus, enhancing educational attainment in the North means that decision-makers, educational institutions, and communities need to do more. Intergenerational trauma associated with residential schools must first be addressed (ITK, 2020). Post-secondary education “needs to be mainstreamed, normalized, and shown as a positive means to achieving better socioeconomic outcomes for Inuit [and other Indigenous] communities” (ITK, 2020). For example, Northern Compass, an offshoot of the Northern Youth Abroad program, aims to mainstream and support Northern students’ participation in post-secondary education across the country (NYA, n.d.-a). It runs orientation programs on Southern university campuses to introduce prospective students to these institutions, life in Southern Canada, and many academic, social, and financial supports—all of which are designed to foster a positive transformational post-secondary education experience (NYA, n.d.-b).

Indigenous-led, accredited education programs can protect Indigenous knowledge systems while advancing educational attainment and capacity in the North

The Panel believes that independent accreditation processes for Indigenous-led post-secondary institutions are important levers to help Canada recognize the legitimacy and inherent value in Indigenous knowledge systems, while simultaneously protecting—in the Canadian context—treaty and land claim agreements. For example, University nuhelot’ine thaiyots’i nistameyimâkanak Blue Quills (UnBQ) was accredited at the college level in 2000 by the First Nation Accreditation Board (now the National Indigenous Accreditation Board) (NIAB, 2021, n.d.). Importantly, it also gained university accreditation in 2016 through the World Indigenous Nations Higher Education Consortium (WINHEC, n.d.-a) (Box 7.1). UnBQ is primarily concerned with “promot[ing] a sense of pride in Indigenous heritage and reclaim[ing] traditional knowledge and practices” (UnBQ, n.d.-a). Based on an ethic of “love, respect, courage, humility, wisdom, and truth,” UnBQ offers programs grounded in the lives and languages of nêhiyawak (Cree) while upholding high standards for research practice and outcomes (UnBQ, n.d.-b, n.d.-c). It is also a founding member of the First Nations Adult Higher Education Consortium (FNAHEC) (UnBQ, n.d.-a), an organization that aims to “nurture, foster, and protect First Nations’ Peoples to their own particular identity through the collective, cooperative and mutually beneficial efforts of our member institutions, while sharing and promoting Indigenous based initiatives to maintain and perpetuate our ways of knowing” (FNAHEC, n.d.). In so doing, FNAHEC promotes First Nations control over education programming and opportunities through support for Indigenous learning environments and content (FNAHEC, n.d.).

The Sámi University of Applied Sciences or Sámi allaskuvla (SUAS) in Norway is also an accredited WINHEC member (WINHEC, n.d.-a). SUAS combines traditional Sámi knowledge with Western knowledge systems in order to improve post-secondary education outcomes and experiences for Sámi across the Arctic (Sámi allaskuvla, n.d.). Of particular note is the linguistic focus of SUAS, with Sámi being the main language written and spoken on campus (Sámi allaskuvla, n.d.).

Box 7.1 World Indigenous Nations Higher Education Consortium (WINHEC)

Established in 2002, WINHEC is a multi-nation effort to affirm the sovereignty and rights of all Indigenous Peoples as they relate to education (WINHEC, 2021, n.d.-b). WINHEC accreditation recognizes Indigenous leadership and accredited educational institutions focus on self-determination and cultural security while supporting educational attainment and economic advancement (WINHEC, n.d.-b). Since its inception, the definition of *higher education* used by WINHEC has evolved, shifting from the Western concept of post-secondary education to a broader, lifelong process that occurs across time and place, within relationships, and “which opens ... Indigenous minds to all that has been given to us by Creator and challenges us to be who we were intended to be as Indigenous Peoples” (WINHEC, 2021). The efforts by WINHEC to empower and affirm Indigenous Peoples’ educational rights within this definition are protected under Articles 12 through 15 of UNDRIP (UN, 2007).

The Panel emphasizes the role of WINHEC in advancing cultural security within the realm of education policies and program development, since a significant portion of its efforts relate to the protection of “language, culture, and spiritual beliefs” (Meyer, 2005; WINHEC, 2021). By providing a framework and forum of support for Indigenous institutions seeking higher-education accreditation, WINHEC aims to reclaim Indigenous Peoples’ right to know, be, and do in ways that are specific to place and people (Meyer, 2005).

Similarly, ITK has partnered with the Mastercard Foundation EleV Program to develop an Inuit Nunangat university (Mastercard Foundation, n.d.). The proposed university, which is still in the planning stage, will be “Indigenous-led ... advancing a holistic Inuit perspective fundamentally transforming and strengthening education and economic opportunities for all Inuit and others”

(Mastercard Foundation, n.d.). The Panel believes that an Inuit Nunangat university can have a significant impact on the educational attainment rates of Northern residents, pointing to similar initiatives elsewhere, such as SUAS and UnBQ, where Indigenous-led post-secondary education has flourished.

