Indian and Northern Affairs Canada | Affaires indiennes et du Nord Canada

Final Report

Implementation Evaluation of INAC Climate Change Adaptation Program: Assist Northerners in Assessing Key Vulnerabilities and Opportunities

Project No.: 1570-07/09053

DECEMBER 8, 2009

Evaluation, Performance Measurement, and Review Branch
Audit and Evaluation Sector

Canada

Table of Contents

Executive Summary

Introduction

This report provides the findings, conclusions and recommendations of the Implementation Evaluation of the Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program (the Program), which forms part of the Adaptation Theme of the Clean Air Agenda (CAA).

The implementation evaluation examined the core issues of relevance and performance as outlined in the Treasury Board Secretariat's (TBS) new directive on the evaluation function (effective April 2009), including the design, delivery, and accountability issues of the Program. Specifically, the evaluation focused on the design and implementation of the Program and its preliminary results/success since its inception in 2008–09. Environment Canada will use the findings of this evaluation, and a summative evaluation planned for 2010–11, to contribute to the reporting on the CAA's Adaptation Theme by fiscal year 2010–11.

The objectives of the Program are to assist northerners to:

1. "Assess and identify risks and opportunities related to the impacts of climate change; and

2. Develop and implement climate change adaptation projects and/or plans to increase the capacity of Aboriginal and northern communities to address the impacts of a changing climate."

To achieve these objectives, this three-year (2008–09 to 2010–11), $14 million Program awards contributions to departmental partners (territorial governments, non-governmental organizations, Aboriginal organizations, related federal departments such as Natural Resources Canada (NRCan), communities and other northern institutions, and associations) to help northern communities understand the impacts of climate change and take steps to adapt or respond to anticipated changes.

Methodology

A matrix of questions, indicators, and data sources guided the evaluation. Note that the research questions relating to the short-term results/success of the Program were drawn from the immediate and intermediate outcomes of the Adaptation Theme and the CAA in an effort to increase the compatibility of the present evaluation with future Theme- and Agenda-level evaluations.

The evaluation methodology comprised the following data collection tasks: document review, literature review, file review (n=37); key informant interviews (n=29); and a focus group (n=3). Limitations of the evaluation methodology included: the ability of the evaluation to measure outcomes, as the Program has only completed one funding cycle and many of the projects funded in the second cycle are just getting underway; the extent to which the Program increased awareness of climate change adaptation issues could not be determined because benchmark data on climate change awareness was not collected prior to the start of the Program; the file review was limited to identifying project activities and outputs that were likely to achieve outcomes as identified in project final reports (since these reports did not contain information on achieved

outcomes); and case studies with program recipients were a planned line of evidence to demonstrate results, but a preliminary review of project files illustrated that this line of evidence was premature. Instead, a focus group was conducted to gather information on Northern regions' climate change adaptation progress.

The Department of Indian and Northern Affairs Canada (INAC) contracted the consulting firm, Prairie Research Associates to help conduct the evaluation.

Findings, conclusions and recommendations

Key findings and conclusions from the evaluation are as follows:

Rationale/Relevance

The Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program is designed to reduce the adverse impacts of climate change and to enhance beneficial impacts. The Program is addressing northern climate change on northerners and adaptation needs by helping communities understand what efforts are being undertaken to address climate change and to determine how they can plan to adapt to these changes.

The evaluation found that the Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program aligns well with the priorities of the federal government and INAC. The Government of Canada has a long history of involvement in climate change initiatives and remains committed to addressing climate change, including adaptation, as demonstrated by its CAA and its involvement in the International Polar Year, the United Nations Framework Convention on Climate Change, and the International Panel on Climate Change. The Program contributes to three of INAC's strategic outcomes: *The North*, *The People*, and *The Land*, and it builds on two former INAC programs: the Aboriginal and Northern Climate Change Program and the Aboriginal and Northern Community Action Plan.

The evaluation found that there is a continued need for climate change adaptation planning and implementation programming in the North. First, this three-year program does not have the capacity or resources to reach all of the communities in the North; consequently, there are some communities that have yet to engage in adaptation planning. Second, there is substantial evidence to suggest that most communities would likely cease adaptation planning if the Program was not available because no other climate change adaptation programs targeting the North exist and communities have a wide range of competing non-climate change-related priorities to address. Third, without continued support, communities are unlikely to implement their adaptation plans and, therefore, will revert to a reactive approach to adapting to the impacts of climate change. This issue will be further examined in the upcoming summative evaluation.

There is no evidence of duplication with other programs. No other formal climate change programs aimed at the North exist, and the Program works with other federal departments involved in climate change adaptation activities to ensure programs across government do not duplicate each other. As a result of the Program, projects have leveraged about $1.9 million in financial and in-kind resources.

Some complementary activities are occurring. Partially through support of the Program, the Yukon and Nunavut territorial governments are developing territory-wide climate change action plans. The Government of the Northwest Territories recently developed a climate change impact

and adaptation report.[1] While some northern communities are adapting to climate change without assistance from the Program, many of these adaptations are being implemented in reaction to specific climate change challenges and focus on behaviour change (e.g., taking extra care and caution while travelling, altering hunting practices, preparing for anticipated flooding).

Design and Delivery

All of the funded projects support the Program's objectives to assess and identify risks and opportunities related to the impacts of climate change in specific communities, and to develop climate change adaptation plans. The second objective of the Program, however, suggests that it is intended to assist northerners to develop *and* implement climate change adaptation projects and/or plans. Much of the Program focuses on the development of adaptation planning. Most costs related to implementation (e.g., infrastructure and capital costs) are not eligible for funding as the Program does not have access to the financial resources needed to support implementation projects.

For the most part, the Program has been implemented as planned. The Program is funding projects that are designed to raise awareness of climate change, identify climate change risks and opportunities, generate new scientific knowledge, help build capacity to adapt to climate change, and begin work on developing adaptation plans. Key challenges encountered included the following:

- Establishing the adaptive capacity of communities and identifying key players with climate change adaptation mandates; and
- Working with internal services (e.g., on communications, contribution agreements, and human resources issues).

The Program has developed and implemented formal management structures such as an Operational Management Guide, Applicant Guide, and Technical Review Committee. However, some management and accountability deficiencies were encountered: some proposals do not clearly identify the activities, outputs, and outcomes associated with the current funding year; project reports do not include information on achieved outcomes; and the Advisory Committee has yet to be established.

The Program is attempting to measure performance. A project performance database is used to ensure diversity in type and location of projects; to identify projects' expected outcomes; to brief senior management; and to collect data for evaluations and program renewal. Nonetheless, a number of opportunities exist to improve the database (e.g., identifying which communities have been reached and which have completed adaptation plans).

---

[1] For more information on the role of territorial governments in climate change adaptation planning in the North, follow these web-links:
Yukon – http://www.environmentyukon.gov.yk.ca/pdf/YG_Climate_Change_Action_Plan.pdf
Northwest Territories – http://www.enr.gov.nt.ca/_live/documents/content/NWT_Climate_Change_Impacts_and_Adaptation_Report.pdf

Best practices include using a Technical Review Committee to review proposals; having people who will stay in the community to develop adaptation plans; having a project representative on the ground in the community; and obtaining letters of support for the project from the community.

Lessons learned are that programs should be built on equal partnerships; repeat messaging about climate change is needed; communities have many priorities other than climate change to address; jurisdictional barriers can make it difficult to conduct the research; adaptation takes time; and communities need additional resources to implement their adaptation plans.

Preliminary Results/Success

- ***Intended outcome: Greater collaboration to address issues of climate change***

A wide range of stakeholders such as scientists, consultants, experts, and communities are collaborating on climate change adaptation projects. These collaborations have helped create a strong network of researchers and communities who are interested in climate change adaptation.

- ***Intended outcome: Increased availability of and access to information, technical expertise, and climate change adaptation products***

Community awareness of climate change is increasing; however, the evaluation found that since baseline data was not collected prior to the start of the Program, it was difficult to assess the extent of increased awareness. There is considerable evidence that the Program brought technical expertise into northern communities and projects are developing climate change adaptation information that is accessible and relevant to these communities.

- ***Intended outcome: Northern communities and user groups are using tools and information to assess climate change risks/opportunities and to plan adaptation strategies***

Communities are assessing climate change risks and opportunities and defining adaptation priorities. While projects are developing adaptation tools, there are no processes in place to track how they are being used.

