

GOVERNMENT OF THE NORTHWEST TERRITORIES

Knowledge Agenda: Northern Research for Northern Priorities

May 2017



MESSAGE FROM THE PREMIER



Research completed in the North and relevant to the North is essential to help the Government of Northwest Territories (GNWT), Aboriginal and federal governments, residents and communities increase our knowledge and understanding of climate change. The NWT is warming at a rate

four to five times faster than the global average. This is causing significant changes in the natural environment. Investigation, experience and research relevant and valuable to NWT residents and communities will ensure we are better able to mitigate and adapt to the effects of climate change.

As a culturally, socially and environmentally diverse area, with continuing and emerging resource development opportunities, the NWT attracts significant research interest and activity every year.

Past research in the NWT has often been driven by the scientific curiosity of national and international research and academic institutions. This research resulted in some high quality investigations, but often overlooked or under-represented many areas of importance to NWT residents.

The Northwest Territories Knowledge Agenda outlines ways to acquire the necessary knowledge for meeting the northern interest, benefiting NWT residents and increasing the calibre of northern research. It is designed to minimize knowledge gaps and support evidence-based decision-making at all levels of government.

The GNWT, Aboriginal and community governments must be active leaders, practitioners, partners and promoters of research necessary to plan for the future of our territory. Relevant research results must be integrated into decision-making at all levels.

The GNWT will continue to collaborate with other governments, academic institutions, research agencies, communities, environmental non-governmental organizations and industry to guide research practitioners working in the NWT to ensure our residents directly benefit from research results.

Research completed in the North must promote engaged decision-making based on best available evidence, including traditional knowledge, local and scientific knowledge.

Robert R. McLeod
Premier of the Northwest Territories

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SECTION 1: INTRODUCTION

The Northwest Territories (NWT) is experiencing a period of dynamic changes and challenges. Resource development, climate change, economic change, new technologies, health risks and social change require the Government of the Northwest Territories (GNWT) to continuously adapt its policies, programs and services. The GNWT believes decisions required to adapt to these changes should be based on the best available evidence and knowledge as derived from investigation, experience and research.

The Knowledge Agenda supports the GNWT's overall goal of positioning the NWT as an active leader, practitioner, partner and promoter of all forms of research, including traditional knowledge and community-based research, necessary to inform relevant, timely and effective policy, planning and legislation. This Agenda will be used by the GNWT to promote, and initiate, collaboration with federal, Indigenous and external governments, communities, academic institutions, agencies and other organizations to increase the calibre of research done in the north and direct research in the northern interest.

The objective of the Knowledge Agenda is to list, and describe, the types of information the GNWT believes it needs to improve the quality of life of NWT residents in collaboration with Aboriginal governments and to maintain the integrity of NWT cultures, ecosystems, environments and communities. It recognizes traditional and local knowledge, necessary to our essential understanding of the North, research and innovation are essential to a prosperous, sustainable and healthy communities.

The Agenda also describes the many roles the GNWT has with respect to carrying out research and using the results in decision-making. The GNWT sees this Agenda as a useful tool for guiding research practitioners working in the NWT to investigations that will yield information relevant and valuable to NWT residents while promoting local engagement and capacity development.

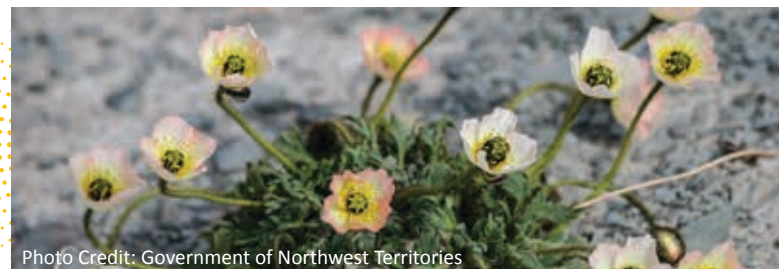


Photo Credit: Government of Northwest Territories



Photo Credit: Government of Northwest Territories

SECTION 2: BACKGROUND AND CONTEXT

The Knowledge Agenda has been developed recognizing the GNWT:

- requires sound, reliable, evidence-based information to make decisions;
- has an essential role in the acquisition and management of knowledge;
- directs and supports research by internal departments, boards, agencies and outside institutions;
- understands research collaborations with other agencies are necessary to augment internal efforts to fill knowledge gaps;
- needs to inform research practitioners and agencies supporting research about its institutional and informational needs;
- often engages as a partner, participant or reviewer of community, federal, territorial and international research initiatives;
- faces major social, political, economic and environmental changes, which require various types of knowledge to address;
- has committed to providing evidence-based information in a series of binding agreements and strategies made at territorial, national and international levels; and
- must implement legislation requiring evidence-based information (listed in Appendix 1).

The Knowledge Agenda is based on, and is an update of, the document entitled “Building a Path for Northern Science: Government of the Northwest Territories’ Science Agenda” published in 2009. The decision to change the focus from “science” to “knowledge” occurred based on feedback that the former term was not inclusive and did not adequately recognize the many non-scientific research methods used to obtain knowledge in a particular subject area.

For the purposes of this document, the GNWT defines knowledge as the theoretical or practical understanding of a subject. Unlike the term “science”, which connotes both a body of knowledge and a specific (scientific) methodology for acquiring that knowledge, the term “knowledge” is neutral as to how that knowledge was obtained. This Agenda is based on the premise that knowledge on any subject can, and should, be obtained by research conducted using the most appropriate methodology for each specific research question. The GNWT acknowledges there are many different research methodologies and approaches that can be used to increase our collective knowledge about the physical, biological and human environments of the NWT.

Other updates and identified research priorities were based on written input and guidance from GNWT departmental representatives.



Photo Credit: Government of Northwest Territories

SECTION 3: IDENTIFYING PRIORITIES

In the past, research undertaken in the NWT has often been driven by the scientific curiosity of southern research institutions and the interests of southern-based academics. This has resulted in some high quality investigations, but it has also meant that many areas of importance to NWT residents were overlooked or under-represented. Research results were often inadequately reported back to the northern communities and, in general, inadequately integrated into policy development at many levels of government. Notably, traditional knowledge-based research has typically been under-represented in all areas of policy development and decision-making.

The GNWT has identified five subject areas where it believes research needs to be focused to improve the quality of life of NWT residents and maintain the integrity of NWT cultures, ecosystems, environments and communities. These core subject areas are:

- cultural sustainability;
- environmental stewardship;
- health and wellness;
- natural resource management; and
- sustainable communities.

Collectively, these subject areas encompass the mandate, responsibilities and interests of the GNWT as expressed in the legislation, policies, strategies and other GNWT commitments listed in Appendix 1. Ongoing research is needed in these core subject areas to minimize knowledge gaps and support evidence-based decision-making at all levels of government. A full description of the five subject areas is provided in Section 4.