The Dechinta Centre for Research and Learning in Yellowknife is another example of an Indigenous-led post-secondary institution in the North. In partnership with the University of British Columbia, the goal of Dechinta is to offer accessible, accredited academic experiences rooted in the Indigenous knowledge systems of the Dene community (Dechinta, n.d.-b, n.d.-c, n.d.-d). The centre is mandated “to serve the needs of northern Indigenous populations through education, research, and community programs ... [and] to deliver Indigenous centered arts, culture, language and educational programming in an innovative land-based environment” (Dechinta, n.d.-c). This blended approach—combining Indigenous knowledge systems and on-the-Land learning with academic credentials—was designed to ensure that, upon graduation, students are set up for success in whatever future endeavour they choose, whether it be on the Land, in the community, or in further post-secondary education (Dechinta, n.d.-d). This holistic approach to education supports students’ needs, including childcare for the duration of the program, in order to reduce barriers to participation (Dechinta, n.d.-a).

The Nunavut Sivuniksavut and Nunavik Sivunitsavut programs are other examples of Indigenous-led initiatives for Northern students who are accessing education in the South. These programs, located in Ottawa and Montréal, respectively, offer training to Inuit students that can support them in their post-secondary journey, while simultaneously providing language and cultural supports (Nunavik Sivunitsavut, n.d.; Nunavut Sivuniksavut, n.d.-a).

Accountability and Accessibility in Education

Accountability within the sphere of education is a broad notion. Systemically, it relates to the need for primary and secondary education to be positive for and relevant to Indigenous Peoples. It also relates to the need for post-secondary program design and implementation to be undertaken together with Indigenous communities. The Panel believes that community-institution partnerships, when done correctly, can result in significant benefits for Indigenous Peoples and the research community more broadly. Accountability also pertains to individuals in the research system; Southern researchers who travel to the North are responsible for the well-being of the communities with which they work.

Accessibility in education is another crucial aspect of an inclusive, collaborative, and effective research system. Increased program availability across the North, as well as tailored programming for Northern Indigenous Peoples based in the South, can improve access to education in a region historically excluded from post-secondary recognition and affiliation. Accessibility also applies to the South, however. The Panel notes that time and resources—elements identified as critical for researchers to engage meaningfully with Northern communities—are often difficult to come by. Increasing accessibility in the South as well as in the North can positively impact Northern research overall.

Educational accountability to Northern Indigenous Peoples begins at the primary and secondary levels

Considering the relationship between education and the research system, focus cannot solely be placed on post-secondary education. As outlined in Chapter 3, there are substantial inequities in terms of educational attainment in the North compared to Southern Canada (StatCan, 2023a), and between Indigenous Peoples and non-Indigenous people in Canada (StatCan, 2023b). As of 2021, approximately 67% of Indigenous people aged 15 and above in Canada had received a high school diploma, compared to 83% of non-Indigenous people within the same age range (StatCan, 2023b); the inequities are particularly acute for Inuit, where 45% of the population in that age range had received a high school diploma. Increased engagement at the post-secondary level requires that increased attention also be paid to the successes and failures of the entire education system.

In Canada, education is a legal requirement for all children; however, the specifics for how that education is provided differ among jurisdictions (GC, 2022f). Two of the four regions that comprise Inuit Nunangat (Nunavik and Nunavut) have control over their own education policies (Gov. of NU, 2008; Kativik Ilisarniliriniq, 2016), with the other two (the Inuvialuit Settlement Region and Nunatsiavut) providing input and/or funding to territorially and provincially determined curricula (Gov. of NT, 2013; Nunatsiavut Government, n.d.-c). As a result, primary and secondary school curricula (Kindergarten to Grade 12) vary. Although this variance makes comparison difficult, the Panel notes that, in recent years, progress has been made overall to improve primary and secondary school education across the North.

