



Cumulative Impact Monitoring Program

2016
2020

Action Plan

September 2015



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1. Introduction

The Northwest Territories Cumulative Impact Monitoring Program (NWT CIMP) is a source of environmental monitoring and research in the NWT. The program coordinates, conducts and funds the collection, analysis and reporting of information related to environmental conditions in the NWT. Its main purpose is to support better resource management decision-making and the wise use of our resources by furthering our understanding of cumulative impacts.

Coordinated, long-term environmental monitoring and research is critical for sustainable development in the NWT. It is a key piece of integrated ecosystem-based management. Results are used to understand, assess and mitigate the potential cumulative impacts of resource development activities on the environment. Results are also used to understand and respond to changing environmental conditions at local, regional and territorial scales.

The vision of NWT CIMP is *"To watch and understand the land so that it can be used respectfully forever"*. To realize its vision, NWT CIMP undertakes the following four main activities: 1) Working with partners to understand key monitoring and research priorities; 2) Coordinating, conducting and funding cumulative impact monitoring, research and analysis; 3) Communicating results to decision-makers and the public; and 4) Assessing the program and the regulatory regime by facilitating the NWT Environmental Audit.

Cumulative impact monitoring is a requirement of settled NWT land claims and the *Mackenzie Valley Resource Management Act* (MVRMA). Input of Aboriginal governments is a key aspect of the program. Since 1999, NWT-CIMP has been guided by a Steering Committee of First Nations, Inuit, Métis, federal and territorial government representatives. Responsibility for the program devolved on April 1, 2014 from Aboriginal Affairs and Northern Development Canada (AANDC) to the Department of Environment and Natural Resources (ENR), Government of the Northwest Territories (GNWT).

NWT CIMP uses a partnership approach to achieve its objectives. A wide range of partners are engaged to establish priorities and conduct tasks, including Aboriginal governments, universities, industry, and federal and territorial government departments. NWT CIMP employs all sources of knowledge, including science, traditional knowledge (TK), and local knowledge, as sources of information. Community capacity building and community-based monitoring are key principles that are supported when they are linked to monitoring that produces information relevant to cumulative impacts.

This action plan seeks to build on the program's successes of the past fifteen years, specifically the accomplishments of the 2010-2015 Strategic Plan. NWT CIMP will continue to focus its science-based program on three priority-valued components: caribou, water and fish, as large gaps remain in our understanding of these central parts of the northern ecosystem.

NWT CIMP will continue to focus on areas of past, current or proposed development in the NWT as these are of most importance to environmental regulators. The program will enhance its support for monitoring from a TK perspective that contributes to our understanding of cumulative impacts. The program will emphasize the priorities of key environmental decision-makers. These are co-management boards or key regulators that make or influence land and water use decisions.

This document presents an action plan for NWT CIMP that outlines the vision, mandate, principles, activity areas, goals, and objectives for the program from 2016 to 2020. The plan provides a roadmap for the program and serves as a key foundation for outreach and engagement with external partners. NWT CIMP welcomes interested parties to partner with us in this important endeavor.

For more information, please contact nwtcimp@gov.nt.ca



2. Vision

The NWT CIMP Steering Committee has articulated a simple yet meaningful vision statement:

“To watch and understand the land so that it can be used respectfully forever.”

This statement envisions a program that is guided by Aboriginal governments and organizations, and administered by the GNWT to collect and analyze scientific data, TK and other knowledge to understand cumulative environmental impacts. The program will provide the results to decision-makers, including regulators, Aboriginal governments and organizations, and industry, to support resource management decision-making and the wise use of our resources.



3. Outcomes

The following key outcomes are expected as NWT CIMP takes steps to achieve its vision:

1. Monitoring and research partners, including Aboriginal governments, are fully engaged in NWT CIMP.
2. NWT CIMP generates credible and unbiased environmental monitoring and research data informed by science and TK, including information about:
 - environmental trends
 - cumulative impacts
 - baseline conditions
3. The monitoring and research information is used to support environmental decision-making and the wise use of our resources.

NWT CIMP will achieve these outcomes by accomplishing the goals provided in Section 6



4. Mandate

1. Cumulative Impact Monitoring Program

NWT CIMP was created to fulfill constitutional and statutory requirements for environmental monitoring and auditing in the Northwest Territories that are contained in the Sahtu, Gwich'in and Tłıchq land claim agreements as well as Part 6 of the MVRMA:

146 The responsible authority shall, subject to the regulations, analyze data collected by it, scientific data, traditional knowledge and other pertinent information for the purpose of monitoring the cumulative impact on the environment of concurrent and sequential uses of land and water and deposits of waste in the Mackenzie Valley.

147 (1) A responsible authority that is a minister of the Crown in right of Canada shall carry out the functions referred to in section 146 in consultation with the first nations and the Tłıchq Government.

148 (3) An environmental audit shall include

(a) an evaluation of information, including information collected or analyzed under section 146, in order to determine trends in environmental quality, potential contributing factors to changes in the environment and the significance of those trends.

Section 146 articulates the environmental monitoring function of NWT CIMP. It is to collect and analyze data for the purpose of monitoring the cumulative impacts of development on the environment. All available information, including science and TK, should be used in the monitoring of cumulative impacts.

Section 148 3(a) provides further detail on the role of NWT CIMP in environmental monitoring. In particular, it is to determine trends in environmental quality, potential contributing factors to changes in the environment and the significance of those trends.

Section 147 outlines a requirement to meaningfully involve Aboriginal governments in the design and function of NWT CIMP. The Gwich'in, Sahtu, and Tłıchq land claims contain similar provisions.