Specific research priorities for each of the core subject areas are also listed in Section 4. Research priorities were identified based on input from all the GNWT departments with a role as a practitioner, consumer, regulator or educator of research in the NWT.



Photo Credit: Government of Northwest Territories

SECTION 3: IDENTIFYING PRIORITIES CONTINUED

Roles of the GNWT with respect to research include:

1. Practitioner

GNWT employees design studies, conduct monitoring or data collection, analyze and report information, and collaborate with other agencies communities, environmental non-governmental organizations, industry and their researchers to address various questions related to their mandates. The GNWT collects a wide range of information through reports, studies, scientific literature and journals, surveys, raw data, real-time remotely-sensed information and research. Research and monitoring conducted by the GNWT is done both to understand the world as it is (basic research) and for the purpose of developing new technologies, mitigations or policies to inform management practices as well as infrastructure design or construction (applied research).



Photo Credit: Government of Northwest Territories

2. Consumer

The GNWT assumed administration and control of public land and subsurface resources in the NWT, as well as rights in respect to water, in 2014. These authorities bring additional responsibilities related to the environmental assessment and regulation of resource development projects in the NWT and for the administration of the Cumulative Impact Monitoring Program. Some of the GNWT's key responsibilities in land and water management for public lands include the provision of technical advice for the regulatory and assessment boards, compliance enforcement for various permits and licences, and as key decision-makers in the approval of environmental assessments and some water licences. In all of these roles, the GNWT needs to rely on the most up to date research available in the five core subject areas identified in Section 3.

Several GNWT departments also lead and conduct projects, including, for example, the construction and maintenance of infrastructure (roads, buildings, etc.), the clean-up of contaminated sites and the development of parks, protected areas or recreation areas. The GNWT also works with community governments through the Department of Municipal and Community Affairs to manage key infrastructure related to obtaining drinking water or

SECTION 3: IDENTIFYING PRIORITIES CONTINUED

managing and disposing of wastewater and solid waste. In all of these roles, the GNWT routinely carries out or utilizes research in order to continuously improve its construction, maintenance, remediation and/or management methodologies.

Other GNWT departments, such as Justice and Education, Culture and Employment, use research to guide their work in directly supporting NWT residents. The Department of Health and Social Services also directs, participates in and relies on research related to its mandate of promoting, protecting and providing for the health and well-being of the people of the NWT.

3. Regulator

GNWT legislation includes four licensing processes to register and regulate research conducted in the NWT. The Regulations ensure research is not environmentally, culturally or socially harmful to the people, wildlife and lands of the NWT. Under the NWT *Wildlife Act*, the Department of Environment and Natural Resources (ENR) is responsible for reviewing and permitting all work related directly to wildlife and wildlife habitat. Under the *Forest Management Act*, ENR also reviews and issues Forest Research Licences. The Culture and Heritage Division of Education, Culture and Employment, through

the NWT Archaeological Sites Regulations, issues permits for archaeological investigations. Under the NWT *Scientists Act*, the Aurora Research Institute reviews and approves all other forms of research in the NWT. This includes investigations into biology, contaminants, engineering, health, physical sciences, social sciences and traditional knowledge.

4. Educator

Education is the key to building capacity so Northerners can function as research practitioners. The GNWT is responsible for the formal education of residents at all stages in their academic careers. This includes the education of public school students in kindergarten through grade 12, as well as delivery of accredited post-secondary programs, including degrees, diplomas, certificates, vocational training and adult basic education. The GNWT is also responsible for ensuring students appreciate the importance of traditional knowledge and have an understanding of how to respectfully conduct research in this field. The Prince of Wales Northern Heritage Centre acts as a site for public education for all ages and communication of research on culture, heritage and the NWT landscape. The GNWT encourages the continuing education of all territorial residents and development of their curiosity and inquiry from a young age.



Photo Credit: Government of Northwest Territories

SECTION 4: RESEARCH PRIORITIES

In this section, the five core subject areas identified in Section 3 are described in detail, including a statement of the GNWT's strategic goal for research in each area. Specific research priorities, as identified by GNWT departments, are also listed for each core subject area to further focus and define the perceived knowledge needs. Research priorities center on socio-economic, environmental, health and cultural indicators and questions, which can provide a more in-depth and focused understanding of the territory. The GNWT expects to update the listed research priorities every five years to ensure their continued relevance.

An examination of the list of current research priorities for the NWT reveals two cross-cutting themes, which seem to affect research in all the core subject areas in different ways. The first theme is climate change, which is already affecting and altering northern ecosystems and the way of life of NWT residents. The GNWT believes acknowledging and addressing this theme across all disciplines of research may allow for a more holistic and informative understanding of effects to the people and environment of the NWT and result in stronger research initiatives.

The second cross-cutting theme acknowledges how innovative and emerging technologies change how research is done and what research questions can be tackled. The integration and use of the latest technology in research is especially important in a territory with such a vast geographic region as the NWT, with a sparse population, harsh climate and relatively little infrastructure. As technology progresses and is adapted to the northern context, the cost-effectiveness of research and monitoring and overall capacity of northern researchers should improve in all the core subject areas.

A full description of these cross-cutting themes can be found below. Research priorities for each of the five core subject areas are presented in Sections 4.1 to 4.5.



Photo Credit: Government of Northwest Territories

SECTION 4: RESEARCH PRIORITIES CONTINUED

Cross-cutting Themes for Research Priorities

1. Climate Change

The North is experiencing rapid and extensive changes linked to climate change. This phenomenon has far reaching effects that are altering northern ecosystems and all aspects of life in the NWT, including the man-made, natural and physical environments, the health of residents, the territory's governance and socio-economic future. Security of NWT heritage resources is also affected by climate change.

Climate change is a complex issue, which requires a multi-disciplinary approach to properly address it. Understanding how the ecosystem changes, due to climate change effects on the NWT economic, health and social conditions, and how human use of the land affects ecosystems, is essential to those working in any field of research in the NWT. There is a need for empirical and experimental investigations on the behaviour and interactions of natural ecosystem functions and the development of models for global and regional climatic systems as well as regional interpretation of these systems. Environmental and sociological monitoring of the effects of climate change paired with socioeconomic analysis is also required. Regionalized modeling is important to plan



SECTION 4: RESEARCH PRIORITIES CONTINUED



Photo Credit: Government of Northwest Territories

for adaptation coordination. These research initiatives cannot be undertaken without a tangible plan to disseminate and communicate the results to those living in the impacted areas.

Climate change is a cross-cutting theme because of the sheer expanse of its relevance to the changing North. Climate change is not contained in one specific research priority. It is applicable, to some degree, within all priorities and should be considered when engaging in any research. It is a major driver within all the core subject areas. An enhanced understanding of environmental changes, the role of climate change in these changes and the challenges and opportunities these changes will present for the NWT is essential.