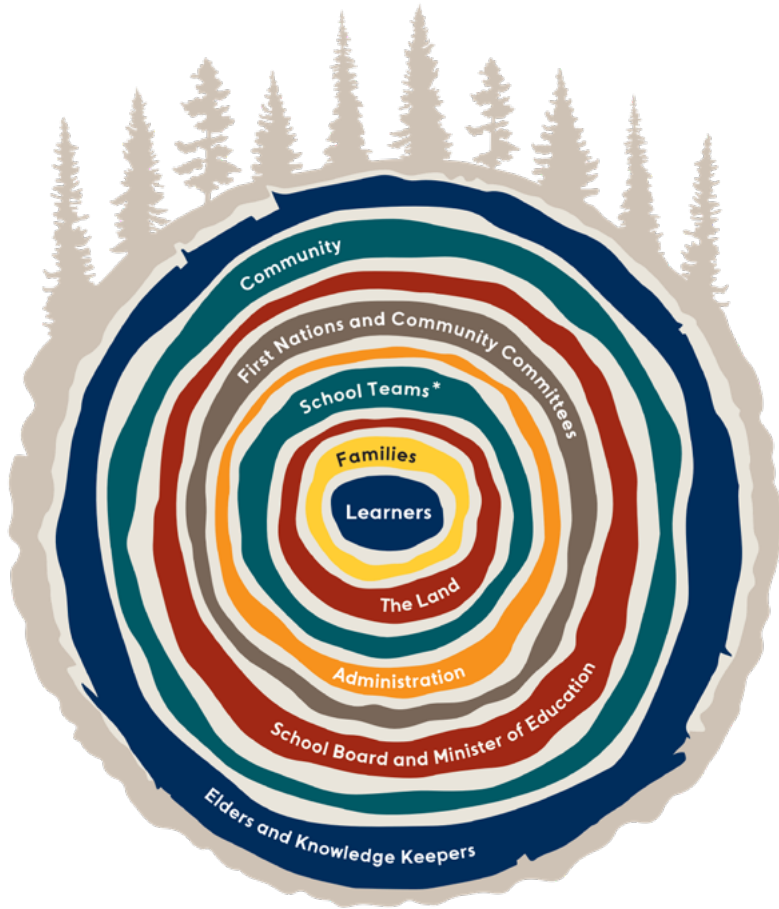
A growing body of research suggests that one factor of long-term success at school is continued instruction provided in a student's first language (Rodon *et al.*, 2015; e.g., Arim *et al.*, 2016). Currently, in Nunavik, under the governance of the Kativik School Board, all teaching from Kindergarten to Grade 2 is done exclusively in Inuktitut (Kativik Ilisarniliriniq, 2016). From Grades 3 to 5, English and French are introduced; however, Inuktitut remains a core subject (Kativik

Ilisarniliriniq, 2016). In Nunavut, under the *Education Act*, Inuit Language Arts (in which Inuktitut or Inuinnaqtun is studied as either a first or second language) is being phased into the central curriculum of Grades 4 through 12; however, full implementation of the Inuit Language Arts program is not scheduled to occur until 2039 (Gov. of NU, 2008). In Nunatsiavut, primary and secondary schooling is provided by the Newfoundland and Labrador English School District; however, the Nunatsiavut Government provides funding to the district to support Inuktitut language programming (alongside other cultural programming) (Nunatsiavut Government, n.d.-c).

The Government of the N.W.T. released an education renewal and innovation framework in 2013, which outlines the ways in which curricula can be redesigned to better ensure student success from Kindergarten to Grade 12 (Gov. of NT, 2013). Redesigning curricula to increase relevancy by applying cultural aspects is one established practice in primary and secondary school reforms (e.g., Kativik Ilisarniliriniq, 2016; Bennett *et al.*, 2022). Furthermore, the framework seeks to improve literacy and numeracy, in part through the reframing of subject areas to focus on educational processes rather than content alone (Gov. of NT, 2013). Although the program has experienced some success, non-Indigenous students continue to graduate at higher rates than Indigenous students (Gov. of NT, 2023). Similarly, the Kativik School Board's strategic plan aims to close the gap between Nunavik and Quebec elementary school success rates by working with communities to increase their engagement (Kativik Ilisarniliriniq, 2016). Although the plan's impact has yet to be measured, the Panel believes that increased community engagement may provide significant benefits in terms of elementary school student success rates.

The First Nation School Board (FNSB) of Yukon, which was established in February 2022, enables Yukon First Nations to share authority with the territorial government over the delivery of public school education (FNSB, n.d.). FNSB schools are open to all Yukon students and “promote reconciliation by enhancing a Yukon First Nations model that puts the student first, through a strength-based, community-centered approach” (FNSB, n.d.). In the Panel's view, the FNSB model (Figure 7.1) represents a crucial shift in perspective in regard to who education is for and what it entails. By centring students and encircling them with elements such as family, Land, community, and Elders and other Indigenous knowledge keepers, FNSB embodies the Panel's vision of accessible and accountable primary school education.

FIRST NATION SCHOOL BOARD ORGANIZATIONAL CHART



* Teachers, Learning Assistance Teachers, Educational Assistants, School Staff, and First Nation Education Staff

Reproduced with permission from FNSB (n.d.)

Figure 7.1 First Nation School Board Organizational Chart

The FNSB organizational chart highlights the interconnected nature of education and community. With the student at the centre, each ring moving outward represents an element of support and learning necessary for educational success. The use of tree imagery also highlights the important role of Land in education. School Teams include teachers, learning assistance teachers, educational assistants, school staff, and First Nation education staff.