As part of the devolution of land, water and resource management to the GNWT on April 1st, 2014, the federal government delegated responsibility for Part 6 of the MVRMA to GNWT.

Although the MVRMA does not apply to the Inuvialuit Settlement Region (ISR), a Memorandum of Understanding between AANDC and the Inuvialuit Game Council was signed in November 2003 that included the Inuvialuit in NWT CIMP and the NWT Environmental Audit. Following devolution of the program, the Inuvialuit and the GNWT signed a renewed Memorandum of Understanding in July 2014. To understand cumulative impacts in the NWT, monitoring and research must be supported in the ISR, as well as in the regions identified in the MVRMA. Specifically, NWT CIMP supports environmental monitoring and research in the onshore area of the ISR.

As the Inuvialuit have a different regulatory regime, they are not included in the portion of the Audit that evaluates the effectiveness of the regulatory system.

2. NWT Environmental Audit

Part 6 of the MVRMA requires an independent audit of environmental monitoring and the MVRMA regulatory regime every five years. Previous audits were conducted in 2005 and 2010, and an audit is currently being conducted in 2015. Section 148(3) of the MVRMA states that:

An environmental audit shall include

- a) an evaluation of information, including information collected or analyzed under section 146, in order to determine trends in environmental quality, potential contributing factors to changes in the environment and the significance of those trends;*
- b) a review of the effectiveness of methods used for carrying out the functions referred to in section 146;*
- c) a review of the effectiveness of the regulation of uses of land and water and deposits of waste on the protection of the key components of the environment from significant adverse impact; and*
- d) a review of the response to any recommendations of previous environmental audits.*

The Act also states that the participation of Aboriginal governments is required. Each of the settled land claim groups must be involved to determine the Terms of Reference of the Audit and to participate in the Audit.

While the Audit itself is conducted by an independent auditor, NWT CIMP is responsible for ensuring that the NWT Environmental Audit occurs every five years in accordance with legislation and the Gwich'in, Sahtu and Tłı̨chǫ land claims.

3. Interpretation

To meet its mandate to 1) monitor the cumulative impact on the environment of land and water and deposits of waste in the Mackenzie Valley; 2) determine trends in environmental quality, potential contributing factors to changes in the environment and the significance of those trends; 3) facilitate the NWT Environmental Audit; and 4) complete these activities with the meaningful involvement of Aboriginal governments, NWT CIMP will undertake the following activities:

1. Work with partners to understand key monitoring and research priorities;
2. Coordinate, conduct, and fund cumulative impact monitoring, research, and analysis
3. Communicate results to decision-makers and the public; and
4. Facilitate the NWT Environmental Audit.

4. Links to GNWT Policy

The vision of NWT CIMP supports the ENR Establishment Policy (2005) and the Sustainable Development Policy (2005) to promote and support the sustainable use and development of natural resources. The NWT CIMP Action Plan integrates into the ENR Departmental Strategic Plan (2015). Work conducted by NWT CIMP also integrates and supports planning being conducted for Bathurst and boreal caribou range management.

NWT CIMP actively contributes to the GNWT Science Agenda priorities of Cultural Sustainability, Environmental Science and Stewardship, and Natural Resource Management, as well as the cross-cutting themes of Technology Integration and Use, Traditional Knowledge Incorporation and Use, and Climate Change through its monitoring and research.

NWT CIMP supports the vision of the GNWT Land Use and Sustainability Framework: “Working together, Northerners will responsibly and sustainably manage the lands, waters and natural resources of the Northwest Territories for the benefit of current and future generations”. NWT CIMP supports key principles of the Framework through our partnerships with Aboriginal governments, universities, industry and other government departments, through our use of science and TK in monitoring, and through our production of credible and unbiased monitoring data that is used for environmental decision-making.

NWT CIMP generates significant information regarding NWT water resources and ensures that this information is available to water use decision-makers. As such, the program is aligned with key principles of the NWT Water Stewardship Strategy to make use of the best available scientific, traditional, and local knowledge to make sound decisions, and use new knowledge as it becomes available.

The use and full consideration of TK for cumulative impact monitoring supports the GNWT Traditional Knowledge Policy by helping to incorporate TK into government decisions and actions where appropriate.

5. Principles

The mandate of NWT CIMP is based on the MVRMA and the Gwich'in, Sahtu and Tłıchǫ land claims. The following key principles will be followed to achieve the mandate, goals and objectives of NWT CIMP

1) NWT CIMP is focused on monitoring cumulative impacts that are relevant to decisions about land and water use in the NWT.

Past NWT Environmental Audits have suggested that NWT CIMP should contribute more monitoring information to regulatory processes. In response, over the last five years NWT CIMP has shifted its focus to monitoring the cumulative impacts of development related to land and water use. As such, the program emphasizes the monitoring and research priorities of co-management boards and key regulators who make or influence key land and water use decisions.

NWT CIMP recognizes that there are many organizations with responsibilities related to land and water use in the NWT, and that there are many ways to contribute to regulatory decisions besides providing information directly to regulatory boards. For instance, monitoring and research information may be used by developers to improve their regulatory submissions, or by Aboriginal participants to inform their regulatory interventions. A broad list of NWT land and water decision-makers is provided in Appendix A.

2) Cumulative impact monitoring includes measuring both human disturbance and natural changes.

NWT CIMP has adopted the Canadian Council of Ministers of the Environment (CCME) definition of cumulative impacts as *a change in the environment caused by multiple interactions among human activities and natural processes that accumulate across space and time*. NWT CIMP believes that both human disturbance, such as mining development, and natural factors, such as forest fires, have equally important and compounding impacts on land and water use.