Photo Credit: Geological Survey of Canada

SECTION 4: RESEARCH PRIORITIES CONTINUED

2. Innovative and Emerging Technologies

Technologies are crucial components in monitoring natural landscapes, the urban environment, and assessing baseline health and socio-economic data.

In the NWT, making progress in any of the research priority areas will depend in part on whether researchers have access to the observation, data analysis and communications technologies required to develop research platforms and conduct information exchange. An example is access to earth observation data through remote sensing. When addressing the vast landscape and sparse population of the NWT, baseline data needs to be collected with minimum impact and cost over large areas. Earth observations through remote sensing address these needs and should be fully integrated in future research, where applicable.



Photo Credit: Government of Northwest Territories

Technology is constantly advancing. The pace at which technology is changing and becoming specific for the northern use can be seen almost every day. Technology, as shown in the past, will change the methodologies and research designs of projects over time. Advancements in technologies will be used prominently for observation and monitoring, which is an indispensable core activity for building our knowledge base, understanding the environment, exercising stewardship and managing resource development.

Technology has a clear role in addressing NWT research priorities. Its use must be examined as part of every research project from its design, implementation and data dissemination to ensure environmental, social and cultural sensitivity. The GNWT needs to provide clear support for innovative ideas backed by new and upcoming technologies, which specifically address science priorities within departments, Indigenous organizations and communities.

Data and information sharing across, and between, departments and other agencies has been identified by many as an area for improvement. Data and information management and sharing is essential to effective integration of science into policy. Efforts must be made to create clear data collection, management and sharing

SECTION 4: RESEARCH PRIORITIES CONTINUED

protocols for the NWT. The GNWT must ensure it has the capacity to maintain these protocols. This will allow for the standardization of the collection, storage and dissemination of observational data. Efforts must also be made to ensure this data is freely accessible and understood by GNWT employees as well as visiting researchers and other users for it to be correctly interpreted, analyzed and incorporated into the decision-making process.

3. Enhanced Role for NWT Residents

The people of the Northwest Territories need to play a greater role in the generation of knowledge about our landscapes, resources and communities. Increased capacity to participate in the research process will lead to increasingly self-reliant individuals responsible for making informed decisions about their own health, wellness, education and economic diversification. The ability to both generate and answer research questions is an essential component of healthy, vibrant communities.

Reliable, timely and accessible research and knowledge is necessary in addressing the dynamic changes taking place in the North and improving the decision-making on a local, regional and territorial level. Increased regional and

local capacity to plan and conduct research will ensure it reflects the historical and current conditions of our people and environment.

Community engagement in planning and conducting research increases the public's trust and acceptance of the results and support the development of a NWT-based research community. A leadership role for Northerners is of particularly high importance in health and social research; however, recognizing the need to engage and involve NWT residents is a crucial planning step in the development and delivery of programs in each of our five research priorities.



Photo Credit: Government of Northwest Territories

Strategic Goal

The goal of research into cultural sustainability is to study past and current cultural practices, traditions and traditional knowledge to better understand and support these practices and traditions in the future.



Photo Credit: Government of Northwest Territories

4.1 CULTURAL SUSTAINABILITY

With respect to cultural sustainability, the GNWT recognizes that:

- the NWT is comprised of many diverse and vibrant cultures with long and extensive histories;
- the NWT has 11 official languages, nine of which are Indigenous;
- globalization forces are altering and impacting traditional cultures and ways of life and changing the way traditional methods and knowledge are maintained;
- the primary responsibility for the preservation and promotion of traditional knowledge, lifestyles and customs lies with Indigenous people;
- traditional knowledge, lifestyles and customs are best preserved through continued use and practical application;
- the primary focus and driver of cultural sustainability research should be the Indigenous community; and
- research related to culture and traditional knowledge must recognize the knowledge holder as the proprietor of the information.

Research related to cultural sustainability must examine and document the history and cultures of various regions and societies of the NWT. This must be done in a culturally sensitive fashion, which means researchers must follow community and ethical protocols. For example, it is important for researchers to seek consent and other input from community and regional leaders on how to conduct their research prior to initiating studies. Identifying the right people to be interviewed or included in the research is important for accuracy, quality and thoroughness.

Research in this field must also highlight the associated legal, cultural and linguistic issues arising from globalization and related changes to cultural practices. Community involvement is vital for successful research either through partnerships or initiating and executing studies.

Research in this field will help produce a more in-depth understanding of various pressures and responses being felt by Indigenous governments, organizations and peoples of the NWT. It will also highlight the vast breadth of traditional knowledge held within the NWT. Traditionally held knowledge and customs have often been transmitted from generation to generation and, as such, have associated methods of communication. Traditional, cultural and historical knowledge should always be treated with deference and by the stipulations of the knowledge holder.

4.1 CULTURAL SUSTAINABILITY CONTINUED

Strategic Goal

The goal of research into cultural sustainability is to study past and current cultural practices, traditions and traditional knowledge to better understand and support these practices and traditions in the future. Research in the NWT should investigate ways to support cultural and linguistic preservation, review and implement traditional knowledge integration paradigms and provide practical steps to ensure the continued livelihood of all Indigenous people in the NWT.



Photo Credit: Government of Northwest Territories

Research Priorities

There are currently two priority areas with respect to cultural sustainability research:

1. To improve our understanding of the impacts of development and climate change on northern cultures. Examples of specific research topics include:
 - Understanding changing traditional knowledge, customs and practices (both current and historical), the pressures causing changes to its use and application, and the consequences of these changes.
 - Determining industrial impacts on culture, including assessments related to socio-economic and cultural impacts and opportunities.
 - Understanding the impacts to heritage resources from factors, including climate change or industrial development.



Photo Credit: Government of Northwest Territories

4.1 CULTURAL SUSTAINABILITY CONTINUED

2. To improve the preservation and use of cultural practices, traditional knowledge and languages.

Examples of specific research topics include:

- Anthropological and archaeological studies of historical and present-day cultural landscapes, customary Indigenous laws, traditional Indigenous food systems, historical and present-day social support networks, the traditional economy and communities.
- Documenting and preserving traditional languages.
- Cultural impact mitigation and adaptation techniques and strategies.
- Effective community-driven and community-based research as well as methodologies in cultural and traditional knowledge topics.
- Regional baseline studies of heritage resources to better understand their distribution in the territory.



Photo Credit: Government of Northwest Territories

Strategic Goal

The goal of research concerning environmental stewardship is to expand our basic environmental knowledge and expertise with a view to supporting economic, social and cultural progress as effectively as possible, while maintaining healthy and resilient ecosystems.