Educational accountability in the North includes increasing and supporting the capacity of primary and secondary school teachers

Improving the accountability of primary and secondary education in the North also requires increasing the capacity of teachers to provide quality education, a fact that has been recognized by Northern institutions. For example, the Faculty of Education at Memorial University partnered with its Labrador Campus and the Nunatsiavut Government to offer a one-time community-based teacher education program (an Inuit Bachelor of Education) that focused specifically on the Labrador Inuit educational context (MUN, n.d.-b). The primary/elementary degree stream required students to take an Inuktitut language course, and student-teacher practicums were offered throughout Labrador's coastal communities (MUN, n.d.-b, n.d.-c).

Similarly, the Yukon Native Teacher Education Program—a joint partnership between Yukon University and the University of Regina—aims to build better primary and secondary educational practices that support reconciliation and decolonization in the territory through required courses, such as History of Yukon First Nations and Self-Governance, First Nations Cultures and Values, and Indigenous Land Based Education (YukonU, n.d.-d).

Nunavut Arctic College also offers tailored educational training through its Nunavut Teacher Education Program, which prepares participants to become teachers within the territory and offers courses on campus and in communities (NAC, n.d.-b). Participants are expected to be proficient in Inuktitut, since the program seeks to develop and support educators who are able to learn and teach in the language (NAC, n.d.-b). In the Panel's view, Northern-focused teacher training is critical to ensure that primary and secondary school education is accessible and accountable to students in the North.

Effective, accountable, and culturally relevant program development and design at the post-secondary level includes community input and the centring of Indigenous knowledge systems

The Panel notes that educational reform that is truly accountable to Northern communities includes community input and influence at all levels of program development and design. In the N.W.T., Aurora College—the territory's primary research institute—is undergoing a series of transformations to become a polytechnic university (Gov. of NT, n.d.-b). While increasing post-secondary presence in the North is a significant step forward, the accreditation process is being guided by the Department of Education, Culture and Employment, which, in the Panel's experience, has done little to engage with the territory's Indigenous communities. Although the transformation of Aurora College into a polytechnic

university is in large part guided by the *NWT Post-Secondary Education Strategic Framework 2019–2029* (Gov. of NT, 2019), the Panel believes more can be done in terms of shifting influence to Indigenous Peoples. That shift would help the territory achieve the framework’s ultimate vision, which aims for education that is “student-centred, accessible, high quality, relevant, and accountable” (Gov. of NT, 2019). The Panel believes curricula cannot be relevant and accountable to communities that have had little to no input in educational reform.

Many post-secondary institutions in the North have recognized the importance of integrating Indigenous perspectives and knowledge systems into their curricula and governance structures. The Labrador Campus of Memorial University, for example, is guided by a founding constitution rooted deeply in respect for local Lands, waters, and Peoples (MUN, 2021b). The constitution makes explicit the university’s respect for and accountability to the Indigenous Peoples of the region, requiring that all “programming, resources, and leadership [be] Northern-led, Northern-based, and Northern-focused, located in and developed by, in, and for the North” (MUN, 2021b). This sense of respect and accountability to the North is reflected in the programming offered by the Labrador Campus. The undergraduate degree and diploma programs offered “emphasize the Lands, waters, histories, and cultures of Labrador, and focus on the theories, methods, analytical techniques, critical thinking, and professional and leadership skills required to understand, live and work in, and contribute to the North” (MUN, n.d.-d). Further, the graduate programs in Arctic and Subarctic Futures require students to partake in research that directly addresses the priorities and needs of Indigenous Peoples and other Northerners (MUN, n.d.-e).

Yukon University has similarly sought to centre Indigenous knowledge systems in all elements of the educational process, from curricula and teaching practices to physical university spaces and hiring practices (YukonU, 2022b). Such centring of Indigenous perspectives is guided by the President’s Advisory Committee on First Nation Initiatives, which was designed, in part, to ensure that university programming is accountable to the many First Nations in the territory (PACFNI, 2007). In the Panel’s view, the Bachelor of Arts in Indigenous Governance (IGD) offered by Yukon University, as well as YFN 001 – Yukon First Nations 101, are exemplars of the integration of Indigenous knowledge systems in post-secondary curricula (YukonU, n.d.-e, n.d.-f). The IGD program focuses explicitly on Northern issues and aims to build leadership capacity tailored to the unique and complex Northern governance context through the strengthening of skills (YukonU, n.d.-e). YFN 001 – Yukon First Nations 101, in contrast, is a course required by the university to fulfill a core competency, and is open to the public online

(YukonU, n.d.-f). Developed as a means to offer knowledge on the history and culture of the First Nations in the Yukon, as well as on how to respectfully engage with Indigenous Peoples, this course provides the foundation for meaningful engagement and education in the North (YukonU, n.d.-f).