The evaluation did not find evidence to support whether planning decisions are being based on identified risks and opportunities, or if climate change information or adaptation information is being integrated into planning and decision-making processes. This will be investigated further in the summative evaluation.

Alternatives

The evaluation found that this Program is the best approach to support climate change adaptation planning. The Program directly targets the North, has the flexibility to meet the needs of communities, involves communities in projects, and fosters the development of partnerships. However, the following are opportunities for Program enhancement: increasing program managers' presence in communities; establishing long-term, community-based positions that focus on climate change; increasing collaboration with other federal departments and territorial governments; strengthening relationships with INAC regional offices; coordinating the Program with the ecoENERGY Program; and providing multi-year funding for projects.

It is recommended that INAC:

1. **Conduct an environmental scan to:**
    - **Determine the awareness of climate change and the capacity for adaptation planning in northern communities.**
    - **Ensure that the Program targets communities in greatest need of support.**

2. **Clarify Program objectives:**
    - **Develop a strategy that responds to the greatest need, allowing for transition through planning phases and into implementation.**

3. **Continue to develop a website that can be used to:**
    - **Facilitate the sharing of climate change adaptation information and tools.**
    - **Extend Program reach.**

4. **Identify and allocate specific resources to performance measurement to:**
    - **Improve proposal review to ensure performance information is clearly articulated.**
    - **Develop reporting template.**
    - **Monitor project reporting requirements / ensure quality control.**
    - **Strengthen and expand the performance tracking database.**
    - **Manage the Program's performance measurement responsibilities (i.e., annual reporting).**

5. **Increase Program efficiency and effectiveness by:**
    - **Coordinating the Program with the ecoENERGY Program.**
    - **Strengthening relationships with INAC regional offices.**
    - **Establishing an Advisory Committee, which includes representatives of other federal departments, territorial governments, and communities.**
    - **Providing multi-year support to projects.**

Management Response / Action Plan

Implementation Evaluation of the Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program
Project #: 1570-7/09068W

Recommendations	Actions	Responsible Manager (Title)	Planned Implementation and Completion Date
1. INAC should conduct an environmental scan to: • Determine the awareness of climate change and the capacity for adaptation planning in northern communities. • Ensure that the Program targets communities in greatest need of support.	• Conduct a review of existing adaptation work/needs documentation done in Aboriginal and northern communities. • Conduct a needs assessment/environment scan with respect to adaptation for Aboriginal and northern communities, which would include a survey of targeted recipients of the Program to measure level of awareness.	Departmental Climate Change Coordinator & Manager, Adaptation	September 30, 2010
2. Clarify Program objectives: • Develop a strategy that responds to the greatest need, allowing for transition through planning phases and into implementation.	• Conduct a needs assessment/environment scan with respect to adaptation for Aboriginal and northern communities. • Develop a strategic plan for future program implementation.	Departmental Climate Change Coordinator & Manager, Adaptation	March 31, 2010
3. Continue to develop a website that can be used to: • Facilitate the sharing of climate change adaptation information and tools. • Extend Program reach.	• Review existing information already on the web site. • Assess gaps in information available. • Produce contents for the site that will fill the gaps. • Establish a process to ensure the website is regularly updated.	Departmental Climate Change Coordinator & Manager, Adaptation	March 31, 2010

Recommendations	Actions	Responsible Manager (Title)	Planned Implementation and Completion Date
4. Identify and allocate specific resources for performance measurement to: • Improve proposal review to ensure performance information is clearly articulated. • Develop reporting template. • Monitor project reporting requirements/ensure quality control. • Strengthen and expand the performance tracking database. • Manage the Program's performance measurement responsibilities (ie. Annual reporting).	• Review the Program applicant's guide to ensure there is a requirement for performance information. • Create reporting templates. • Review of all reporting requirements for the Program and projects funded to date. • Assess current performance tracking system and identify gaps. • Make required changes to the performance tracking and reporting system to address gaps.	Departmental Climate Change Coordinator & Manager, Adaptation	March 31, 2010
5. Increase Program efficiency and effectiveness by: • Coordinating Program with the ecoEnergy Program. • Strengthening relationships with regional offices. • Establishing an Advisory Committee, which includes representatives of other federal government departments, territorial governments, and communities. • Providing multi-year support to projects.	• Hold regular meetings with Adaptation and ecoEnergy staff to discuss issues. • Ensure harmonization of program management processes between the ecoEnergy and Adaptation programs. • Identify contacts in each region and establish regular communication with the regional offices. • Complete terms of reference for the Advisory Committee. • Identify members for the Committee and schedule a first meeting of the Advisory Committee. • *As the Program sunsets in March 2011 we will be unable to address the last point. We will however consider this in any program renewal initiative.*	Departmental Climate Change Coordinator & Manager, Adaptation	March 31, 2010

I approve the above Management Response and Action Plan*

_____
Patrick Borbey
Assistant Deputy Minister

Date: _____

The Management Response and Action Plan for the Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program were approved by the Evaluation, Performance Measurement and Review Committee December 7, 2009

1.0 Introduction

This report provides the findings, conclusions and recommendations of the Implementation Evaluation of the Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program (the Program), which forms part of the Adaptation Theme of the Clean Air Agenda (CAA).

The implementation evaluation examined the core issues of relevance and performance as outlined in the Treasury Board Secretariat's (TBS) new directive on the evaluation function (effective April 2009), including the design, delivery, and accountability issues of the Program. Specifically, the evaluation focused on the design and implementation of the Program and its preliminary results/success since its inception in 2008–09. Environment Canada will use the findings of this evaluation, and a summative evaluation planned for 2010–11, to produce a thematic evaluation for the CAA's Adaptation Theme by fiscal year 2010–11.

The objectives of the Program are to assist northerners to:

1. "Assess and identify risks and opportunities related to the impacts of climate change, and

2. Develop and implement climate change adaptation projects and/or plans to increase the capacity of Aboriginal and northern communities to address the impacts of a changing climate."[2]

To achieve these objectives, this three-year (2008–09 to 2010–11), $14 million Program awards contributions to departmental partners (territorial governments, non-governmental organizations, Aboriginal organizations, and related federal departments such as Natural Resources Canada (NRCan), communities and other northern institutions, and associations) to help northern communities understand the impacts of climate change and take steps to adapt or respond to anticipated changes.

1.1 Outline of the Report

Section 2, based on a literature review, provides the context for climate change adaptation planning and describes the Program. Section 3 defines the evaluation scope and outlines the evaluation methodology. Section 4 presents the evaluation findings in four subsections: rationale/relevance; design and delivery; preliminary results/success; and alternatives. Section 5 concludes the report and offers recommendations for consideration.

[2] Treasury Board of Canada (TB). (2008). *Clean Air Agenda*. Retrieved April 21, 2009 from, http://www.tbs-sct.gc.ca/hidb-bdih/initiative-eng.aspx?Hi=12

2.0 Climate Change Overview

This section, based on a literature review, provides an overview of climate change and the context within which the Program was established. It defines climate change, reports on the status of climate change in the North, describes the process of adapting to climate change, and identifies potential adaptation strategies.

2.1 Arctic most at risk

Climate change is a long-term shift in weather conditions including temperature, wind patterns, precipitation, and frequency/severity of storms.[3] It may refer to increased climate averages (temperature, wind, precipitation) and increased variability in climate. While climate change has always occurred naturally, the preponderant view of scientists worldwide is that the world is experiencing changes in both rate and magnitude of weather conditions and global climate change. In part, this shift in climate patterns is believed to be a result of human activities such as land use changes and the combustion of fossil fuels, which have added substantial amounts of three common Greenhouse Gas (GHGs)—carbon dioxide, nitrous oxide, and methane—to the atmosphere. Human activities have increased and continue to increase concentrations of GHGs in the atmosphere.[4]

A natural system, the "greenhouse effect," regulates the temperature of the Earth. This system relies on the GHGs mentioned above and water vapour (another GHG) to trap the heat of the sun (like the glass of a greenhouse does), which maintains the Earth's average temperature at about 15°C, as opposed to the –18°C it would be without the greenhouse effect. Increasing the amount of GHGs in the atmosphere is presumed to enhance the ability of the greenhouse effect to warm the Earth, which in turn raises the average temperature of the Earth in what is commonly known as global warming.[5/6]

---

3 Environment Canada (EC). (2009). *Climate Change*. Retrieved August 27, 2009 from, http://www.ec.gc.ca/cc/default.asp?Lang=En.