Photo Credit: Government of Northwest Territories

4.2 ENVIRONMENTAL STEWARDSHIP

With respect to environmental stewardship, the GNWT recognizes that:

- the NWT is a vast and geographically diverse territory with an array of environmental characteristics of local, national and global significance;
- the northern environment is sensitive to change from local, national and global drivers such as climate change, the long-range transport of contaminants and habitat fragmentation as a result of natural or human disturbance;
- long-term baseline monitoring and information are essential to understand the state of biodiversity and ecosystems throughout the different regions of the NWT and to assess climate change and other cumulative impacts;
- NWT-specific, quantifiable environmental indicators are required to detect ecosystem stress and change;
- increased understanding of geophysical, vegetative, climate and hydrological processes are required to comprehend ecosystem functioning territory-wide; and
- understanding the relationships between components of the northern environment is required, as all components are interconnected.

Research helps produce the basic knowledge, predictive modeling and impact assessment expertise needed to enable effective management of the northern environment and its resources. Environmental research should investigate both biological and physical environments and their inherent connections. The results of such research allow for the potential and actual cumulative impacts of development activities, climate change and ecosystem stress to be better measured and analyzed. There is also a continuing need for environmental baseline data collection, coordination, analysis, storage and dissemination to support environmental impact assessments and strategic environmental assessments. High quality traditional knowledge, local and scientific knowledge research is needed for effective environmental regulation and management, land use planning and water resource management.



Photo Credit: Government of Northwest Territories

4.2 ENVIRONMENTAL STEWARDSHIP CONTINUED

Strategic Goal

The goal of research concerning environmental stewardship is to expand our basic environmental knowledge and expertise with a view to supporting economic, social and cultural progress as effectively as possible, while maintaining healthy and resilient ecosystems. Research and monitoring will help to quantify and determine environmental stresses, predict their impacts and develop mitigation and adaptation strategies to protect the environment, maintain biodiversity and ecological diversity, and promote healthy air, water, land, plants and wildlife for future generations.



Photo Credit: Aurora Research Institute

Research Priorities

There are currently five priority areas with respect to environmental stewardship related research:

1. To maintain our northern biodiversity. Examples of specific research topics include:
 - Conducting baseline inventories of species presence, habitat use and abundance in all NWT regions, especially lesser-known species.
 - Increasing the understanding of landscape-level changes to better assess their impact on species at risk.
 - Conducting research on key threats to species at risk, such as landscape changes, pollution, and diseases and parasites, and model how threats are related to climate and human activity.
2. To mitigate and adapt to climate change by maintaining ecosystem services, integrity and resiliency. Examples of specific research topics include:
 - Increasing our understanding of climate change at regional and local levels to better predict future effects on NWT ecosystems.

4.2 ENVIRONMENTAL STEWARDSHIP CONTINUED

- Enhancing the tracking of new species, pests, invasive alien species, diseases, parasites and pathogens, and environmental contaminants, and increasing our understanding of their role in population dynamics of northern wildlife species and ecosystems.
- Refining valuations of ecosystem services and streamlining these into carbon accounting and other economic accounting of the effects of climate change and of biodiversity protection services.
- Increasing the monitoring of changes in permafrost regimes, identifying sensitive terrain, and the environmental and geotechnical implications.
- Strengthening hydrology and water quality knowledge across the NWT, including surface and ground water.
- Boosting the monitoring of changes in forest productivity, condition and carbon dynamics as climate change progresses.
- Increasing the understanding of the changing fire regime in the northern boreal forest, as a result of progressing climate change, and the potential implications for NWT residents.
- Understanding the impacts of severe fire years on terrestrial ecology and aquatic ecosystem health.



Photo Credit: Government of Northwest Territories

4.2 ENVIRONMENTAL STEWARDSHIP CONTINUED

- Paleo-environmental studies that assess temporal change in climate and aquatic and terrestrial ecosystems.
- Increased monitoring of weather events, such as instances of fog, increased snowfall and rainfall, to better understand natural ranges of variation and help build predictive models inclusive of global climate change.



Photo Credit: Government of Northwest Territories

3. To support NWT's social, cultural and economic well-being by mitigating and reducing the cumulative impacts of industrial activities in a changing climate, by supporting food security and by supporting sustainable economic activities. Examples of specific research topics include:
 - Understanding forest renewal and dynamics after natural and anthropogenic disturbances.
 - Developing and testing mitigation measures, best practices and offsets related to the impacts of present and future industrial developments, including development arising from our economic adaptation of a changing climate.
 - Maintaining healthy and resilient wildlife populations by enhancing research and innovative information gathering on traditional knowledge, harvest reporting and contaminants.
 - Finding efficiencies and innovative ways to enhance the long-term monitoring of wildlife populations such as non-invasive methods, community-based approaches, protocols based on traditional knowledge, remote and new technologies.
 - Enhancing our knowledge of the impacts from upstream pollution sources and developing regional assessments.

4.2 ENVIRONMENTAL STEWARDSHIP CONTINUED

- Tracking of atmospheric transport of pollutants and changing air quality.
 - Determine best practices to measure the social return on investment on initiatives, in particular programming designed to enhance equitable involvement in co-management.
4. To develop innovative monitoring and research techniques and technologies. Examples of specific research topics include:
- Improved methods of air quality monitoring and analysis.
 - Baseline monitoring and observation techniques that enhance researchers' abilities to collect data in remote areas of the NWT, including remote sensing technology and community-based approaches.
 - Increasing our understanding of landscape changes using innovative technologies and processes, such as modeling and remote sensing.
 - Efficient environmental baseline monitoring programs, including inter-departmental planning and coordination, and a strategy to manage, archive and disseminate environmental data.
- Improving methods and technologies for assessment and evaluation of environmental, human health, social and industrial risk management and mitigation processes.
 - Building an outcomes measurement framework or tool with goal of balancing the Indigenous worldview and a western research paradigm to ensure the equitable management of natural resources is realized.
5. To support transparent, robust and evidence-based decision-making related to environmental stewardship. Examples of specific research topics include:
- Assessing the value of ecosystem services, including biodiversity protection services.
 - Developing innovative and consistent methods of applying and integrating research results into government decision-making with respect to environmental stewardship.
 - Research on best practices in the development and implementation of policy and legislation for improved and consistent environmental stewardship.

Strategic Goal

The goal of research relating to health and wellness is to ensure continuing vitality into the near and long-term future of NWT residents by better understanding health and wellness trends, health care service and management systems.