The Nunavut Law Program—whose first cohort graduated in 2021 (USask, n.d.)—is another important example. A joint program offered by Nunavut Arctic College and the University of Saskatchewan, it was designed to increase the legal capacity of Nunavut—and thereby increase access to justice for Nunavummiut—by equipping lawyers with the knowledge and skills necessary to work in the territory (NAC, n.d.-c; USask, n.d.). This includes the study of Canadian common law as well as Inuit traditional law, and the interaction of both in the contemporary legal context (NAC, n.d.-c). Nunavut Arctic College has also signed a memorandum of understanding (MOU) with Memorial University to build administrative and research capacity in Nunavut through joint credentials (Daly, 2019). The first initiative of the partnership, which began in 2019, is a refurbished Nunavut Teacher Education Program, focusing on both Inuktitut and English classroom teaching in order to prepare teachers for Nunavut’s unique primary and secondary education system (Daly, 2019). In the Panel’s view, such programs offer important avenues for capacity-building in the North, which is essential to foster an inclusive and collaborative research system.

The Arctic and Northern research system in Canada may also benefit from educational programming related to non-place-based research endeavours (Box 6.2). The Panel recognizes that, while Land-based research is at the forefront of Northern research, many areas of work may be carried out entirely remotely, often taking place in the South. As a result, the Panel has found that community engagement in these fields is often lower; even if researchers are interested in collaboration, they often lack strong ties to communities and are unsure of how to engage meaningfully (e.g., Ford *et al.*, 2016). At the same time, many Indigenous communities are over-burdened with research requests (GC, 2019a) and, in the Panel’s experience, choose to engage in work with direct ties to their communities and Land. The Panel believes that increased awareness of, and education in, these non-place-based topics in the Northern school system, as well as better understanding of the North among Southern-based remote workers, can benefit the research system overall by increasing meaningful engagement among researchers, even when the work does not necessarily lend itself to community involvement.

Before engaging in Arctic and Northern research, it is imperative that Southern researchers develop an understanding of the history and context of the North

In the Panel's view, education about the North—its history, peoples, and priorities—in Southern Canada is a critical element in advancing equitable relationships through research (e.g., Wong *et al.*, 2020). This sentiment is shared by others working in the North; for example, Derrick Pottle, an Inuit cultural educator in Labrador, notes that, “if the guests I bring out onto the Land educated themselves on relevant cultural and safety-related aspects, as well as on how to be respectful to the community, that would go a long way” (D. Pottle, personal communication, 2022). Tailored programs for Southerners to learn about Northerners and the North are difficult to come by. The Panel notes that Northern institutions have identified this gap and feels that additional ways must be found to provide training for Southerners, so they can meet Northern expectations.

The Government of the N.W.T. offers an online learning platform to provide foundational knowledge and cultural awareness for all incoming staff (Gov. of NT, n.d.-c). Comprising eight modules, the Living Well Together—Indigenous Cultural Awareness and Sensitivity Training platform is mandatory for all government staff (Gov. of NT, n.d.-c). Memorial University also offers researchers a guide to “doing Indigenous research in a good way” (MUN, n.d.-f), which is part of its larger Research Impacting Indigenous Groups policy. Publicly available on the university's website, the guide provides a number of answers to frequently asked questions, such as “I want to work with Indigenous groups, where do I start?” and “Are there existing principles or best practices for doing research with Indigenous groups respectfully?” (MUN, n.d.-f). The Panel believes that, although not focused specifically on research related to Northern Indigenous Peoples, the guide is a useful starting place for engaging with Indigenous communities and can serve as an example for Northern-based research institutions.

The University of Alberta Engage North program offered through the UAlberta North office is another example of tailored programming to prepare Southern researchers for meaningful work in the North. Engage North is a four-month-long internship program that “aims to act as a hub to connect Northern community-based organizations with Southern resources” by deploying undergraduate and graduate students at the University of Alberta into Northern placements (UAlberta, n.d.-a). Prior to departure, interns participate in two weeks of intensive cultural training, which can include sessions with Elders and community members; it focuses on community etiquette (UAlberta, n.d.-b). In the Panel's

view, the Engage North pre-departure training offers a good starting point for Southern researchers to learn about the context of, and etiquette around, working in the North and would benefit from expansion beyond the internship program to all Arctic and Northern research-related activities.

The Panel notes that developing an understanding of the history and context of the North is not limited to researchers coming from Southern Canada. Many foreign researchers work in Northern Canada, as there are a number of international partnerships collaborating on Arctic and Northern research (e.g., CINUK; see Chapter 4). The Panel emphasizes that *all* researchers working in Northern Canada, including those based in other countries, need to develop an understanding of the history and context of the Indigenous Peoples upon whose Land they are staying and working on, in order to ensure greater equity and respect in the research process overall.