Cumulative impacts are related to the effects and interactions of human activities as well as the effects of a dynamic natural environment. The NWT CIMP definition differs from the MVEIRB definition of cumulative impacts which is *the effects of a proposed development in combination with other past, present or reasonably foreseeable future developments*. This definition only accounts for the impacts of human activities. NWT CIMP can provide information to the decision-makers about cumulative effects from both natural change and human activities. This information will provide decision-makers with an understanding of the current spatial and temporal effects within an area where a decision is required and what future induced effects may be.

3) NWT CIMP is focused on geographic “hot spots” of past, current, or proposed development where cumulative impacts of development are most likely.

The NWT is a relatively large area compared to the resources of NWT CIMP; therefore, NWT CIMP is currently focused on geographic “hot spots” of past, current or proposed development to make the best use of finite funding. These “hot spots” are areas where cumulative impacts from human activities are most likely, and decision-makers are most likely to be interested in the results. Geographic “hot spots” include areas where there is past, current or potential for future development. Monitoring and research in and around these areas, at various geographic scales, can provide relevant information about changes from human disturbance and natural changes.

4) Cumulative impact monitoring can include baseline monitoring where required.

Monitoring data in the NWT is often scarce, even in areas of existing development; however, adequate baseline data is needed before cumulative impacts can be monitored. Therefore, in geographical priority areas where there is inadequate baseline data regarding fish, water and caribou, NWT CIMP may provide support for baseline monitoring. NWT CIMP will not provide support for baseline monitoring in areas where it is clearly the responsibility of another organization. For example, NWT CIMP will not provide support for programs with secured, established funding or support collection of baseline data for a specific proposed or on-going development. However, NWT CIMP may support baseline data collection when the data being collected spans a greater geographical area, or is beyond the scope of the baseline data required for a particular proponent. It should be noted that there are a number of organizations within the NWT that conduct baseline monitoring, including the federal, territorial and Aboriginal governments and industry.

5) NWT CIMP supports effects and stressor-based approaches to generate the information that decision-makers require.

There are two general approaches taken to monitor cumulative impacts: 1) Effects-based monitoring and stressor-based monitoring and 2) Effects-based monitoring reports on past and present environmental conditions to understand ecosystems, and the cause and effect relations between ecosystem components. This is the main approach NWT CIMP has taken in the past. The strength of this approach is a greater understanding of the ecosystem. A weakness is that there is rarely enough data to prove causality. In contrast, stressor-based monitoring focuses on forecasting the potential effects of future disturbances, using a scenario-based approach. This requires the documentation of current human disturbances on the landscape, followed by the projection of future scenarios, using historic and current data, and reasonable assumptions of future disturbances. By projecting trends and creating multiple land use

scenarios, decision-makers can choose the preferred outcome and implement the necessary decisions, guidelines, mitigation and monitoring to achieve this outcome. This approach will allow decision-makers to reasonably contemplate the potential future results of their present actions. NWT CIMP believes that a combination of effects and stressor-based monitoring approaches will provide the most useful information to regulatory decision-makers.

6) NWT CIMP supports the use of common data collection and analysis protocols.

A key tool to assist cumulative impact monitoring is the use of common data collection and analysis protocols among monitoring partners so that data is comparable between sites, regions, and even across the territory. However, a barrier to the adoption of common data protocols is the fact that each organization collects and analyzes data for different reasons and may not have flexibility in how the data is collected or analyzed. Given this constraint, NWT CIMP will encourage organizations to provide metadata that allows others to understand how the data was collected and analyzed so that they can better assess the data for themselves. NWT CIMP will work towards the adoption of common data collection and analysis protocols in regions where we are working with multiple partners.

7) Aboriginal governments are involved in all aspects of the program.

Meaningful participation of Aboriginal governments in NWT CIMP is established in the MVRMA and settled land claims. ENR is committed to including Aboriginal governments in the design and implementation of NWT CIMP through guidance roles on the CIMP Steering Committee and the Audit Steering Committee.

8) NWT CIMP relies on a partnership approach to ensure its success.

Throughout its history NWT CIMP has developed partnerships with interested monitoring partners to successfully achieve its goals. In addition to partnering with organizations with monitoring mandates, the program will continue to partner with agencies responsible for development, assessment and management. This multi-party approach has been successfully piloted with members from industry, co-management boards and government regulators.

9) Science and TK are sources of monitoring data.

A requirement to consider all knowledge, including both science and TK, is clearly laid out in the MVRMA. NWT CIMP has supported TK monitoring in the past, and the NWT CIMP Steering Committee has affirmed TK-based research and monitoring as a program priority moving forward. NWT CIMP is committed to expanding the role of TK in cumulative impact monitoring in the next five years. The program recognizes that science and TK are two different ways of knowing and that their integration is not always required. As such, NWT CIMP intends to be more holistic with our call for TK proposals, and to allow communities to define what monitoring of cumulative impacts is important and will contribute to decisions made regarding the use of land and water in the NWT.

10) NWT CIMP supports community-based monitoring and capacity building when they help to support its primary objective to monitor the cumulative impacts of development.

NWT CIMP recognizes the importance of community based monitoring of environmental change and the need for aboriginal and co-management partners in monitoring. Early in its history, many NWT CIMP projects focused solely on community-based monitoring and/or capacity building with little connection to the priorities of decision-makers. In the last five years NWT CIMP has moved to better focus its monitoring on the needs of decision-makers. Capacity building and community-based monitoring will be supported when they contribute to the primary objective of monitoring the cumulative impacts of development and/or natural change that can contribute to decisions made regarding the use of land and water in the NWT.