4 Natural GHG emissions include water vapour, carbon dioxide, methane, nitrous oxide, and ozone (International Institute for Sustainable Development (IISD). (1998). *A Guide to Kyoto: Climate Change and What it Means to Canadians*, p. 3). Retrieved November 13, 2009 from, http://www.iisd.org/pdf/kyotoprimer_en.pdf
Human-induced GHG emissions include carbon dioxide, methane, nitrous oxide, fluorinated gases, and ozone-depleting substances (United States Environmental Protection Agency. (2009). *Greenhouse Gas Emissions.* Retrieved September 28, 2009 from http://www.epa.gov/climatechange/emissions/index.html)

5 Environment Canada (EC). (2009). *Climate Change*. Retrieved August 27, 2009 from, http://www.ec.gc.ca/cc/default.asp?Lang=En.; Arctic Climate Impact Assessment (ACIA). (2004*). Impacts of a Warming Arctic*. New York: Cambridge University Press*;* Warren, F. J., Barrow, E., Schwartz, R., Audrey, J., Mills, B., & Riedel, D. (2004). *Climate Change Impacts and Adaptation: A Canadian Perspective.* Ottawa: Climate Change Impacts and Adaptation Directorate, Natural Resources Canada, Government of Canada; David Suzuki Foundation. (2009). *Science.* Retrieved September 29, 2009 from, http://www.davidsuzuki.org/Climate_Change/Science/

6 Note that while scientists predict that, on average, climate change will result in "global warming," regional impacts are expected to be highly variable, with some regions experiencing climate cooling.

Many experts agree that Arctic regions are most at risk and will continue to undergo significant changes due to global warming.[7] Many studies show that the Arctic has warmed significantly, and faster than the global mean over the last few decades, and will continue to get warmer in the future. For example, marine, terrestrial, and atmospheric studies synthesized by Serreze et al. (2000) indicated that "the climate of the Arctic has warmed significantly in the last 30 years."[8] The Intergovernmental Panel on Climate Change (IPCC) states that winter warming in the Arctic will be 40 percent greater than the global mean by the end of the century, and the temperature in the Arctic will rise approximately 3–4°C over the next 50 years.[9]

2.2 Climate change impacts

Several changes to the physical and biological systems of the Arctic are being witnessed due to warming temperatures. It is predicted that these changes will continue and be more severe over the next century as the concentration of GHGs in the Earth's atmosphere continues to increase.[10] These changes will also have social, economic, and cultural impacts on northerners.

Some of the documented physical climate change impacts are:

- *Changing sea- ice thickness/melting and snow cover.* The extent and thickness of sea ice and the extent of snow cover over land areas in the Arctic are decreasing. The melting sea ice and snow cover, along with shorter winters and the resulting shortening of the snow season, will continue to increase the impacts of climate change on the North. As the sea ice and snow melt, more of the ocean's dark blue water and the Arctic's dark terrain are exposed to absorb the heat from the sun, resulting in a faster warming Arctic.[11] This is one of the reasons climate change impacts are expected to be greater in the Arctic than other areas of the world.

  Melting sea ice and snow cover, along with melting glaciers, result in rising sea levels. It is predicted that by 2100, the melting of arctic glaciers alone will contribute four to six centimetres to global sea-level rise. It is expected that sea-level rise in the Arctic will "inundate marshes and coastal plains, accelerate beach erosion, exacerbate coastal flooding, and force salt water into bays, rivers, and ground-water."[12]

- *Degrading permafrost.* It is expected that over the next century, permafrost degradation will occur over 10 to 20 percent of the current permafrost area and the southern limit of

---

7 Hinzman, L.D. et al. (2005). Evidence and Implications of Recent Climate Change in Northern Alaska and Other Arctic Regions. Climate Change, 72, pp. 251-298.; Johannessen O.M. et al. (2004). Arctic Climate Change: Observed and Modelled Temperature and Sea-ice Variability. *Telus, 56A,* pp. 328-341.; Nichols, T. et al. (2004). Climate Change and Sea Ice: Local Observations from the Canadian Western Arctic. *Arctic, 57* (1), pp. 68-79.; Prowse, T.D. et al. (2006). Climate Change Effects on Hydroecology of Arctic Freshwater Ecosystems. *Ambio, 35*(7), pp. 347-358.

8 Cited in Hinzman, L.D. et al. (2005). Evidence and Implications of Recent Climate Change in Northern Alaska and Other Arctic Regions. *Climate Change, 72,* pp. 251-298.

9 Johannessen O.M. et al. (2004). Arctic Climate Change: Observed and Modelled Temperature and Sea-ice Variability. *Telus, 56A,* pp. 328-341.

10 ACIA. (2004). *Impacts of a Warming Arctic*. New York: Cambridge University Press.

11 Hinzman, L.D. et al. (2005). Evidence and Implications of Recent Climate Change in Northern Alaska and Other Arctic Regions. *Climate Change, 72*, pp. 251-298.

12 ACIA. (2004*). Impacts of a Warming Arctic*. New York: Cambridge University Press.

permafrost will shift northward by several hundred kilometres. The thawing permafrost can have major impacts on infrastructure in the Arctic. Also, in combination with other climate change events, permafrost degradation can cause rockslides and avalanches.

- *Warming temperatures.* The warming temperatures in the North will increase evaporation, which will lead to increased rainfall. Much of the increased precipitation will appear in the winter months, which results in faster snowmelt and, when the rainfall is intense, can result in flash flooding in some regions.[13] The amount of precipitation in the Arctic is predicted to increase by 20 percent by the end of the century.

  The warming temperatures are also diminishing lake and river ice and are resulting in rising river flows. The shorter and warmer winters in the Arctic are causing later freeze up and earlier ice breakup of rivers and lakes, thereby causing peak river flows to occur earlier in the spring.

- *Increasing weather variability and severity.* In general, Aboriginal communities in the Canadian Arctic have noted that weather has become less predictable and that storm events progress more quickly than they did in the past.[14]

Some of the predicted biological impacts include:

- *Shifts in vegetation zones.* It is expected that climate change causes the boreal (northern) forests to shift into the Arctic tundra, and the tundra to shift into the polar deserts.[15] The shrinking of the Arctic tundra and the polar deserts will result in major species shifts and possible extinction of endangered species that depend on these habitats.[16]

- *Decline in species.* Species dependent on sea ice and the Arctic climate (e.g., polar bears, certain types of seals, walruses, and some marine birds) are at risk and likely to decline in numbers. If the sea ice continues to melt as predicted, some of these species may face extinction.[17]

- *Changes in fish populations.* Fish populations may increase or decrease due to climate change. However, barring any major shifts, slightly warming temperatures may increase fish stocks, such as cod and herring, as higher temperatures and reduced ice cover could provide a more extensive habitat.[18]

Examples of the social, economic, and cultural impacts of climate change on northerners include the following:

---

13 ACIA. (2004). *Impacts of a Warming Arctic*. New York: Cambridge University Press.; Arctic North Consulting. (2009). *Climate Change and Canadian Mining: Opportunities for Adaptation.* Prepared for The David Suzuki Foundation.

14 Furgal, C., & Prowse, T.D. (2008): Northern Canada. In *From Impacts to Adaptation: Canada in a Changing Climate 2007.* Lemmen, D.S., Warren, F.J., Lacroix, J, & Bush, E. (Eds). Ottawa: Government of Canada, pp. 57–118.

15 ACIA. (2004). *Impacts of a Warming Arctic*. New York: Cambridge University Press.; Hinzman, L.D. et al. (2005). Evidence and Implications of Recent Climate Change in Northern Alaska and Other Arctic Regions. *Climate Change, 72*, pp. 251-298.