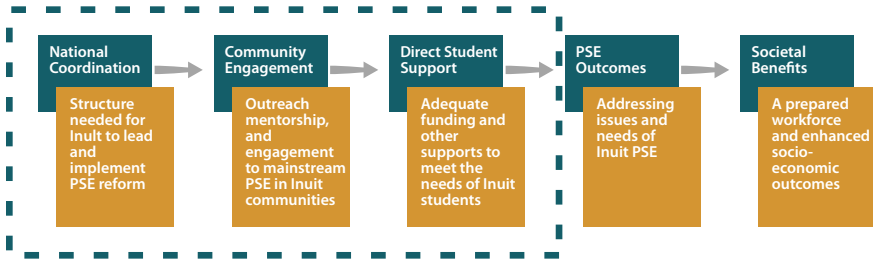
Courtesy of Michael Atkins/Yukon University

Students in YukonU's Yukon Native Teacher Education Program and students from the Yukon Native Language Centre prepare moose leg bones, Ayamdigut Campus, Yukon University, Whitehorse, Yukon

The establishment of and support for education that is accessible, inspiring, and culturally relevant fosters increased post-secondary engagement among Northern Indigenous Peoples

Increasingly, post-secondary education in the North does not require Northern residents to attend Southern institutions. Currently, there are two Northern colleges (Aurora College and Nunavut Arctic College) and two Northern universities (Yukon University and the Labrador Campus of Memorial University). These institutions offer programming relevant to the Northern context that is closer to—if not in—the home communities of many students across a number of campuses. For example, Yukon University has 13 campuses throughout the territory (YukonU, n.d.-g), each of which offers a number of courses, including those related to environmental operation, the history and self-government of Yukon First Nations, and public administration (e.g., YukonU, 2023). Further opportunities exist to expand Northern-based post-secondary education in similar ways.

A number of studies document the factors that hinder student engagement at the post-secondary level (e.g., ITK, 2011, 2020; Rodon *et al.*, 2015). These factors include a lack of Indigenous-specific support, inconsistent and inadequate funding, a lack of guidance relating to administrative processes, substandard academic training at the primary and secondary levels, and irrelevance to their lives (ITK, 2011, 2020; Rodon *et al.*, 2015; Bennett *et al.*, 2022). Seeking to address these concerns, ITK (2020) released a comprehensive strategy for raising educational attainment rates at the post-secondary level (Figure 7.2). The strategy focuses on the three core elements of national coordination, community engagement, and direct student support, in order to foster improved outcomes for Inuit across the North (ITK, 2020). In the Panel's view, the proposed strategy provides a solid foundation for decision-makers to use moving forward, and it can serve as a model for the development of similar educational policy for Northern First Nations and Métis.



Reproduced with permission from ITK (2020)

Figure 7.2 Raising Education Attainment Rates in Inuit Post-Secondary Education (PSE)—Strategy Overview

ITK's strategy for raising attainment rates at the PSE level for Inuit comprises five tiers, which progressively work toward the goal of enhanced socioeconomic outcomes.

Using elements of this strategy, the Nunatsiavut Government Education Division developed the NG Education Funding Program, which is a streamlined process through which Labrador Inuit seeking post-secondary education are supported, both financially and administratively (Nunatsiavut Government, 2022). The program combines funding from the federal Post-Secondary Student Support Program and the Inuit Pathways funding program. Financial assistance covers a number of elements, ranging from tuition and residence fees to childcare and transportation expenses (Nunatsiavut Government, 2022); it has been noted, however, that a significant drawback to the program is the inability of funding to be applied to infrastructure costs, such as office spaces (J. Lane, personal communication, 2022). Flexibility in what funding can be used for is critical to the success of the program, since a higher proportion of Inuit post-secondary students have children and are more likely to be away from home with no nearby relatives to provide childcare during school days (ITK, 2020). The program, established in 1987, has supported around 3,000 graduates in all areas, ranging from adult basic education programs to professional degrees, with anywhere between 250 and 270 students being funded each semester (J. Lane, personal communication, 2022).

The Inuit Educators Gathering hosted by Nunavut Tunngavik is another example of an element of the ITK strategy at work (Nunavut Tunngavik, n.d.). Aimed at current and aspiring Inuit educators from across Inuit Nunangat, the Inuit Educators Gathering is a forum to share wisdom on education and professional development opportunities (Nunavut Tunngavik, n.d.). Similarly, the annual National Inuit Student Gathering, hosted by ITK, offers a venue for Inuit students to connect and exchange experiences and knowledge (ITK, 2023). Topics discussed

at the gathering range from stories of challenges and successes to navigating funding and highlighting Inuit student research (ITK, 2023). In the Panel's view, there is an opportunity for other such information exchanges, which can increase student support in educational programming at all levels.