6. Activity Areas, Goals and Objectives

This section describes the work that NWT CIMP will conduct from 2015 to 2020. The work is organized around four activity areas that address the legislated mandate, vision, and principles of NWT CIMP. Each activity area includes goals that will be the program's key deliverables. Goals are further divided into objectives with estimated timelines that will be required steps to reach each goal.

1. Work with Partners to Understand Key Monitoring Priorities

a) Understand the cumulative impact monitoring priorities of key regulators for caribou, water, and fish.

The NWT is a relatively large area in comparison to the resources of NWT CIMP; therefore, there is a need to focus on identified monitoring and research priorities. In 2011, NWT CIMP conducted a survey and held a workshop with a wide range of stakeholders to determine their cumulative impact monitoring priorities. The resulting priorities were broad: caribou, water quality and quantity, and fish in geographic "hot spots" of past, current or proposed development.

NWT CIMP has focused its efforts and funding allocation to address these priority valued components. The program is now starting to realize the positive results of this focus; however, large gaps remain in our understanding of these central parts of the ecosystem. NWT CIMP will continue to focus on caribou, water, and fish since these valued ecosystem components remain a priority for the territory, particularly for residents who rely on the land for their food and water.

Within the lens of caribou, water, and fish in geographic "hot spots", NWT CIMP will focus on the monitoring priorities of co-management boards and key regulators who make or influence key land and water use decisions. NWT CIMP also recognizes that there are many organizations with responsibilities related to land and water use in the NWT, and that the program can also address their needs.

Specific objectives for this goal include:

- i. *Establish cumulative impact monitoring priorities for co-management boards and key regulators who make or influence key land and water use decisions. (2015)*

Mackenzie Valley Land and Water Boards, Land Use Planning Boards, MVEIRB, and other key regulators will articulate their key cumulative impact monitoring priorities to NWT CIMP.

- ii. *Consult with co-management boards and key regulators who make or influence key land and water use decisions to determine which trends in environmental quality are of most use for decision-making. (2015)*

NWT CIMP is required by the MVRMA to investigate trends in environmental quality. It is important to understand trends in environmental quality that will be of most use to decision-makers.

- iii. *Review priorities with subject-matter experts to develop monitoring and research methodologies. (2015)*

NWT CIMP will translate the cumulative impact monitoring priorities identified by co-management boards and key regulators who make or influence key land and water use decisions into monitoring questions and methodologies, in collaboration with subject-matter experts. Dialogue with decision-makers will be important so that key questions can be better understood and refined.

- iv. *Create blueprints and work plans for each main issue/project. (2015-2016)*

A blueprint is a document that outlines the monitoring and research issues and questions that are to be addressed. A work plan outlines a timeline of when specific activities will occur. Increased communication regarding monitoring priorities between NWT CIMP, regulators, and the Renewable Resource Boards will result in clear monitoring blueprints and work plans that address the priorities of decision-makers and provide straightforward guidance to those applying for NWT CIMP support.

b) Aboriginal governments continue to guide the design and function of NWT CIMP.

The specific objective for this goal is to:

- i. *Engage with Aboriginal governments through quarterly meetings of the NWT CIMP Steering Committee. (ongoing)*

Meaningful participation of Aboriginal governments in NWT CIMP is established in the MVRMA and settled land claims. ENR is committed to including Aboriginal governments in the design and implementation of NWT CIMP through the guidance role of the NWT CIMP Steering Committee.

c) Articulate TK monitoring priorities that support cumulative impact monitoring.

The increased use of TK in cumulative impact monitoring within the program is a top priority. The goal is to support TK that will result in cumulative impact monitoring information that can be incorporated into land and water use decision-making. It is recognized that TK is holistic in nature and cannot be divided into separate valued components, such as caribou, fish and water.

The specific objectives for this goal include:

- i. *Develop TK monitoring and research priorities. (2016)*
NWT CIMP will work with Aboriginal governments to develop TK monitoring priorities of the program. Information that has been collected in previous meetings and/or workshops will be used as a basis that can be validated.
- ii. *Develop guidance for TK use in NWT CIMP. (2016)*

NWT CIMP will use information gathered to date, through previous workshops, reports and feedback, to develop internal and external guidance for the use of TK in NWT CIMP funded projects.

iii. Develop a TK Sharing Agreement template. (2015)

NWT CIMP will work with its partners to develop an adaptable TK sharing agreement that enables the use of TK information in NWT CIMP programs and projects.

2. Coordinate, Conduct, and Fund Cumulative Impact Monitoring, Research and Analysis

With key priorities articulated in clear blueprints and work plans, NWT CIMP staff will solicit proposals from experts, coordinate, and conduct monitoring and research. NWT CIMP will address the priorities of co-management boards and key regulators who make or influence key land and water use decisions, determine trends in environmental quality, and work towards implementing the TK monitoring priorities.

a) Address high priority cumulative impact monitoring questions of key regulators for caribou, water, and fish.

The specific objectives for this goal include:

i. Use blueprints and work plans to solicit and assess collaborators and distribute funding (2016).

NWT CIMP staff will use monitoring blueprints and work plans to solicit collaborators, and prepare project proposals for review by subject-matter experts and the NWT CIMP Steering Committee. NWT CIMP staff will maintain rigorous project proposal, evaluation, and reporting processes.

ii. Coordinate collaborators and conduct monitoring for priority projects (ongoing).

NWT CIMP staff will conduct scientific research and monitoring, coordinate collaborators and liaise with decision-makers and communities for priority projects.

iii. Regularly engage with partners for feedback (ongoing).