16 ACIA. (2004). *Impacts of a Warming Arctic*. New York: Cambridge University Press.

17 Ibid.

18 Ibid.

- *Traditional land and resource use*. The depletion and shift of species, shorter winters, and changes in snow and ice characteristics are making hunting more difficult and dangerous. Reduced snow accumulation and hard-packed snow caused by changing wind patterns makes it difficult for hunters to build igloos as temporary and emergency shelters.[19] Unexpected storms and a lack of shelter have resulted in major injuries and deaths among northerners. Additionally, because many people in the Arctic often now live in permanent settlements, their ability to move with species as they shift locations is limited.[20]

  Northerners' land is susceptible to coastal erosion, which could result in the need for communities to incur costs to maintain buildings along the coastline and to develop measures for avoiding flooding, or to relocate further inland. For example, severe coastal erosion is already present in Tuktoyaktuk, Canada, leading the community to abandon an elementary school, houses, and other buildings.[21]

- *Health.* The melting sea ice has two key negative effects on human health in the Arctic. First, the risk of injury increases as hunters venture out onto the unstable ice. Second, melting sea ice may change the distribution of marine animals and fish, which could result in a change of diet for northerners. It has been noted that shifts to a more western diet increases risks of cancer, obesity, diabetes, and cardiovascular disease among Arctic populations.[22]

  Human health may also be affected by drinking water quality. Permafrost thawing, coastal erosion, extreme weather events such as floods and rockslides, and intense rainfall may affect the quality of drinking water, limit efficient delivery of water, or cause direct damage to water facilities.

  Increases in injury, death, and disease from climate change are also related to weather events, such as extremes of temperature (both cold and heat) floods, storms, rockslides, avalanches, and intense rainfalls.

  Severe psychological impacts can result from climate change in the North. Approximately half of the Arctic population have their culture, language, and identity tied to the land and sea of their Aboriginal heritage.[23] This population will be forced to change their culture as the opportunities for subsistence hunting, fishing, herding, and gathering diminish. The inability of elders to predict weather and the loss of cemeteries and habitat from flooding, erosion, and permafrost thawing will also have severe impacts

---

19 Ford, J., et al. (2007). Reducing Vulnerability to Climate Change in the Arctic: The Case of Nunavut, Canada. *Arctic, 60*(2), pp. 150-166.

20 ACIA. (2004). *Impacts of a Warming Arctic*. New York: Cambridge University Press.

21 Ibid.

22 Ibid.

23 Furgal, C., & Prowse, T.D. (2008): Northern Canada. In *From Impacts to Adaptation: Canada in a Changing Climate 2007.* Lemmen, D.S., Warren, F.J., Lacroix, J, & Bush, E. (Eds). Ottawa: Government of Canada, pp. 57–118.

on their culture.[24] These stresses have been associated with symptoms of psychosocial, mental, and social distress, such as alcohol abuse, violence, and suicide.[25]

- *Infrastructure.* The melting permafrost is expected to cause shifting in infrastructure such as buildings, industrial facilities, and pipelines. Since climate warming considerations were not incorporated in engineering designs and environmental impact assessments for infrastructure until the late 1990s, constant upgrades to existing infrastructure in the Arctic will be required to avoid structural failures.[26]

- *Transportation.* In the winter, northern communities rely on ice roads for the delivery of groceries and other supplies. Once the ice roads melt, goods can only be delivered to certain areas by air or by water, which is much more costly. Ice roads are also very important for industry. Gas, mining, and oil industries use the ice roads to transport hundreds of tonnes of supplies to their sites each year, and for land exploration activities.

  The melting permafrost will also have an effect on cement roads and railroads. As the layer of permafrost degrades, roads and railroads will shift, resulting in cracks and breaks. Therefore, continual maintenance of the roads and railroads will be necessary.

  The melting and earlier breakup of the sea ice will, however, increase marine transport and access to resources. Extension of the navigation season will open up the possibility of more transportation in certain areas. It will also increase access to natural resources and may increase offshore extraction of oil and gas.

2.3 Adaptation strategies

Climate change is being addressed through mitigation and adaptation.

- *Mitigation* involves taking actions to reduce GHG emissions.
- *Adaptation* consists of initiatives and measures to decrease humans' and communities' vulnerability to the impacts of actual or expected climate change effects.
  - *Vulnerability* is the degree that a community or ecosystem is susceptible to or can be harmed by adverse effects of climate change, and is determined by the adaptive capacity of communities to environmental changes.[27]
  - The *adaptive capacity* of a community is the extent to which it can address changes to its environment and depends on the following factors: wealth, technology, education, information, skills, infrastructure, access to resources, and management.[28]

---

24 ACIA. (2004). *Impacts of a Warming Arctic*. New York: Cambridge University Press.

25 Furgal, C., & Prowse, T.D. (2008): Northern Canada. In *From Impacts to Adaptation: Canada in a Changing Climate 2007.* Lemmen, D.S., Warren, F.J., Lacroix, J, & Bush, E. (Eds). Ottawa: Government of Canada, pp. 57–118.

26 Ibid.

27 Budreau, D., & McBean, G. (2007). Climate Change, Adaptive Capacity and Policy Direction in the Canadian North: Can We Learn Anything from the Collapse of the East Coast Cod Fishery? *Mitig Adapt Strat Glob Change, 12*, pp. 1305-1320.

28 Smith, J., Lavender, B, Smit, B., & Burton, I. (2001, Winter). Climate Change and Adaptation Policy. *Isuma,* pp. 75-81.

The primary global response has been to address climate change through mitigation.[29] Examples of mitigation methods include technological developments and awareness campaigns to try and control the level of GHG emissions released into the atmosphere.[30/31] However, mitigation does not rapidly reverse climate change. Experts have confirmed that efforts to reduce GHG emissions have been slow and that it will take decades to stabilize climate change.[32]

Adaptation, therefore, complements mitigation and is necessary to reduce the adverse impacts of climate change and to enhance beneficial impacts. Adaptation in the public policy context has been defined as "measures taken by any level of government […] to lessen the overall vulnerability of the public."[33] Government measures ultimately fall into two categories: moral suasion and regulation. Moral suasion includes tools used by government to persuade the behaviour of populations without force. General policy tools include education programs and financial incentives. Regulation, on the other hand, forces populations to meet a particular standard. For example, a government could introduce a law that compels behavioural change.

Government can also choose to implement proactive, rather than reactive, climate change adaptation policies.

- *Proactive* policies develop adaptation methods in preparation for future climate change-related events. For example, enhancing adaptive capacity is a proactive approach because it prepares individuals and communities for expected future climate change events.
- *Reactive* policies implement methods for adapting to climate change following a major event. For example, bearing the costs and spreading or sharing the loss are reactive approaches because the effects of climate change are only being dealt with following a disturbance.

While a proactive approach is initially more costly to government and requires foresight, Warren et al. (2004) and Budreau and McBean (2007) agree that it is more beneficial than a reactive approach.[34] Firstly, the proactive approach develops adaptive capacity because it prepares for future circumstances and incorporates long- and short-term climate change adaptation goals. However, the reactive approach only offers short-term solutions and does not develop adaptive

---

29 Budreau, D., & McBean, G. (2007). Climate Change, Adaptive Capacity and Policy Direction in the Canadian North: Can We Learn Anything from the Collapse of the East Coast Cod Fishery? *Mitig Adapt Strat Glob Change, 12*, pp. 1305-1320.

30 Centre for Indigenous Environmental Resources (CIER). (2006). *First Nations and Climate Change Mitigations, Adaptations, and Recommendations.* Retrieved October 30, 2009 from, http://www.cier.ca/information-and-resources/publications-and-products.aspx?id=190&linkidentifier=id&itemid=190

31 Canada has several climate change mitigation initiatives under their ecoACTION program. Visit http://www.ecoaction.gc.ca/subject-sujet/index-eng.cfm for a list of the initiatives by subject area.

32 Budreau, D., & McBean, G. (2007). Climate Change, Adaptive Capacity and Policy Direction in the Canadian North: Can We Learn Anything from the Collapse of the East Coast Cod Fishery? *Mitig Adapt Strat Glob Change, 12*, pp. 1305-1320.; Ford, J. D., & Smit, B. (2004). A Framework for Assessing the Vulnerability of Communities in the Canadian Arctic to Risks Associated with Climate Change. *Arctic, 57*(4), pp. 389-400.

33 Ibid.

34 Warren, F.J. et al. (2004). *Climate Change Impacts and Adaptation: A Canadian Perspective.* Ottawa: Climate Change Impacts and Adaptation Directorate, Natural Resources Canada, Government of Canada.; Budreau, D., & McBean, G. (2007). Climate Change, Adaptive Capacity and Policy Direction in the Canadian North: Can We Learn Anything from the Collapse of the East Coast Cod Fishery? *Mitig Adapt Strat Glob Change, 12*, pp. 1305-1320.

capacity. Secondly, in the long run, it is predicted that proactive adaptation methods will be more cost-effective. Nonetheless, a combination of reactive and proactive approaches is most likely required in any community.