Inclusive Northern education involves Northern Indigenous Peoples living in Southern Canada

The Panel notes that numerous “urban Inuit” and Northern Indigenous Peoples living, studying, and working throughout Southern Canada contribute to the Arctic and Northern research system. Programs developed to increase awareness and understanding of the Northern context can help improve research and community relationships.

For Inuit, the Nunavut Sivuniksavut program (which translates roughly to “our Land is our future”) offers youth a combination of academic and cultural learning experiences (Nunavut Sivuniksavut, n.d.-a). Located in Ottawa, Nunavut Sivuniksavut offers two college-level certificate programs in Inuit and Advanced Inuit Studies (Nunavut Sivuniksavut, n.d.-a). Although the programs are accredited through Algonquin College, they are designed and delivered by Nunavut Sivuniksavut staff and taught on their own campus (Nunavut Sivuniksavut, n.d.-a). Upper-year programming designed to expose students to university-level studies includes courses in Political Science and Northern Public Administration through Carleton University (Nunavut Sivuniksavut, n.d.-b). Founded on the desire to aid Inuit students in their transition into adulthood, Nunavut Sivuniksavut curricula focus on understanding Inuit history and culture and expose students to a number of cultural experiences that “reinforce students’ personal identity and allow [them] to develop valuable cultural skills” (Nunavut Sivuniksavut, n.d.-a).

The success of the Nunavut Sivuniksavut program inspired the development of a similar program in Montréal (Rogers, 2017). Nunavik Sivuniksavut offers a variety of one-year courses on topics such as Inuit and circumpolar history, governance, literature, and languages, which can be applied for credits toward the completion of any CÉGEP diploma²⁴ (Nunavik Sivuniksavut, n.d.). Alongside the for-credit courses, the Nunavik Sivuniksavut program aims to provide a positive urban experience while strengthening participants’ sense of identity and leadership skills (Nunavik Sivuniksavut, n.d.).

24 The CÉGEP (Collège d’enseignement général et professionnel) system is the publicly funded college system in Quebec, which provides general and vocational training (Fédération des cégeps, n.d.).

Together at the Fire: Reflections on Education

Excellence in education at all levels—primary, secondary, and post-secondary—is a critical component of developing an Arctic and Northern research system that is inclusive, collaborative, and effective. In the context of the North, this is especially relevant, as it is a region that has historically been, at best, underserved by educational policies and programming and, at worst, actively harmed by them. By shifting the educational paradigm toward a system that recognizes, respects, and affirms diverse ways of being, knowing, and doing, education in the North can also be *for* the North, supporting increased capacity, self-determination, and sovereignty within communities and institutions and across Nations. Furthermore, ensuring that programming is accessible and accountable to Indigenous Peoples is also critical for collaboration and inclusivity in research. However, responsibility for excellence in education does not rest solely on Northern institutions and programs. The role of Southern researchers working in the North is also vital; education on the history, culture, and context of the communities within which Southern researchers work is an important aspect of doing research in a good way, which itself entails a greater investment of time and resources.



Tending the Fire: Panel Reflections

So light was given permanence in the world. Fox's power has left its mark, though. When light grows weary, and the Strength from the Raven wavers, the world falls back into that darkness of old. Then there is the dark of Winter. Then comes the long night.

Qitsualik-Tinsley &
Qitsualik-Tinsley (2015)

Coming Back to the Community Fire

Arctic and Northern research in Canada was and continues to be dominated by and centred on the perspectives, priorities, questions, and institutions of the South. Throughout its assessment, the Panel focused on Northern voices—Northern Indigenous voices in particular—in its desire to elevate the recognition and materialization of the rights of Indigenous Peoples to self-determination. In doing its work, the Panel recognized that all components of the research system—funding, infrastructure, data, and education—elevate the narratives of the South. The Southern perspective continues to be pervasive and has diminished Indigenous Peoples priorities and goals, thereby instilling the notion that Indigenous Peoples are merely supplementary. In the view of the Panel, Indigenous Peoples of the North are holders of crucial perspectives and are central to any and all research initiatives.

The Panel reminds us that the North is not simply a location for research. It is the homeland of Indigenous Peoples and other Northerners, as well as the plants and animals that dwell across the diverse Arctic region. The North is a home. The *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP) provides an essential human rights framework, and it has great relevance to both international and national laws and policies as they relate to relationships with First Nations, Métis, and Inuit. Article 3 of UNDRIP states that “Indigenous Peoples have the right to self-determination” (UN, 2007), and this includes their right to determine what can and cannot occur on their Lands and what happens with the data and knowledge gained through research activities. The right to self-determination served as a strong guiding principle for the Panel and was instrumental in informing all discussion and decisions.