Decision-makers will regularly be engaged to provide feedback for monitoring and research projects. Aboriginal governments can choose to engage at multiple levels, for example through membership on project-specific working groups, regular updates through the NWT CIMP Steering Committee, or final reports once the project is complete.

b) Determine trends in environmental quality, potential contributing factors to changes in the environment and the significance of those trends.

The specific objectives for this goal include:

i. Support long-term monitoring and analysis of key environmental variables (ongoing)

NWT CIMP staff will work with partners to identify trends in environmental quality, potential causes and the significance of trends for caribou, water, and fish.

ii. Support standardized regional collection and analysis of data (ongoing).

A key to the establishment of regional datasets that can be analyzed for cumulative impacts and trends is the use of consistent data collection and analysis protocols between projects. NWT CIMP projects will support the use of standardized data collection and analysis protocols within regions. Existing protocols will be used where possible. Where it is impractical to establish common protocols, partners will be required to report their metadata.

iii. Support our understanding of landscape disturbance by implementing the [Inventory of Landscape Change](#) (ongoing)

Monitoring human disturbance is important because human activities can be actively managed. Monitoring of natural disturbances, such as wildfires, is also important as these can have widespread and cumulative effects. A spatial and temporal understanding of both human and natural disturbance provides the basis for informed environmental trends and cumulative impact assessment. NWT CIMP will support human and natural disturbance monitoring by implementing the Inventory of Landscape Change. The inventory is intended to document human and natural disturbance at a regional scale throughout the NWT.

c) Implement TK monitoring priorities that support cumulative impact monitoring.

The specific objectives for this goal include:

i. Support projects that address the NWT CIMP TK monitoring priorities. (2017-2020)

Once the TK monitoring priorities are developed, NWT CIMP will promote and provide funding for projects that address these priorities. NWT CIMP will track progress to ensure that the results are meaningful and that the products are useful for cumulative impact monitoring and decision-making.

ii. Support use of TK in decision-making. (2017-2020)

With the development of the sharing agreement and internal and external guidance for funding, NWT CIMP will work to promote use of TK in decision-making.

3. Communicate Results to Decision-makers and the Public

NWT CIMP believes that it is important that research and monitoring results be published in peer-reviewed literature to ensure a high standard of work. It is also important that results be presented in plain language that is broadly understood by decision-makers and the public. Given the legislated mandate of NWT CIMP with respect to land and water use decisions, it is important to report results directly to decision-makers through regulatory processes. Results and opportunities for feedback must also be provided to communities in which the research or monitoring is occurring.

a) NWT CIMP monitoring results are accessible to communities and the public

The specific objectives for this goal include:

- i. *Monitoring results are available on the NWT Discovery Portal and/or the NWT CIMP website. (ongoing)*
NWT CIMP results will be available to a broad audience in an easily obtainable format. Monitoring results will be available on the NWT Discovery Portal or the NWT CIMP website (Appendix B).
- i. *Monitoring results are presented in both plain language and scientific publications. (ongoing)*
NWT CIMP requires results that are available in plain language that is accessible to the public (e.g. posters, plain language summaries and syntheses). It is also important that results are available in formats that are useful to scientists and engineers, as technical results may be used in project planning or assessment (e.g. scientific publications in peer-reviewed journals, technical reports, and regional summaries).
- iii. *Monitoring results and opportunities for feedback are presented to communities where the research or monitoring is occurring. (ongoing)*
NWT communities expect that researchers will return to explain and discuss ongoing results. NWT CIMP will ensure that its projects have robust communication plans to bring results back to communities while the monitoring is ongoing and once it is complete. NWT CIMP also plans to host regional results workshops to report results and raise awareness of the program.

b) Relevant NWT CIMP-supported monitoring is reported directly to environmental decision makers.

The specific objectives for this goal include:

- i. *NWT CIMP staff report results directly to environmental decision makers. (ongoing)*
Regulatory decision-makers may have specific ways in which they require information to be submitted to them, such as through an environmental assessment process. NWT CIMP will report relevant results directly to decision makers through formal and informal processes.

4. Facilitate the NWT Environmental Audit

The NWT Environmental Audit is an MVRMA obligation facilitated by NWT CIMP. NWT CIMP is a subject of the audit, so it must work at an arms-length from the Auditor.

a) The NWT Environmental Audit is conducted every 5 years, in accordance with the MVRMA.

i. Coordinate Audit Steering Committee and Auditor. (2015)

The next Environmental Audit will occur in 2015. While most of the Audit preparation occurred in 2014/15 there is a need for NWT CIMP to continue to facilitate the Audit contract. NWT CIMP staff will also facilitate interactions between the Auditor and the Audit Steering Committee at several stages of the Audit. The Audit Steering Committee consists of Aboriginal, federal and territorial government representatives including the Government of Canada (represented by Parks Canada), the Government of the Northwest Territories (represented by Environment and Natural Resources), Gwich'in Tribal Council, Sahtu Secretariat Incorporated, Tłıchq Government, Inuvialuit Game Council, NWT Métis Nation, and the North Slave Métis Alliance.

ii. Follow-up on recommendations and commitments from 2015 Audit. (2016)

Following release of the Audit report in January 2016, there will be a need to follow-up on responses to the recommendations. Parties that are subject to recommendations will be given the opportunity to respond and/or make changes based on the recommendations. Though there is no legal mechanism requiring parties to respond to the Audit, NWT CIMP staff will play a key role in encouraging those who are subject to recommendations to respond.

iii. Audit Steering Committee creates the 2020 Audit terms of reference. (2019)

The next Audit is required in 2020 and arrangements will begin in 2019. As in previous Audits, an Audit Steering Committee that is composed of Aboriginal governments is required to set the terms of reference which outline what the Auditor will assess.

iv. Contract Auditor. (2019)

NWT CIMP staff will arrange the contract for the Auditor with guidance from the Audit Steering Committee.

v. Coordinate Audit Steering Committee and Auditor as required. (2019-2020)

The Auditor will require interaction with the Audit Steering Committee at several stages of the Audit. NWT CIMP staff will facilitate these interactions.