Photo Credit: Government of Northwest Territories

4.3 HEALTH AND WELLNESS

With respect to health and wellness, the GNWT recognizes that:

- the NWT has significantly lower rates of self-reported overall health, as well as self-reported mental health, compared to the national averages;
 - there remains significant disparities in the overall health status between Indigenous residents and non-Indigenous residents;
 - the prevalence of significant risk factors, such as heavy drinking, smoking, physical inactivity and obesity, contribute to chronic conditions;
 - mental health issues and substance abuse are underlying concerns that contribute to overall poor health;
 - the NWT has a higher rate of potentially avoidable deaths than the national average, with the leading causes being injuries, cancers and circulatory diseases;
 - the NWT struggles with higher rates of communicable disease, such as sexually transmitted infections and community-based Methicillin-resistant Staphylococcus Aureus (MRSA);
 - baseline information in certain areas of health and wellness needs to be increased to better understand and analyze the health of the NWT population;
- research examining how human health may be impacted by climate change and environmental contamination needs to be improved; and
 - proper health education tools and culturally-relevant implementation mechanisms can greatly improve research in health and wellness.

Research initiatives in the NWT must take a comprehensive approach in considering the health and well-being of all residents. Research should focus on the social determinants of health to support and enable individuals and families to be, and stay, healthy. Research can provide a better understanding of the health risks and issues facing the NWT. It should consider primary, secondary and tertiary prevention measures for a complete approach to altering the adverse consequences of all health-related events in the NWT.



Photo Credit:
Government of Northwest Territories

4.3 HEALTH AND WELLNESS CONTINUED

Strategic Goal

The goal of research relating to health and wellness is to ensure continuing vitality into the near and long-term future of NWT residents by better understanding health and wellness trends, health care service and management systems. Research should identify important gaps in information, which have impacts across the system and population, while supporting culturally relevant paradigms.

Research Priorities

There are currently five priority areas with respect to health and wellness related research:

1. To improve the health status of the population through prevention and education. Examples of specific research topics include:
 - Adding to regional baseline surveys and establishing a comprehensive understanding of health care knowledge, behaviours, population health status and health care outcomes as well as perceived needs.
 - Defining or predicting the impacts of economic development on social wellness and human health or establishing baseline data in impacted regions.
2. To improve access to primary care and public health services. Examples of specific research topics include:
 - Investigating ways to improve care and service delivery methods related to chronic disease, communicable diseases, seniors' care, addictions, child and family services, early childhood development and mental health.
 - Investigating ways to support the safe delivery of quality primary care service delivery structures/ models in rural and remote locations with small populations.
 - Enhancing communication between health care professionals and patients to maximize patient participation in decision-making and improved patient experiences and outcomes.
 - Innovation in service delivery and scaling up proven innovation (knowledge translation and dissemination).
3. To better address mental health and addictions. Examples of specific research topics include:
 - Improving prevention and education for individuals and families facing mental health and addictions concerns.
 - Improving outcomes for individuals and families facing mental health and addictions concerns.

4.3 HEALTH AND WELLNESS CONTINUED

- Minimizing social disparities by addressing social determinants of health.
 - Providing evidence about the effectiveness of land-based healing approaches.
 - Understanding and utilizing Indigenous research methodologies to health indicators to ensure research remains relevant to Indigenous communities.
4. To improve child and family services. Examples of specific research topics include:
- Outcome informed practice.
 - Developing methods to improve outcomes for children and families.
 - Minimizing social disparities by addressing social determinants of health.
5. To address disparities in Indigenous health. Examples of specific research topics include:
- Targeted access to services for high-risk populations to reduce disparities in health status and the impacts of social determinants between Indigenous and non-Indigenous populations.
 - Delivery of culturally sensitive services that meet community wellness needs.
- Safe delivery of care and effective communication to bridge language and cultural barriers. For example, the development of cancer terminology in Indigenous languages or exploration of the potential for trauma-informed practice in service delivery.
6. To assess the exposure of and the human health risks related to both locally sourced and long-range environmental contaminants.
- Measuring contaminants in the environment and in humans.
 - Improving understanding of how humans are exposed to contaminants, e.g. dietary surveys.
 - Providing toxicological or human health risk assessment of exposure to contaminants.
 - Improving understanding of how mixtures of contaminants affect human health.
 - Measuring health outcomes related to contaminant exposure.
 - Developing effective risk communication materials and health messaging for small, northern communities.
 - Building upon existing context of available environmental contaminants related data for effective knowledge translation, i.e. placing new information against a backdrop of what is already known.

Strategic Goal

The goal of research concerning the natural resources of the NWT is to expand our basic knowledge and expertise with a view to manage these resources, support sustainable economic and industrial progress as effectively as possible, and to create opportunities for the development of new resources and technologies, while minimizing environmental impacts.

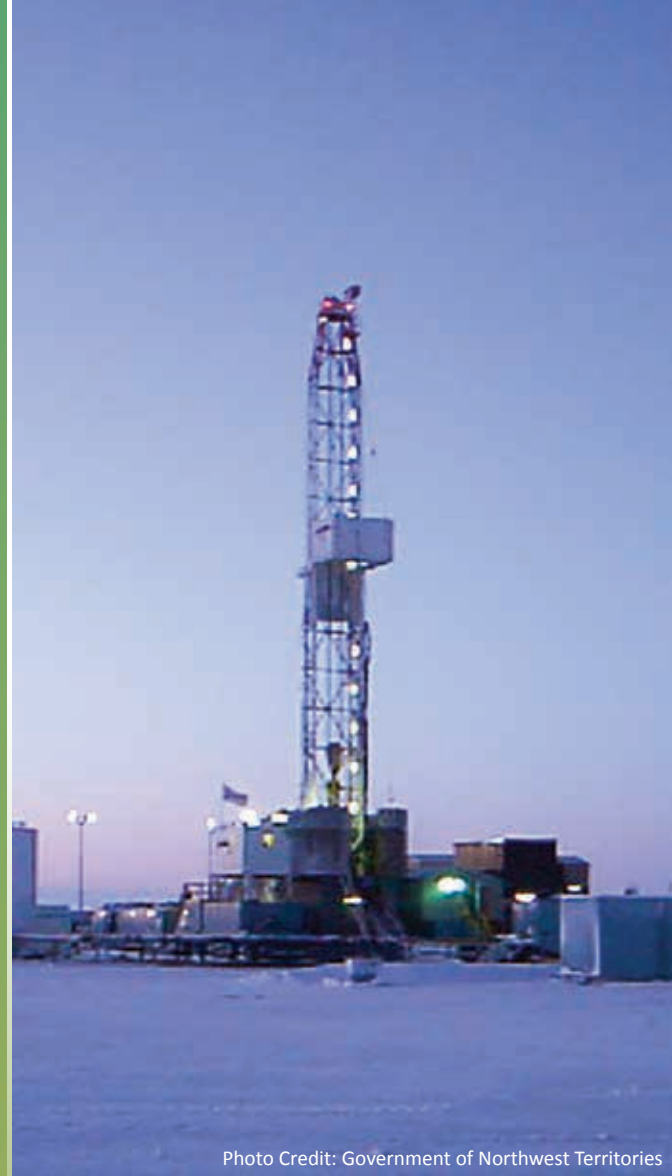


Photo Credit: Government of Northwest Territories

4.4 NATURAL RESOURCE MANAGEMENT

With respect to natural resource management, the GNWT recognizes that:

- the NWT contains a wealth of renewable and non-renewable natural resources. These include water, minerals, energy (oil, gas, geothermal, biomass, wind, solar and hydro), timber, traditional food stocks (fish, non-timber forest products and wildlife) and endemic genetic resources;
- natural resource development is of great economic importance to the NWT;
- future generations in the NWT depend upon the responsible development of both renewable and non-renewable resources in the present;
- the prediction, monitoring, evaluation and reporting of cumulative impacts due to development activities, harvesting, climate change and ecosystem stress should be improved; and
- natural resources are integral to the cultures of the NWT.