The drivers of adaptation are mainly economic development and poverty alleviation; therefore, they are already embedded in broader development, sectoral, regional, and local planning initiatives.[35] The integration of adaptation strategies with economic and sustainable development initiatives is a useful option for territorial, provincial, national, and international governments to leverage funding from multiple sources and to align adaptation with broader governmental goals.

A review of the literature on climate change impacts on the physical and biological systems in the North, as well as the social, economic, and cultural impacts on northerners, clearly demonstrates a need for the Program and the rationale for why it was established. The following section describes the Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program.

[35] Intergovernmental Panel on Climate Change (IPCC). (2007). *Climate Change 2007: Synthesis Report.* Retrieved September 2, 2009 from, http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf

3.0 Program Description

This section identifies Program objectives and intended outcomes; reviews the Program theory; outlines the financial resources available to the Program; describes the governance structure and funding application and review processes; and outlines recipient reporting requirements.

3.1 Program objectives and intended outcomes

As previously mentioned, the objectives of the Program are to assist northerners to:

- "Assess and identify risks and opportunities related to the impacts of climate change; and
- Develop and implement climate change adaptation projects and/or plans to increase the capacity of Aboriginal and northern communities to address the impacts of a changing climate."[36]

However, as discussed in Section 5.1.1, the Program's main objective is to assist communities with adaptation planning. The Program does not have sufficient resources to fund the implementation of adaptation plans and therefore has not engaged in any activity in this area.

The Program's intended outcomes are listed in Table 1.

Table 1: Intended outcomes

Timing	Intended outcomes
Long-term outcome	▸ Increased capacity of northerners to adapt to climate change impacts
Intermediate outcomes	▸ Increased professional and institutional development related to adaptation to climate change ▸ Aboriginal and northern communities have access to support to develop and implement adaptation planning and actions ▸ Guidance material for developing safer and more reliable infrastructure ▸ Planning decisions are based on identified risks
Immediate outcomes	▸ Access to information and increased technical expertise on adaptation to climate change ▸ Climate risks evaluated and responses to risks identified ▸ Greater collaboration in place for the design of effective solutions

Source: INAC, 2008 (February). Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Results-based Management and Accountability Framework and Risk Based Audit Framework.

3.2 Resources

TBS allocated the Program $14 million in funding over the three-year period 2008–09 to 2010-11. The Program's planned expenditures for each fiscal year were: $4.7 million in 2008-09,

[36] Indian and Northern Affairs Canada (INAC) (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Results-based Management and Accountability Framework and Risk Based Audit Framework.*

$4.8 million in 2009–2010, and $4.5 million in 2010–2011. Section 5.2.1 compares planned and actual expenditures.

3.3 Governance

The Program fits into INAC program architecture within the Environment and Renewable Resources Directorate (ERR). Figure 1 illustrates the full organizational structure of the Program.

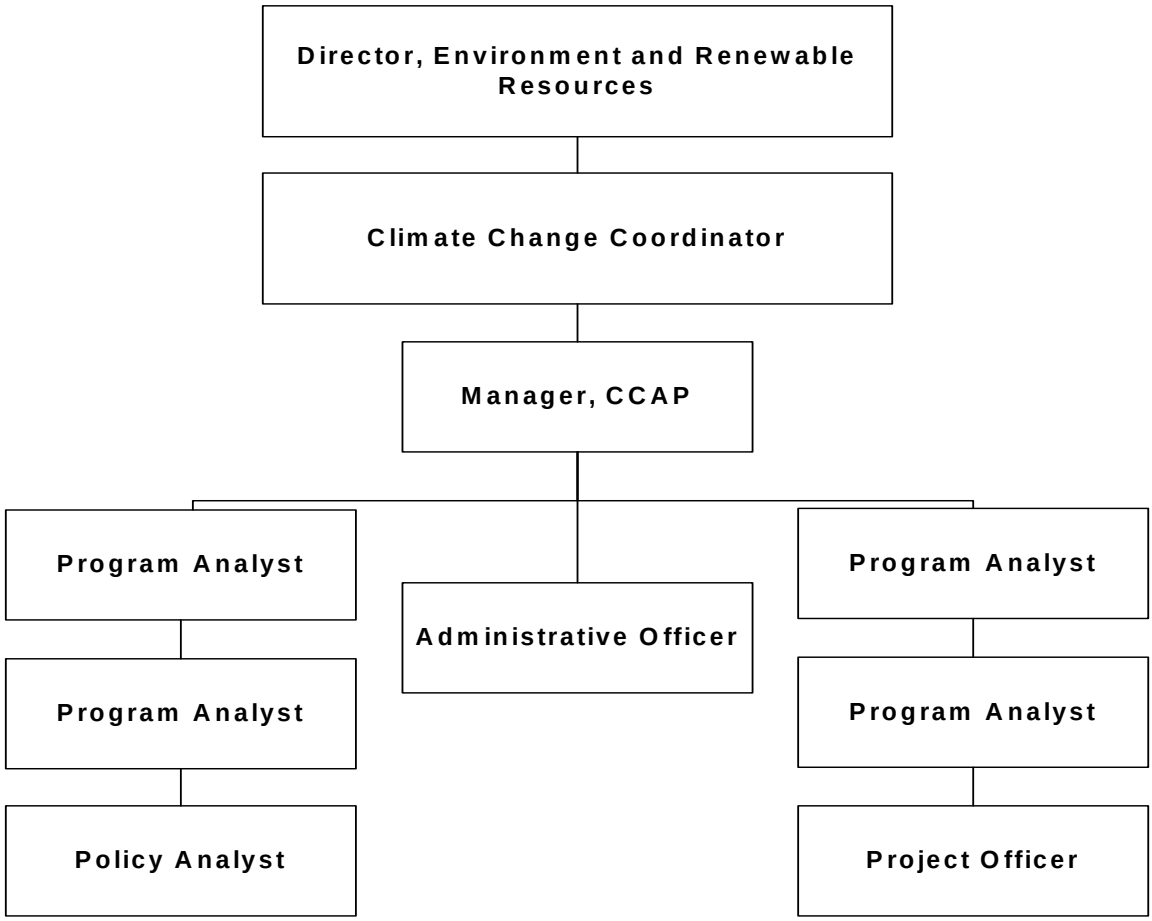

Figure 1
Organizational Structure

Director, ERR. The Director, ERR, is responsible for the overall strategic management of the Program.[37]

Climate Change Coordinator. Operating immediately under the Director, ERR, the Climate Change Coordinator holds responsibility for ensuring that the Program is aligned with corporate

[37] INAC. (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Operational Management Guide.*

policies within the INAC mandate and for being a point of formal contact between Program staff and the Director, ERR.[38]

Program Staff. Program staff are responsible for the day-to-day operations of the Program including assisting proponents with proposals, participating in the Project Technical Committee, monitoring project implementation, and providing support to recipients. Additionally, INAC regional staff are involved in liaising with project applicants and recipients and assisting in the establishment of funding agreements with local project representatives.[39]

Committees. The Program committed to develop the following two committees:

- *Project Technical Committee.* The role of the Project Technical Committee is to review project applications and to make funding recommendations to the Director, ERR. The Committee is to appraise project proposals for feasibility and the degree to which they meet funding eligibility criteria.[40] This Committee is functional (see Section 5.2.3).
- *Program Advisory Committee.* The Program Advisory Committee is to be composed of various regional stakeholders, northern organizations, territorial governments, and other federal departments involved in climate change adaptation. The Committee is charged with reviewing the objectives of the Program, discussing the continued relevance of these objectives, and providing advice to the Program on the overall direction of operations and policy.[41] This Committee has yet to be established (see Section 5.2.3).