7. Governance

The NWT CIMP governance model, presented in Figure 1, illustrates the program as a coordinator and conductor of monitoring activities. Cumulative impact monitoring questions and priorities are identified by decision-makers who make key decisions respecting the environment. NWT CIMP emphasizes the monitoring priorities of the Mackenzie Valley Land and Water Boards and MVEIRB. The NWT CIMP Steering Committee (formerly NWT CIMP Working Group) provides guidance to ensure that the program continues to address the needs of Aboriginal, Territorial and Federal governments. NWT CIMP also conducts its own monitoring in collaboration with partners. They also coordinate monitoring initiatives to collect, analyze and report on cumulative impacts. This information is communicated to decision-makers directly, or through monitoring partners, and the NWT Discovery Portal.

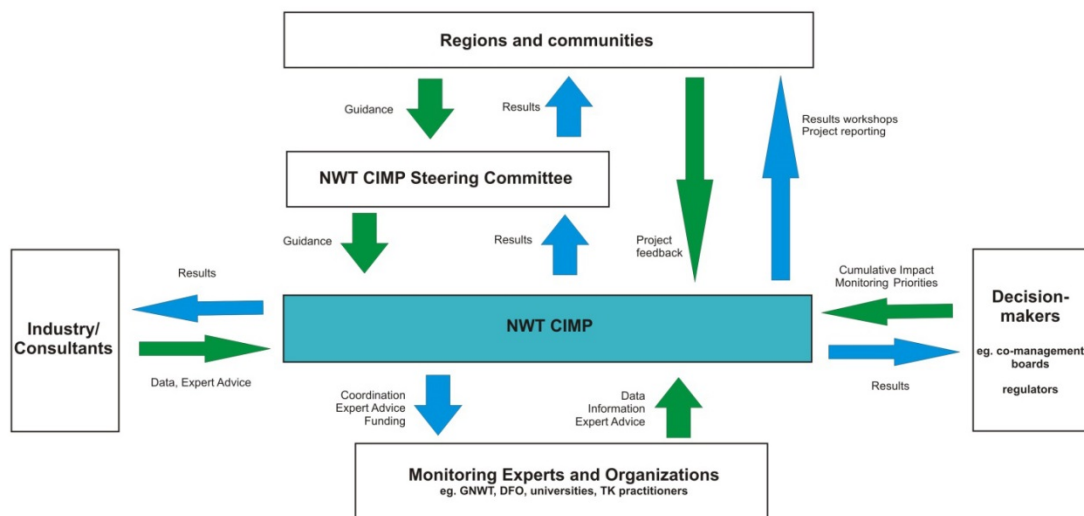


Figure 1 NWT CIMP governance model

The key governance elements of NWT CIMP are described below:

1. NWT CIMP Steering Committee

NWT CIMP is governed by a Steering Committee that is comprised of Aboriginal, federal and territorial government representatives including the Government of Canada (represented by Parks Canada), the Government of the Northwest Territories (represented by Environment and Natural Resources), Gwich'in Tribal Council, Sahtu Secretariat Incorporated, Tłıchq Government, Inuvialuit Game Council, NWT Métis Nation, and the North Slave Métis Alliance.

At this time, active observers include the Dehcho First Nations, Akaitcho Territory Government, Environment Canada, Department of Fisheries and Oceans, MVEIRB, and the Canadian Association of Petroleum Producers. Aboriginal government observers have a standing invitation to participate as Steering Committee members at any time. However, since the Steering Committee uses a consensus approach to make decisions, the role of observers is often similar to those of committee members.

The CIMP Steering Committee provides high-level oversight for NWT CIMP and ensures that the program continues to meet the needs of Aboriginal governments. The needs of the Federal and Territorial governments are also addressed by their representatives. Steering Committee members are required to consult with their region on key committee decisions, and to bring back monitoring results and information to their regions. NWT CIMP staff support Aboriginal governments to bring results back to their regions by hosting results workshops and requiring NWT CIMP funding recipients to present results in communities.

2. Regulatory Decision-makers

NWT CIMP recognizes that there are many organizations with responsibilities for land and water management in the Northwest Territories. Since NWT CIMP is focused on the cumulative impacts of development related to land and water use, the program emphasizes the monitoring priorities of the Mackenzie Valley Land and Water Boards, the Mackenzie Valley Land Use Planning Boards and MVEIRB. However, other organizations that are involved in regulatory processes are also of interest to NWT CIMP (e.g. industry, government departments and community governments). A list of Northwest Territories decision-makers is provided in Appendix A.

Key decision-makers provide input to NWT CIMP regarding their monitoring questions and priorities. These monitoring and research questions provide the basis for NWT CIMP work planning. Once the work is complete, NWT CIMP staff provide results to the decision-makers in usable formats, including reports, data, and direct submissions to regulatory processes.

3. NWT CIMP Staff

Nine NWT CIMP staff are housed within GNWT-ENR. Staff have both administrative and monitoring and research functions. Administrative tasks include support for the Steering Committee, distribution of funding and dissemination of results. Monitoring roles include coordination and collection of scientific, traditional, and local knowledge to conduct cumulative impact-related monitoring and research, analysis and reporting of information. NWT CIMP staff are responsible for ensuring that NWT CIMP meets its mandate, vision and the objectives of the Action Plan.