The NWT has a long history of resource management and development, with billions of dollars generated mainly from mining and oil and gas extraction activities. Some of these activities have led to the development of other

natural resources, such as hydro and wind power. Many direct and indirect benefits accrue to NWT residents, but 'boom and bust' cycles as well as environmental and social challenges also occur, signaling the need for a comprehensive, well-informed and long-term management approach. In addition, some issues are at an early stage of research and understanding. Chief among these is the effects of climate change on natural resource baselines and economic activities. There is an ongoing need to better understand and manage the NWT's complex web of natural resources in order to maximize economic, environmental and social benefits, while minimizing negative impacts.

Ongoing research is needed to guide natural resource discoveries and development. Economic deposits of minerals, oil and gas are exceptionally hard to find and renewable resources, such as timber and fish stocks, also face numerous hurdles to research and, where appropriate, development. Research provides the NWT with basic scientific, traditional and local knowledge of its resources and a better opportunity to compete on the world stage for scarce development capital.

4.4 NATURAL RESOURCE MANAGEMENT CONTINUED

In areas of the NWT where susceptibility to ecosystem change and development potentially overlap, implementation of a robust environmental monitoring and research system that can link multiple sources of northern environmental knowledge becomes a critical tool for resilient ecosystem planning and responsible management of resource development. In this way, research related to environmental stewardship (as presented in Section 4.2) naturally overlaps with resource management.

Research and monitoring efforts must focus on providing sound, publicly available information to improve the sustainable use, extraction and development of renewable and non-renewable natural resources within the NWT. Research assists in producing basic knowledge and methodological expertise to find, understand and manage natural resources. Baseline environmental data collection and management as well as cumulative effects monitoring, evaluation and reporting are important tools to responsibly manage the state of the environment. In research and management, natural resources should always be treated within the framework of a larger ecosystem that is characterized by numerous linkages and interdependencies.



4.4 NATURAL RESOURCE MANAGEMENT CONTINUED



Photo Credit: Government of Northwest Territories

Strategic Goal

The goal of research concerning the natural resources of the NWT is to expand our basic knowledge and expertise with a view to manage these resources, support economic and industrial progress as effectively as possible, and to create opportunities for the development of new resources and technologies, while minimizing environmental impacts.

Research Priorities

There are currently two priority areas with respect to natural resource management related research:

1. To improve the discovery, assessment and utilization of natural resources. Examples of specific research topics include:
 - Continued delineation of the location, extent and value of natural resource potential in the NWT (hydro, oil, natural gas, natural gas liquids, coal and possible coal bed methane, geothermal energy, minerals, biomass, timber, traditional food stock and genetic resources).
 - Effective development, implementation, use and export (if appropriate) of unconventional energy sources, including unconventional oil, natural gas, natural gas liquids, coal and possibly coal bed methane, geothermal energy, biomass, solar and wind power.

4.4 NATURAL RESOURCE MANAGEMENT CONTINUED

2. To improve the management of environmental impacts caused by natural resource development and a changing environment. Examples of specific research topics include:
 - Identification and assessment of opportunities and impacts created by industrial development, including socio-economic, health, environmental and cultural aspects.
 - Reclamation and remediation techniques for industrial projects/development.
 - Identification, assessment and monitoring of past natural disturbances and potential for future natural disturbance events.
 - Clear and effective environmental impact assessment criteria at regional and project scales, which account for cumulative effects suitable to the scale of consideration.
 - Identification, assessment and monitoring of past, existing and future industrial development impacts on abiotic and biotic indicators.
 - Best management practices for industrial activities to minimize environmental impacts.



4.4 NATURAL RESOURCE MANAGEMENT CONTINUED

- Development of adaptation and mitigation best practices that acknowledge the North's rapidly changing climate and the role of permafrost in the natural and built environments.
- Improvement of knowledge translation and public communications approaches to ensure NWT residents understand research findings for a given study as well as the overall, emerging body of knowledge for a subject area.



Photo Credit: Aurora Research Institute



Photo Credit: Government of Northwest Territories

Strategic Goal

The goal of research on the social environment aspect of sustainable communities is to study, understand and develop governance structures that best promote the health, safety and sustainability of communities in the NWT.

The goal of research on the civil infrastructure aspect of sustainable communities is to improve the conditions for the continuing success of NWT communities to function, both logistically and technically, and ensure the reliability of materials, services, energy supplies and communications.



Wilfrid Laurier University

4.5 SUSTAINABLE COMMUNITIES

With respect to sustainable communities, the GNWT recognizes that:

- the sustainability, viability and wellness of NWT communities is a primary goal;
- NWT community members consistently identify issues related to sustainable communities and health as their top research priorities;
- changing environmental regimes and factors threaten the viability of current infrastructure;
- the NWT has a complex governance regime with diverse levels of interaction and partnership with agencies at the Indigenous, community and federal government levels; and
- affordable and reliable energy systems are key elements for sustainable communities.

Research concerning sustainable communities must be conducted on two relatively distinct aspects: the social environment and civil infrastructure. As with all research, these are not necessarily mutually exclusive. For ease of explanation in this document, a division has been drawn.

The social environment of the NWT is characterized by a sparse, culturally diverse population with complex Indigenous, territorial and federal government relations. Increasing attention must be focused on the dynamics of northern regional governance structures and the strategies and scenarios of regional development to create functional, versatile and viable communities, which are healthy for all population groups. Questions of governance and interactions between various levels of government, including Indigenous, territorial and federal agencies, must be further understood in the face of increasing social pressures and in the wake of devolution. Research must produce information in a decision-making format on how changes to the regional structure can be made in an environmentally, economically, culturally and socially acceptable manner.



Photo Credit: Government of Northwest Territories

4.5 SUSTAINABLE COMMUNITIES CONTINUED

The NWT is characterized by isolated communities and a severe climate. Smoothly functioning transportation systems, reliable delivery of materials and power, and ease of communication within, and between, communities are of prime importance for everyday living, business and industrial activity. Advanced infrastructure and communications are needed to ensure communities function in parallel with larger centers in the country. Many GNWT departments identified that research related to sustainable communities must focus on alternative and unconventional energy sources to reduce the economic burden of power generation in the NWT. Information related to infrastructure longevity or evolving best practices under the rapidly changing permafrost regimes is also often identified as a major research question.