3.4 Application Requirements and Process

The Program funds projects that:

- "Assess the risks and vulnerabilities to Aboriginal and northern communities related to the impacts of climate change;
- Support the preparation of action plans focusing on economic, social, cultural, environmental, and security issues;
- Address major issues related to climate change, such as:
  - Emergency management and food security,
  - Integration of climate change impact considerations into land use and community planning processes,
  - Vulnerability of community infrastructure and of industrial and resource sectors,
  - Development of adaptation management options, and
  - Taking into account long-term changes to major project lifecycles; and

38 Ibid.

39 INAC. (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Results-based Management and Accountability Framework and Risk Based Audit Framework.*

40 INAC. (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Operational Management Guide.*

41 Ibid.

- Result in specific tangible adaptation measures to address critical community issues such as storm surges and coastal erosion."[42]

It should be noted that project funding is strictly confined to assessment, feasibility, and/or other types of research-based endeavours. The Program does not provide funding for infrastructure development, renewable energy or energy efficiency, capital development, political advocacy on climate change, or international adaptation initiatives and events.[43]

The Program aims to provide project funding to any organizations, institutions, communities, and individuals who provide a project proposal that is well-matched to the objectives of the Program (see Section 3.1). It does not confine project funding to northern-based recipients; any group that shows a commitment to identifying risks related to the impacts of climate change in the North and/or to increasing capacity to address the impacts of a changing climate in the North can be considered as a potential Program recipient.[44]

Proposals are to be funded according to a template included in the *Applicant Guide* and should contain the following information:

- Project title;
- Proponent, project coordinator, and contact partners;
- Background and rationale for the project;
- Project description;
- Objectives;
- Methodology;
- Community engagement;
- Work plan;
- Deliverables;
- Funding breakdown, including INAC and other sources; and
- Funding partners, indicating whether the contribution is cash or in-kind.

The primary consideration made during proposal review is the perceived strength of a linkage between the proposed project and the Program's *Guiding Principles*, which are:

- "Recognition that climate change impact intensity and form will vary by region;
- Recognition that communities and individuals are the essence of the projects;

---

42 TB. (2008) *Clean Air Agenda.* Retrieved April 21, 2009 from, http://www.tbs-sct.gc.ca/hidb-bdih/initiative-eng.aspx?Hi=12

43 INAC. (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Operational Management Guide.*

44 Ibid.

- Contribution to managing risk related to climate change for individuals and communities in order to maintain safe and sustainable communities for all individuals;
- Developing the capacity at the community/organization level to increase the overall adaptive capacity of communities;
- Contribution to developing a strong information base integrating science, engineering practices, socioeconomic development, and traditional knowledge, to promote sustainable communities; and
- Using a partnership approach, building on regional and national initiatives, and leveraging tools, knowledge and funding as available."[45]

The Project Technical Committee (as discussed in Section 5.2.3) conducts a subjective review of proposals based on the following criteria:

- "Eligibility of the applicant and the initiative according to the *Guiding Principles*;
- The project team has the capacity and expertise to conduct the project;
- The objectives of the project are consistent with Program objectives and priorities;
- The methodology clearly demonstrates how the proponents will address the objectives of the project;
- The proposal includes community involvement and engagement throughout the process; and
- The community and other communities can benefit from the project (directly or from lessons learned)."[46]

3.5 Program recipient reporting requirements

Each funded project is managed under the conditions of TBS's *Policy on Transfer Payments* as well as INAC's own financial policies and procedures. All project funding is dispersed through a contribution agreement that details TBS and INAC funding criteria and basic project expectations and conditions. Contribution agreements are made for a maximum period of one year and a maximum amount of $200,000, although funding recipients may reapply annually. If agreements have been previously negotiated with INAC, exceptions can be made to fund projects beyond the $200,000 limit (for example, to cover the cost of travelling to the North).[47] Upon project completion, Program recipients are required to submit detailed financial and program reports.

- *Financial reports* are required to outline project expenditures and funding from all sources during the project life cycle.[48]

---

45 INAC. (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Operational Management Guide.*

46 Ibid.

47 INAC. (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Operational Management Guide.;* INAC. (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative*. *Results-based Management and Accountability Framework and Risk Based Audit Framework.*

48 INAC. (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative.*

- *Program reports* are required to outline the findings and outcomes of the project work, and to detail the processes by which these outcomes were achieved. The Program reviews these reports at three different levels: first, by the Program Manager; second, by the Climate Change Coordinator; and finally, by the Director, ERR.[49]

Operational Management Guide.

[49] Ibid.

4.0 Methodology

This section outlines the evaluation methodology. It describes the data collection tasks and identifies the limitations of the methodology.

4.1 Evaluation objectives and scope

The implementation evaluation examined the core issues of relevance and performance as outlined in the TBS new directive on the evaluation function (effective April 2009), including the design, delivery, and accountability issues of the Program. Specifically, the evaluation focused on the design and implementation of the Program and its preliminary results/success since its inception in 2008–09. The Terms of Reference for this implementation evaluation were approved by INAC's Evaluation, Performance Measurement and Review Committee in April 2009. Field work was completed between July 2009 and October 2009

A matrix of questions, indicators, and data sources guided the evaluation. The matrix addresses four evaluation issues: rationale/relevance, design and delivery, preliminary results/success, and alternatives. The evaluation findings (see section 5) are organized according to these issues. The evaluation questions associated with each issue are listed at the start of each of the findings sub-sections (Sections 5.1 to 5.4).

Note that the research questions in the evaluation matrix that relate to the short-term results/success of the Program were drawn from the immediate and intermediate outcomes of the Adaptation Theme and the CAA in an effort to increase the compatibility of the present evaluation with future Theme- and Agenda-level evaluations. This was accomplished by integrating the immediate and intermediate outcomes for the present Program as indicators for these higher-level outcomes. In most cases, the language of the outcomes at the Theme and Agenda levels were closely related with those of the Program. The main difference taken into consideration during the integration of outcomes was capacity building at the Adaptation Theme level, which was identified as an ultimate outcome for the Program, and was therefore excluded from this implementation evaluation.

A summative evaluation, planned for 2010–11, will gather additional evidence on the results.

4.2 Data Collection Tasks

The evaluation methodology included the following data collection tasks: document review, literature review, file review, key informant interviews, and a focus group. A technical report was prepared following the completion of each task. The evaluation findings and conclusions are based on the analysis and triangulation of these multiple lines of evidence. INAC contracted the consulting firm, Prairie Research Associates to help conduct the evaluation.

4.2.1 Document review

A profile of the Program was prepared based on a review of documents provided by the Program, such as Treasury Board Submissions, the Results-based Management and Accountability Framework and Risk-based Audit Framework (RMAF-RBAF), the Operational Management Guide, and the Applicant Guide. The information contained in the Program Profile provided the necessary background for the completion of the other evaluation tasks.

4.2.2 Literature review

The literature review included an initial scan of the relevant literature followed by the selection of key articles from the initial scan references. A scan of Canadian federal government, other countries', and international organizations' climate change initiatives concluded the search.

The literature review gathered evidence related to the rationale/relevance of the Program. The literature review report provides an overview of what climate change is, identifies the impacts of climate change on northerners, describes the process of adapting to climate change in the North, and reviews some of the adaptation strategies that are being implemented.

4.2.3 File Review

The file review provided a profile of the projects funded in 2008–09 and 2009–10, and described the progress the Program made toward its intended outcomes. It was based on the following information sources:

- Individual project files, which include the proposal, funding approval letter, contribution agreement, progress reports, final reports, and financial reports.
- The Program's performance tracking spreadsheet. This spreadsheet records project-level financial information and uses indicators to measure progress against activities, outputs, and outcomes. This spreadsheet is up-to-date for 2008–09 projects but not for 2009–10 projects as they are currently underway.
- The Program's project tracking spreadsheet, which collects information about proposal submissions, funded proposals, funding arrangements, and amendments. This spreadsheet was put in place for the 2009–10 funding year.

A total of 37 projects were included in the file review, including 19 projects[50] funded in 2008–09 (which have been completed) and 18 projects funded in 2009–10[51] (which are just getting underway).

[50] The Program funded 21 projects in 2008-09. However, some projects were combined for purposes of the file review.

[51] The Program funded 26 projects in 2008-09. However, as of June 18, 2009, information was only available for 18 of these projects.

4.2.4 Key Informant Interviews

Key informant interviews gathered respondents' perspectives on the Program's relevance, design and implementation, and progress to date.

Using a list of potential key informants provided by INAC, interviews were completed with 29 representatives from the following groups:

- INAC senior management (n=1)
- INAC representatives (n=7)
- Representatives of other federal government departments (n=3)
- Program recipients (n=18)

Key informants were emailed an introductory letter describing the objectives of the evaluation and explaining that they may be contacted for an interview.