4. Monitoring Experts and Organizations

Monitoring experts and organizations are subject-matter experts and may include traditional knowledge holders and practitioners, government departments, academia, industry, community members, or independent experts. NWT CIMP often enters into agreements with its partners to complete work on its priorities. NWT CIMP staff may organize monitoring experts, decision-makers, and other partners into small, project-specific working groups that collaborate on priority questions.

Appendix A: NWT Decision-makers

NWT CIMP recognizes that there are many organizations with responsibilities for land and water management in the Northwest Territories. This list is not meant to be comprehensive. NWT CIMP is focused on the cumulative impacts of development related to land and water use. As such, the program emphasizes the monitoring priorities of co-management boards and key regulators who make or influence key land and water use decisions. These key regulatory decision-makers are highlighted in bold.

Aboriginal Governments

- Akaitcho Territory Government
- Dehcho First Nations
- Inuvialuit Joint Secretariat
- Inuvialuit Regional Corporation
- Gwich'in Tribal Council
- North Slave Métis Alliance
- Northwest Territory Métis Nation
- Sahtu Secretariat Incorporated
- Tłıchq Government

Government of Canada

- Department of Fisheries and Oceans
- Environment Canada
- National Energy Board
- Natural Resources Canada
- Parks Canada
- Transport Canada

Northern Resource Management Boards

- Environmental Impact Review Board
- Environmental Impact Screening Committee
- Fisheries Joint Management Committee
- Gwich'in Land and Water Board
- Gwich'in Land Use Planning Board
- Gwich'in Renewable Resources Board
- Inuvialuit Game Council
- Inuvialuit Water Board
- Mackenzie Valley Environmental Impact Review Board
- Mackenzie Valley Land and Water Board
- Sahtu Land and Water Board
- Sahtu Land Use Planning Board
- Sahtu Renewable Resources Board
- Wek'èezhii Land and Water Board
- Wek'èezhii Renewable Resources Board

Government of the Northwest Territories

- Department of Lands
- Education, Culture and Employment (Prince of Wales Northern Heritage Centre; Aurora Research Institute)
- Environment and Natural Resources
- Industry, Tourism and Investment
- Transportation

Appendix B: NWT CIMP Links

NWT CIMP website:

<http://www.nwtcimp.ca>

NWT Discovery Portal:

<http://www.nwtdiscoveryportal.enr.gov.nt.ca>

NWT CIMP Caribou Blueprint:

http://sdw.enr.gov.nt.ca/nwtdp_upload/CIMP%20Caribou%20Blueprint%20-%20October%202014.pdf



Appendix C: Program History

NWT CIMP was administered by Aboriginal Affairs and Northern Development Canada from 1999 to 2014. In April 2014, the program was devolved to the GNWT. Despite modest funding from 1999-2009 the program made notable progress including establishing a collaborative, multi-stakeholder governance structure, supporting multiple monitoring and capacity building projects, and developing a number of key program management documents, guidelines and models.

NWT CIMP initially focused on fourteen valued components including water and sediment quality; water quantity; snow, ground ice and permafrost; fish habitat, population and harvest; fish quality; caribou; moose; other mammals (terrestrial); other wildlife (avian); marine mammals; vegetation; climate; air quality; and human health and community wellness.

In 2011, NWT CIMP narrowed its focus to water, fish, and caribou in geographic hot spots of current or proposed development. These priorities were based on the results of a survey and an in-person workshop including a wide range of NWT stakeholders.

A list of all [CIMP-funded projects from 1999 to 2014](#) is available on the NWT Discovery Portal, along with individual project reports. [State of Knowledge Reports](#) for the NWT were produced biannually by NWT CIMP and subject matter experts (2002, 2005, 2007, 2009 and 2012). These reports provided a current understanding of the valued components, including baseline information and the identification of knowledge gaps.

NWT CIMP invested significant resources to facilitating input from Aboriginal governments into the program and to providing guidance on how to ensure that community and regional input is incorporated into environmental monitoring. The [Pathway Approach](#) (2012) and [Working Together Towards Relevant Environmental Monitoring and Research in the NWT](#) (2013) are documents that provide a strong basis from which to establish monitoring projects that meet the needs of communities and key decision makers. Developed in collaboration with the Aurora Research Institute, the *Working Together* document is distributed to all NWT Scientific License applicants on at www.nwtresearch.com.

NWT CIMP and its Aboriginal partners also worked to understand how best to address TK in the program and in understanding cumulative impacts. A [Traditional Knowledge Framework](#) was developed and released for discussion in 2007.

In 2010 the program received increased, longer-term funding which led to the development of an initial [Five-Year Strategic Plan](#). Since 2010, the program has moved significantly closer to fulfilling the cumulative impact monitoring needs of regulatory decision-makers. Successes include the hiring of a dedicated staff of nine scientists and program administrators; establishment of the [NWT Discovery Portal](#) as a central repository for environmental information, with over 2,500 entries; support for

multiple projects that address community and decision-maker priorities; development of an [Inventory of Landscape Change](#) to track environmental trends; and the analysis of cumulative impacts in Lac de Gras, the current focus of industrial development in the territory.