The metaphor of the community fire was chosen by the members of the Panel to embody their discussions; as with bringing people together on Nuna (the Land) it illustrates one way in which diverse perspectives can be brought forth to strengthen communal respect. At the same time, the community fire serves as a reminder of the need to come back to, care for, and respect the Land. When people gather around a community fire, the assumption is that prejudices are put aside, and people come together to celebrate ethical and equitable space, which provides an arena for cross-cultural conversations and outcomes in the pursuit of equity and justice (Ermine, 2007). The elements of transformational change identified by the Panel—justice, cultural security, accessibility, and accountability—are the very basis, or kindling, for the fire. These are required to initiate an effective, inclusive, and collaborative Arctic and Northern research system. Without the proper kindling, the community fire cannot catch, and will not ignite respect. However, kindling for fire is insufficient in isolation. The fire must be lit in a way that respects both the fire itself, the Land it is on, and those who have come to gather around it. Lighting the fire in a way that upholds the ethical imperatives of responsibility, reciprocity, and respect involves the avenues of transformational change. In their work, the Panel also identified the drivers of meaningful transformational change, namely shifting influence to the North and increasing capacity across the research system as a whole.

All Indigenous Peoples of the North have great respect for their respective Lands, and each have their own ways of expressing their strong love for the Land. In their mindset, the Lands have their own cognizance allowing peoples to live fulfilled lives that the Lands provide, freely and generously. The Lands provide nourishment physically as well as spiritually. The notion that you are part of the Land from which you are born is strongly instilled and remains a marker of your identity. So much of the lives of the Northerners have changed drastically over the last century, and many of these shifts have introduced uncertainty and many challenges; yet, within these rapid and often-difficult changes, the love of, respect for, and connection to Lands and waters continues to persist strongly and stand as a guiding principle and foundation for community, culture, and self-determination.

The community fire and that of being invited to the Lands of Inuit and other Northern Indigenous Peoples act as metaphors for the Arctic and Northern research system, and in the mind of the Panel represent radical and transformational change. If approached with care and consideration, the responsibility, reciprocity, and respect that kindle the fire and that of being on the Lands in the North can support a place where individuals can gather to learn and grow together.

Tending the Fire and That of Being on the Land

Once the fire is lit, and individuals invited, care and attention cannot be withdrawn. Maintaining the community fire and the needed relationships to evoke an ethical research system is a responsibility of all involved, as Wolf implies. Fire is not permanent; it grows weary and occasionally fades into dark. So too does the flame. Raven's Strength wavers, ushering in the dark of Winter; the dark sought out by Fox to raid and pillage at will. The Panel holds that the elements of transformational change being advanced here require ongoing upkeep of good community relationships and true structural change. To keep the flame burning bright, it must be tended and kept, as do the human-to-human relationships fostered while spending time on the Lands of Indigenous Peoples. All of this requires ethical relationship building that, in effect, might be a life-long endeavour.

Tending the fire and that of being on the Land both speak strongly to shared responsibilities and require a delicate sense of balance embodied by Raven and Wolf. Both perspectives are critical to an ethical and inclusive research system; however, the role of each is dynamic and flexible, responsive to any given context. The North—and Indigenous Peoples, more specifically—must be a priority for the Arctic and Northern research system in Canada if Southern researchers and institutions want research in the Arctic to achieve full inclusivity and effectiveness.

The Panel recognizes that tending this fire and that of being out on the Land are not easily undertaken; the perspectives brought to this report are themselves rooted in a diversity of experiences involving struggles against seemingly insurmountable structural barriers. Yet, the Panel has fought for a vision of transformational change that is based on UNDRIP and the Truth and Reconciliation Commission (TRC) Calls to Action, and grounded in the perspectives, priorities, and needs of the North. The fire, and that of establishing human-to-human relationship, though waning at times, never goes out. When people and institutions tend to the fire, we each contribute to a space of inclusivity and collaboration. The community fire, at its core, is about so much more than world-class research. It is about belonging at the fire in the first place.

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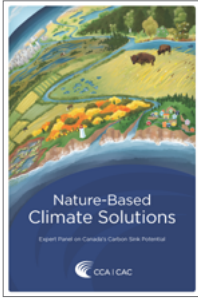
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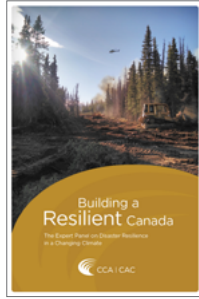
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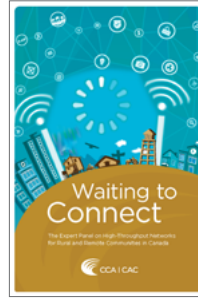
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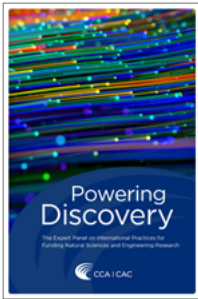
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