Interviews were conducted over the phone, in the key informant's preferred official language. Prior to the interview, key informants received a copy of the interview guide so that they could provide considered responses. Separate interview guides were prepared for each type of key informant. A four-member Evaluation Advisory Committee, comprised of extensive climate change adaptation and experience and representing regions North and South of 60^0, reviewed and provided feedback on the draft interview guides.

Key informants were assured of the anonymity of their responses. To ensure accuracy, the interviews were audio-recorded (with the respondents' permission), then destroyed once the interview notes were completed.

4.2.5 Focus Group

The four members of the Evaluation Advisory Committee, who provided feedback on the draft interview guides, were invited to participate in the focus group. These individuals have extensive climate change adaptation knowledge and experience. Three of the invitees participated.

The one-hour focus group was conducted via teleconference. Participants received a copy of the discussion questions prior to the teleconference so they could prepare considered responses. The discussion centred on participants' perspectives on climate change impacts and risks, the capacity of northerners to adapt to climate change and progress made to date, and the next steps that INAC should take in supporting communities adaptation efforts.

4.3 Limitations of the Evaluation Methodology

The following are limitations associated with the evaluation methodology:

- The ability of the evaluation to measure outcomes is limited as the Program has only completed one funding cycle and many of the projects funded in the second cycle are just getting underway. However, a summative evaluation planned for 2010–11 will gather additional evidence on intended outcomes.

- Benchmark data on climate change awareness was not collected prior to the start of the Program; therefore, the evaluation could not determine the extent to which the Program increased awareness of climate change adaptation issues.

- The file review determined that project final reports did not include information on the achievement of outcomes. Therefore, the file review had to focus on identifying project activities and outputs that were likely to achieve outcomes.

- Case studies with Program recipients were a planned line of evidence to demonstrate results. However, a preliminary review of project files illustrated that this line of evidence was premature. Therefore, to gather general information on communities' adaptation progress, a focus group was conducted.

4.4 Analysis

The evaluation findings included in Section 5 are based on triangulation of all of the lines of evidence. As described in Section 4.2, the lines of evidence include a document review, a literature review, a file review, key informant interviews, and a focus group.

The strength of the support for the findings presented is assessed as:

- *Substantial* – all lines of evidence provide strong support for the finding;

- *Considerable* – most lines of evidence provide some support for the finding; and

- *Some* – few lines of evidence support the finding and/or there is limited support for the finding.

The findings section is divided into four subsections: rationale/relevance, design and delivery, preliminary results/success, and alternatives. The headings within each section provide a high-level response to the evaluation question being addressed. The findings presented reveal the analysis of multiple lines of evidence; individual lines of evidence are only identified where notable.

5.0 Findings

This section provides the evaluation findings, which are divided into the following four subsections: rationale/relevance; design and delivery; preliminary results/success; and alternatives.

5.1 Rationale/Relevance

This section provides the findings relating to the rationale/relevance of the Program. It discusses the continued need for the Program, its alignment with government priorities, and whether it duplicates or overlaps with other programs.

5.1.1 The Program is relevant to northerners and addresses the continued need to adapt to climate change

This section responds to the following evaluation question: *Is the Program addressing key environmental climate change needs? Is it relevant to the needs of northerners?*

The Program is addressing northern climate change and adaptation needs

The evaluation found substantial evidence that the Program is addressing key environmental climate change needs and is relevant to the needs of northerners. Key informants reported that one of the strengths of the Program, and one of the factors that ensures it is relevant to northerners, is that it involves communities in climate change adaptation and encourages their ownership of projects. The Program is responsive to the needs of communities because the eligibility criteria (see Section 3.4) does not specify which climate change risks projects should address (see Section 2.1 for an overview of climate change impacts on the North); rather, communities have the freedom to define the climate change priorities that their project will focus on. This flexibility is further reflected in the level of effort that Program staff put into working with proponents to ensure their proposals meet the Program requirements as well as the needs of their community, which has resulted in only one proposal being rejected.

The evaluation also found substantial evidence that the Program is helping communities understand what efforts are being undertaken to address climate change and to determine how they can plan to adapt to these changes. The Program is funding projects in each of the territories as well as South of 60^0. Based on the file review, the Program funded 37 projects, including 19 in 2008–09 and 18 in 2009–10. However, some projects received two phases of funding in a single fiscal year and some received funding in each of the Program's first two funding cycles. Table 2 below shows the distribution of projects across each region and funding year.

Table 2: Number of projects funded by region and funding year				
Region	**2008–09**	**2009–10 (as of June 16/09)**	**Total**	***Number multi-year projects**
Nunavut	3	5	8	3
Northwest Territories	3	3	6	3
Yukon	6	6	12	3
South of 60^0	4	4	8	1
Other[52]	3	-	3	-
Total	19	18	37	10
*This column indicates how many multi-year projects were funded.				

Through funded projects, communities are increasing their capacity to understand the risks associated with climate change and to undertake a systematic assessment of, and formulate a coordinated and proactive response to, the vulnerabilities and opportunities associated with climate change. They are accomplishing this by conducting literature reviews, scientific research, risk assessments, and workshops. The following are some examples, from the file review, of the work being conducted through the Program:

- ***Nunavut.*** Most of the projects funded in Nunavut support the territory's Climate Change Strategy, one component of which is the development of a Nunavut Climate Change Adaptation Plan. Three partners have received funding through this Program to support the development of an adaptation plan for the territory. Examples of activities undertaken include visiting communities, holding community workshops, conducting literature reviews, training research coordinators, and conducting scientific research. Some of the outputs produced include a research report (Climate Change Priority Issues in Nunavut), a draft Coordinators Manual for the Ittaq Heritage and Research Centre, scientific data sets and reports, and community posters. Outcomes achieved include generating new knowledge about adapting to climate change, engaging communities in climate change adaptation planning, beginning to develop adaptation tools, and beginning to prepare adaptation plans for five pilot communities.

- ***Northwest Territories.*** Some of the projects in the Northwest Territories support the northern chapter of the national assessment of climate change and adaptation, *From Impacts to Adaptation: Canada in a Changing Climate*. Activities undertaken through this Program include visiting communities to promote climate change programming, conducting climate change workshops, and assessing climate change risks/opportunities relating to infrastructure and water, reviewing literature on climate change vulnerability and adaptation, and interviewing community members. Outputs generated include community climate change planning posters, notes on public information meetings, a report entitled *Navigating the Waters of Change*, and a report on gaps in adaptation and vulnerability literature. Outcomes achieved through these projects include raising awareness of climate change in northern communities, engaging communities in the adaptation process, generating new information for use in adaptation plans, and

[52] The "other" category includes the following three projects: sponsorship of a conference that showcased northern issues as part of International Polar Year (IPY) initiative; the preparation of a research paper about food security in the Arctic; and a the preparation of a research paper that outlines, from an Inuit perspective, considerations for a climate change mitigation and adaptation strategy.

beginning to prepare pilot adaptation plans in two communities. Another project builds on general community sustainability planning efforts and a previous climate change-related workshop.

- ***Yukon.*** Projects in Yukon also build on previous work including climate change-related workshops, risk assessments, vulnerability studies, and the northern chapter of the national assessment of climate change and adaptation, *From Impacts to Adaptation: Canada in a Changing Climate*. Activities undertaken include holding a workshop to communicate the importance of adaptation, developing a risk assessment workshop, preparing a work plan for community outreach, and conducting preliminary work to support the eventual development of regional climate change scenarios, and reviewing forest management and ecology to determine the impacts of climate change. Outputs of these projects include a workshop report, a workshop agenda and materials, publication of research results and preparation of an outreach plan, and collection of preliminary archival data. Outcomes of these projects achieved include strengthened partnerships, the generation of new information for use in adaptation plans, increased community awareness of climate change, and increased community capacity to engage in adaptation planning.

- ***South of 60^0.*** Two of the South of 60^0 projects continue with previous work. One of them builds on the Centre for Indigenous Environmental Resources report, *Climate Change and First Nations South of 60^0: Impacts, Adaptations and Priorities*, assessing the adaptive capacity of First Nation communities. The other builds on work that the Nunatsiavut Government completed, and continued the dialogue on climate change adaptation planning and built community capacity. Activities completed through these projects include a literature review, an environmental scan, the creation of a literature and knowledge database, and key informant interviews. Outputs include final reports. Outcomes achieved include strengthened partnerships, the generation of new information for use in adaptation plans, and increased community awareness of climate change.