Examples of NWT CIMP Impact on Regulatory Decision-making

A key goal of NWT CIMP is to contribute to the quality and timeliness of resource management decisions by providing valuable monitoring information. The following section describes seven examples of NWT CIMP contributions to the quality and timeliness of resource management decisions from 2010 to 2014:

1. Changing hydrology in the Taiga Shield

Aboriginal Affairs and Northern Development Canada (S. Kokelj, S.V. Kokelj), Environment Canada (C. Spence)

The abandoned Giant gold mine, one of Canada's largest contaminated sites, is located on the Taiga Shield. The region is experiencing higher winter streamflow, leading to challenges in managing water on the mine site. In spring 2011, the development of anchor ice in Baker Creek, a stream crossing the mine site, forced water to the floodplain causing a spill of contaminated tailings into Great Slave Lake.

This project monitors and explains recent changes in streamflow and water chemistry, and identifies future trends so that resource managers in the region can make better planning decisions.

Results from the project were communicated to the Giant Mine Remediation Project Team in a 2012 report. The report was used by the team to inform the Developer's Assessment Report and to respond to a specific information request from MVEIRB on the development of anchor ice in Baker Creek. MVEIRB used this understanding in its 2013 Report of Environmental Assessment to make recommendations about the potential diversion of Baker Creek. It concluded that the risks presented by the flooding of Baker Creek were too great, and that it should be diverted.

2. Bull Trout Habitat in the Prairie Creek watershed

Fisheries and Oceans Canada (N. Mochnacz)

The purpose of this study was to monitor movements and habitat use of Bull Trout in the South Nahanni watershed near the Prairie Creek mine site. The study found that Bull Trout use Prairie Creek upstream and downstream of the mine site in both summer and winter for residence, migration, and spawning.

The study formed a major part of a report that was submitted to the MVLWB as part of the Fisheries and Oceans Canada (DFO) intervention to the Canadian Zinc water license application. DFO used the report to support a recommendation to establish a Bull Trout monitoring program. This information was used by the MVLWB in the development of the 2013 Canadian Zinc water license.

3. Comparison of NWT gill net protocols

Fisheries and Oceans Canada (P. Cott)

Two standard netting protocols were tested and calibrated for their effectiveness in the Northwest Territories to establish ecological baselines for large fish. The establishment of common protocols is important so that data is comparable and change is detected.

The calibrated protocols have been used by DFO since 2011 to advise industry on appropriate methodology to be used for baseline fish assessments, which are often required for major water license applications.

4. Monitoring Landscape Change in the Peel Plateau

NWT CIMP (S.V. Kokelj)

The Peel Plateau, located in the northwest corner of the Gwich'in Settlement Area, is undergoing large-scale landscape changes in the form of massive permafrost slumps. The main objectives of this project are to monitor and understand landscape disturbances; and to determine their impacts on the physical, chemical and biological characteristics of streams.

Information from this project has provided context within which the Gwich'in Renewable Resources Board have made fish and wildlife management decisions.

Since 2011, results from this project have directly contributed to GNWT Department of Transportation (DOT) planning mitigations for permafrost slumping along the Dempster Highway, which traverses the Peel Plateau. Monitoring results have impacted the DOT climate change and adaptation policy.

5. Surface Water Monitoring in the Sahtu

NWT CIMP (K. Chin)

The Central Mackenzie Valley is a "hot spot" for shale gas exploration using a proposed method of extraction called horizontal hydraulic fracturing. There are concerns related to the potential for ground and surface water contamination. In 2013 the Sahtu Land and Water Board (SLWB) received water license applications for hydraulic fracturing from Conoco-Phillips and Husky Oil. The Board requires Surface and Groundwater Monitoring Plans; but, there is no consistent approach to ensure that the plans are appropriate and produce useful data.

In 2013, technical experts from NWT CIMP were requested by SLWB staff to provide written and oral advice regarding effective surface water monitoring program design. This information will contribute to a standardized Surface and Groundwater Monitoring Plan template that will be used in the Central Mackenzie Valley, and could be used throughout the NWT.

6. Boreal Caribou in the Dehcho

GNWT - Environment and Natural Resources (N. Larter)

This is the only long-term, ongoing population monitoring program for boreal caribou in the Northwest Territories. Monitoring includes calf production, survival, patterns of range use and development avoidance. The project was designed with local Aboriginal governments, and has been supported by NWT CIMP for 6 years.

In 2011, the Dehcho Boreal Caribou Working Group, representing Dehcho First Nations communities and ENR, used data from this project to inform fire suppression managers of areas of importance to boreal caribou that require fire protection.

The study also contributed information to Environment Canada's 2012 national Recovery Strategy for the Woodland Caribou, Boreal population (*Rangifer tarandus caribou*) in Canada. The strategy will impact land use decision-making in the NWT due to disturbance thresholds.

The Sambaa K'e area is a candidate protected area near the community of Trout Lake in the Dehcho region, under the Protected Areas Strategy. Data from this study was used by conservation planners to help delineate the boundary of this area.

Inuvik to Tuktoyaktuk Highway

NWT CIMP (S.V. Kokelj, M. Palmer, C. Marchildon, J. Kanigan)

In 2013 the federal government approved the Environmental Impact Review Board of the Inuvialuit Settlement Region recommendation to approve development of the Inuvik to Tuktoyaktuk highway. The project then entered the regulatory phase with the Inuvialuit Water Board, Inuvialuit Land Administration, AANDC, and others requiring detailed design and mitigation plans.

In 2012, CIMP provided GNWT-DOT with multiple datasets and reports relevant to terrain hazards that require mitigation to produce a detailed highway design. Subject areas included regional air and ground temperature variation, ice wedge and thaw slump distribution. The data directly contributed to the quality of the designs and mitigation plans that the GNWT-DOT submitted to regulators for review.





For more information, please email us at: nwtcimp@gov.nt.ca
For monitoring results please visit nwtdiscoveryportal.enr.gov.nt.ca