4.5 SUSTAINABLE COMMUNITIES CONTINUED



Photo Credit: Wilfrid Laurier University

Strategic Goal

The goal of research on the social environment aspect of sustainable communities is to study, understand and develop governance structures that best promote the health, safety and sustainability of communities in the NWT. Research should investigate ways to support social and economic development, social stability, the culture and livelihood of all NWT residents, and the management of environmental and health issues in order to retain the vitality of the NWT.

The goal of research on the civil infrastructure aspect of sustainable communities is to improve the conditions for the continuing success of NWT communities to function, both logistically and technically, and ensure the reliability of materials, services, energy supplies and communications.

4.5 SUSTAINABLE COMMUNITIES CONTINUED

Research Priorities

There are currently two priority areas with respect to social environment related research:

1. To develop governance structures that best promote the health, safety and sustainability of NWT communities. Examples of specific research topics include:
 - Developing additional self-governance implementation models considering relationships to territorial responsibilities.
 - Implementation of programs, service mandates and responsibilities that are able to transition between the GNWT and Indigenous or community governments.
 - Developing governance coordination and cooperation strategies and paradigms related to economic, social, infrastructure and environmental issues.
 - Application of conservation economy principles (i.e. ensuring economic opportunities are in line with the conservation objectives for a particular area) to communities.

2. To understand and support social well-being and economic development in NWT communities. Examples of specific research topics include:
 - Analysis of current information on socio-economic indicators related to community longevity, sustainability and prosperity.
 - Evolving commercial and business strategies and implementation in a northern context.
 - Evolving land use and recreation strategies and implementation in a northern context.
 - Food security issues related to the high cost of living, northern agriculture, food production and dissemination.

There are currently two priority areas with respect to civil infrastructure related research:

3. To optimize the design, construction and maintenance of civil infrastructure with the goal of minimizing environmental impacts and maximizing utility and reliability for communities. Examples of specific research topics include:
 - Building and infrastructure deployment methods to increase efficiency, lower costs and reduce waste in materials and processes.

4.5 SUSTAINABLE COMMUNITIES CONTINUED

- Monitoring technical performance of building and road designs to evaluate engineering designs in a northern context.
 - Regionally specific infrastructure, including cold climate innovations and higher performing, higher durability community buildings and dwellings.
 - Advancing northern-based building and road construction technology and building manufacturing.
 - Maximizing the efficiency and integrity of NWT infrastructure design standards.
 - Development of renewable energy plans for various technologies and techniques based on the use of local resources.
 - Improving the design and management of municipal waste infrastructure (e.g. water treatment systems, sewage lagoons, solid waste facilities) to mitigate the impacts of contaminant release to the environment.
 - Enhancing infrastructure planning processes, including regionally specific variations.
 - Testing and implementing newer, more efficient technologies that reduce impact associated with infrastructure on the surrounding environment.
4. To understand and prepare for the effects of environmental change on communities and infrastructure. Examples of specific research topics include:
- Assessing atmospheric/aquatic and local contaminant-loading, related cumulative socio-economic, environmental and health impacts as well as regionally specific mitigation and remediation strategies.
 - Investigating water and river regime changes (annual levels, break-up periods, ice stability) as they relate to transportation infrastructure.
 - Understanding changing permafrost regimes in relationship to transportation and building infrastructure stability.
 - Updating flood maps for flood-prone communities and disaster mitigation planning.
 - Developing an efficient search and rescue system for the NWT.



Photo Credit: Government of Northwest Territories

SECTION 5: MOVING FORWARD ON PRIORITIES

Progress on the research priorities listed in this Knowledge Agenda requires both internal and external actions on the part of the GNWT.

Internally, the GNWT seeks to:

- ensure relevant research results are integrated into GNWT decision-making at all levels of government;
- ensure research in the NWT is regulated and conducted using the most appropriate research approaches and methods;
- maintain adequate capacity (e.g. human and financial resources, infrastructure) within the departments to ensure continued progress on the identified research priorities; and
- maximize the efficiency and effectiveness of its research efforts by utilizing the best methods available and seeking opportunities for inter-departmental collaborations.

The specific actions needed to achieve the above goals will be articulated in GNWT policies and strategies that are in the process of refinement or development.

External actions involve the GNWT and its employees actively reaching out to different levels of governments, academic institutions, community and Indigenous organizations, environmental non-governmental

organizations, industry or other research agencies to meet the following goals:

- enhance collaborations with external organizations or governments to increase the calibre of research done in the North and to direct science in the northern interest; and
- support and develop research capacity (e.g. human and financial resources, infrastructure) in the NWT to ensure northern knowledge and research needs can be met now and in future.

This Agenda provides a basis for discussion and engagement of research practitioners who are either already working in the North or are considering projects in the NWT. The GNWT encourages these researchers to consider the strategic goals listed in this document and attempt to align their work, whenever possible, with the priorities listed in Section 4. Further information about the GNWT's knowledge and research policies, strategies and legislative requirements can be obtained by accessing the documents listed in Appendix 1 on the GNWT website (www.gov.nt.ca).

The GNWT welcomes specific inquiries about potential research collaborations or requests to obtain more information about any of the topics raised in this Agenda. These inquiries should be addressed to: knowledgeagenda@gov.nt.ca.



Photo Credit: Government of Northwest Territories

APPENDIX 1: GNWT LEGISLATION, POLICIES AND STRATEGIES

The GNWT has many legislated responsibilities and policy commitments that are informed by the latest and most relevant research available in the knowledge priority areas described in this Agenda. The GNWT is committed to providing the best available information as part of a series of legislative tools, agreements, accords and high

level strategies. Examples of these commitments are listed below, with references to each of the Knowledge Agenda's core priorities. These documents can be found on the GNWT website (www.gov.nt.ca) or by request to knowledgeagenda@gov.nt.ca.

	Cultural Sustainability	Environmental Stewardship	Health and Wellness	Natural Resource Management	Sustainable Communities
Legislation and Regulation					
<i>Access to Information and Protection of Privacy Act</i> (S.N.W.T. 1994, c.20) and Regulations (R-206-96)	√				√
<i>Archaeological Sites Act</i> (S.N.W.T. 2014, c.9) and Regulations (R-024-2014)	√	√		√	√
<i>Aurora College Act</i> (R.S.N.W.T. 1988, c.A-7)	√		√		√
<i>Canada Health Act</i> (R.S.C., 1985, c.C-6)			√		
<i>Civil Emergency Measures Act</i> (R.S.N.W.T. 1988, c.C-9)					√
<i>Community Planning and Development Act</i> (S.N.W.T. 2011, c.22) and Regulations (R-063-2013)					√
<i>Environment Protection Act</i> (R.S.N.W.T. 1988, c.E-7)		√		√	
<i>Fire Prevention Act</i> (R.S.N.W.T. 1988, c.F-6)					√
<i>Forest Management Act</i> (R.S.N.W.T. 1988, c.F-9)		√		√	
<i>Forest Protection Act</i> (R.S.N.W.T. 1988, c.F-10)		√		√	
<i>Health Information Act</i> (S.N.W.T. 2014, c.2)			√		
<i>Historical Resource Act</i> (R.S.N.W.T. 1988, c.H-3)	√	√			√
Mackenzie Valley Land Use Regulations (SOR/98-429)		√		√	
<i>Mackenzie Valley Resources Management Act</i> (S.C., 1998, c.25)	√	√		√	

APPENDIX 1: GNWT LEGISLATION, POLICIES AND STRATEGIES CONTINUED

	Cultural Sustainability	Environmental Stewardship	Health and Wellness	Natural Resource Management	Sustainable Communities
<i>Public Health Act</i> (S.N.W.T. 2007, c.17)		√	√	√	√
<i>Safety Act</i> (R.S.N.W.T. 1988, c.S-1)					√
<i>Scientists Act</i> (R.S.N.W.T. 1988, c.S-4)	√	√	√	√	√
<i>Species at Risk (NWT) Act</i> (S.N.W.T. 2009, c.16)		√			
<i>Waters Act</i> (S.N.W.T. 2014, c.18) and Regulations (R-019-2014)		√		√	
<i>Wildlife Act</i> (S.N.W.T. 2013, c.30)		√			
GNWT Policies, Strategies and Frameworks					
Action Plan for Boreal Woodland Caribou Conservation in the NWT: 2010-2015		√			
Agricultural Strategy (in development)			√	√	√
Aurora Research Institute Strategic Plan	√	√	√	√	√
Aurora College Strategic Plan (in development)	√	√	√	√	√
Bathurst Caribou Range Plan (in development)		√			
Biodiversity Action Plan		√			
Boreal Caribou Range Plan (in development)		√			
Building Stronger Families – An Action Plan to Transform Child and Family Services			√		
Canadian Wildland Fire Strategy				√	
Caring for our People – Improving the NWT Health and Social Services System			√		
Charting Our Course: NWT Cancer Strategy			√		
Climate Change Strategic Framework (in development)		√	√	√	√
Commercial Timber Harvest Planning and Operations Standard Operating Procedures Manual		√			
Country Food Strategy (in development)	√		√		√
Cumulative Impact Monitoring Program Action Plan (2016-2020)		√			

APPENDIX 1: GNWT LEGISLATION, POLICIES AND STRATEGIES CONTINUED

	Cultural Sustainability	Environmental Stewardship	Health and Wellness	Natural Resource Management	Sustainable Communities
Culture and Heritage Strategic Framework	√	√	√		√
Early Childhood Development Action Plan			√		√
Economic Opportunities Strategy					√
Ecosystem Classification: Taiga Plains, Taiga Shield, Boreal Cordilleran Ecozones		√			
Environment and Natural Resources Framework for Action		√		√	
Environment and Natural Resources Traditional Knowledge Implementation Plan	√	√		√	
Forest Fire Management Policy 53.04		√		√	
Forest Vegetation Inventory Specifications		√			
Green Light: Signaling the Department of Transportation's Commitment to the Environment		√		√	
GNWT Anti-Poverty Action Plan			√		√
Gwich'in Forest Management Plan (draft)				√	
Guidance for the Protection of Land, Forest and Wildlife: Oil and Gas Seismic Exploration		√		√	
Guidelines for Designing and Implementing Aquatic Effects Monitoring Programs for Development Projects in the Northwest Territories		√		√	
Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories				√	
Healthy Land, Healthy People: GNWT Priorities for Advancement of Conservation Network Planning (2016-2021)		√			
<i>Lands Act</i> S.N.W.T. 2014, c.13		√		√	
Land Use and Sustainability Framework		√		√	
Land Use Planning Strategic Framework (in development)				√	
Making the Case for Change – Advancing the NWT Chronic Disease Management Strategy			√		

APPENDIX 1: GNWT LEGISLATION, POLICIES AND STRATEGIES CONTINUED

	Cultural Sustainability	Environmental Stewardship	Health and Wellness	Natural Resource Management	Sustainable Communities
Management Plan for the Dolphin/Union Caribou (in development)		√			
Management Plan for the Polar Bear in the Inuvialuit Settlement Region of the NWT and Yukon (under review)		√			
Mind and Spirit: Promoting Mental Health and Addictions Recovery in the NWT Strategic Plan 2016-2021 (in development)			√		
Northern Land Use Guidelines				√	
NWT Health and Social Services Performance Measurement Framework			√		
NWT Power System Plan					√
NWT Mineral Development Strategy		√		√	√
<i>Oil and Gas Operations Act S.N.W.T. 2014, c.14</i>		√		√	
Oil and Gas Strategy (in development)				√	
Our Elders: Our Communities			√		√
Performance Measurement and Accountability Framework, Health and Social Services System			√		
<i>Petroleum Resources Act S.N.W.T. 2014, c15</i>		√		√	
Protected Area Strategy		√			
Recreational Land Management Framework (in development)		√			√
Recovery Strategy for the Boreal Caribou in the Northwest Territories		√			
Recovery Strategy for the Hairy Braya in the Northwest Territories		√			
Recovery Strategy for the Peary Caribou (in development)		√			
Solar Energy Strategy				√	√
State of the Environment Report		√			
Strategic Plan for the NWT Health and Social Services System 2016-2019 (in development)			√		
Strategic Investments in Northern Economic Development (SINED) – Public Geoscience Initiatives, 2005-2009 and 2009-2014				√	

APPENDIX 1: GNWT LEGISLATION, POLICIES AND STRATEGIES CONTINUED

	Cultural Sustainability	Environmental Stewardship	Health and Wellness	Natural Resource Management	Sustainable Communities
Sustainable Development Policy		√		√	√
Traditional Economy Strategy (in development)	√				√
Traditional Knowledge Policy 53.03	√				
Traditional Knowledge Implementation Framework	√				
Transportation Strategy					√
Green Light: Signaling the Department of Transportation's Commitment to the Environment		√		√	
Waste Resource Management Strategy (in development)		√		√	√
Water Stewardship Strategy and Action Plan for 2016-2020		√		√	√
Wildlife Management and Monitoring Plan Guidelines (in development)		√		√	
Wood Bison Management Strategy for the NWT: 2010-2020		√		√	



Photo Credit: Aurora Research Institute