Continued support for adaptation is needed

The evaluation also confirmed there is a continued need for adaptation in the North, to reduce the adverse impacts of climate change, and to enhance beneficial impacts. Key informants reported that communities would cease adaptation planning if the Program was not available. Partly, this is because no other climate change adaptation programs targeted at the North exist (see Section 5.1.3). However, as documented in the literature and raised by key informants, it also reflects the wide range of priorities communities must address, including the environment (e.g., contaminants), community infrastructure, pipelines, and social issues (i.e., housing, food security, and poverty). According to the literature, the ability of communities to adapt to climate change without support is limited by their high reliance on natural resources, poverty, inadequate safety nets, and limited financial resources to undertake projects.[53] Budreau and McBean (2007) argue that government intervention is necessary to assist with these limitations.[54]

---

53 Thomas, D.S.G. and Twyman, C. (2005). Equity and Justice in Climate Change Adaptation Amongst Natural-Resource-Dependent Societies. *Global Environmental Change, 15,* pp. 115-124.

54 Budreau, D., & McBean, G. (2007). Climate Change, Adaptive Capacity and Policy Direction in the Canadian North: Can We Learn Anything from the Collapse of the East Coast Cod Fishery? *Mitig Adapt Strat Glob Change, 12,* pp. 1305-1320.

The evaluation also demonstrated that a three-year program cannot address all of the adaptation needs in the North. Although the Program has been successful in reaching several communities, as is discussed in Section 5.2.1, and many Program recipients have participated in previous INAC programs, some communities are just becoming aware of climate change-related issues and have not had the opportunity to participate in adaptation planning activities as the Program is just starting to build momentum. Moreover, adaptation planning is a long-term process that involves multiple phases, as follows:

- Raising awareness of climate change;
- Identifying climate change risks/opportunities;
- Developing the capacity to address climate change; and
- Establishing adaptation plans.

As such, some communities will require multiple years of funding to complete their adaptation plans. Further, the evaluation found substantial evidence that communities are unlikely to implement their adaptation plans without access to additional resources.

The following is typical in developing climate change adaptation strategies:

Assessment of community vulnerabilities/adaptive capacity → Development of an adaptation plan → Implementation of sector-specific adaptation actions.

Although the Program's objectives and eligibility criteria suggest that funding can be used for some implementation activities (excluding infrastructure development, renewable energy or energy efficiency and capital development), Program staff indicated that the Program recognizes that it does not have sufficient financial resources to support this activity. Therefore, the current Program is addressing the first two items only, in the adaptation strategy.

Some key informants indicated that if the Program is not continued, this would signal to communities that climate change is no longer a priority issue for the Government of Canada, which may discourage communities from proactively adapting to climate change. They also suggested that gaps in programming will likely result in the need to redo work due to lost momentum, and the turnover in community members actively engaged in responding to climate change challenges.

5.1.2 Program aligns well with government priorities

This section responds to the following evaluation question: *Is the Program aligned with federal government priorities and INAC priorities?*

The evaluation found that the Program aligns well with the priorities of the federal government and INAC.

Alignment with federal government priorities

The Government of Canada has a long history of involvement in climate change initiatives and remains committed to addressing climate change today. The following are some of the Government of Canada's current climate change-related activities:

- ***The Clean Air Agenda (CAA).*** CAA represents Canada's continued commitment to addressing climate change. It forms the Government of Canada's response to improve the environment by reducing air pollution and GHGs. The CAA includes program measures to address actions in key areas, including adaptation. Programs under the Adaptation Theme seek to increase the resiliency and capacity of Canadians to reduce their vulnerability to the impacts of climate change.

  By funding adaptation-related projects, the Program aims to increase the capacity of northerners to adapt to climate change impacts. This outcome supports the CAA's long-term outcome to reduce risks to communities, infrastructure, and the health and safety of Canadians resulting from climate change. It also supports the intermediate outcome of Canadians and communities taking action to reduce their vulnerabilities from and adapt to predicted impacts of climate change.

- ***International Polar Year (IPY).*** The Canadian government dedicated $150 million to Canadian science and research projects as part of IPY 2007–2008, which was "the largest-ever international program of scientific research focused on the Arctic and Antarctic regions."[55] Canada is funding 43 projects,[56] focusing on science and research activities related to climate change impacts and adaptation, and the health and well-being of northern communities.[57]

- ***United Nations Framework Convention on Climate Change (UNFCCC).*** The UNFCCC took effect in 1994 and includes the participation of 192 countries around the world, including Canada. The UNFCCC is an international treaty that considers options to reduce global warming and adapt to inevitable temperature changes. In support of the treaty, participating countries agreed to develop national programs to slow climate change and support climate change activities in developing countries.

- ***The International Panel on Climate Change (IPCC)***. Canada is one of the member countries of the IPCC, which the United Nations Environment Programme and the World Meteorological Organization established in 1989 to "provide the governments of the world with a clear scientific view of what is happening to the world's climate."[58] One of the IPCC's working groups focuses on climate change impacts, adaptation, and vulnerability. The IPCC is currently working on a special report: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*.

Despite substantial documented evidence of the Government of Canada's commitment to address climate change, some key informants said they had limited understanding of how the Program aligns with government priorities. The only climate change-related activity that they identified the federal government as being involved in was the CAA, although they were not clear on how

---

55 International Polar Year (IPY). (2008). *International Polar Year 2007-2008: A Valuable Opportunity for Canada.* Retrieved September 9, 2009 from, http://www.api-ipy.gc.ca/pg_IPYAPI_046-eng.html

56 Brief descriptions of the 43 projects selected by the Canadian government as part of IPY 2007–2008 can be found at the following web address: http://www.ipy-api.gc.ca/pg_IPYAPI_050-eng.html

57 International Polar Year (IPY). (2008). *International Polar Year 2007-2008: A Valuable Opportunity for Canada.* Retrieved September 9, 2009 from, http://www.api-ipy.gc.ca/pg_IPYAPI_046-eng.html

58 Intergovernmental Panel on Climate Change (IPCC). (2009). *Organization.* Retrieved September 10, 2009 from, http://www.ipcc.ch/organization/organization.htm

the Program supported it. It is not clear what factors contributed to this; it may reflect that most Program staff do not have responsibilities directly linked to the CAA; as well, it could be the lack of clarity and collaboration around the theme level objectives of the Program. This issue could be further explored in the summative evaluation.

Alignment with INAC priorities

The evaluation found that the Program closely aligns with INAC's priorities.

INAC has a departmental mandate to assist northern communities in efforts to "improve social well-being and economic prosperity; develop healthier, more sustainable communities; and participate more fully in Canada's political, social and economic development – to the benefit of all Canadians."[59] To this end, the Department delivers programs through six strategic outcomes, three of which the Program contributes to: *The North* – The people of the North are self-reliant, healthy, skilled and live in prosperous communities; *The People* – Individual and family well-being for First Nations and Inuit; and *The Land* – Sustainable management of First Nations and Inuit lands, resources and environment.[60]

Additionally, the Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program builds on the following two former INAC programs:

- *The Aboriginal and Northern Climate Change Program (ANCCP).* The purpose of the ANCCP (2001 to 2003) was to create awareness of and interest in sustainable energy use and production in northern communities. Through this program, many opportunities were realized for energy use and GHG emissions reductions.

- *The Aboriginal and Northern Community Action Program* (*ANCAP)*. INAC delivered this $30.7 million program (2003 to 2007) in partnership with NRCan. The ANCAP aimed to create sustainable energy solutions for northern communities, with a specific focus on reducing the consumption of diesel fuels.

While the ANCCP was an awareness program, the ANCAP was an action program that assisted northern communities with the development of initiatives related to community energy planning, capacity building, raising awareness, energy efficiency, renewable energy, alternate diesel technologies, and sustainable transportation.[61] Although these programs focused on mitigation, adaptation measures were also an important component. INAC and the northern community at large deemed these programs as highly successful.[62]

5.1.3 No evidence of program duplication

This section responds to the following evaluation question: *Does the Program complement or duplicate/overlap with other Adaptation initiatives? If so, what actions should be taken to address unnecessary duplication or overlap?*

---

59 INAC. (2008). Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Operational Management Guide.

60 Ibid.

61 Centre for Indigenous Environmental Resources. (2007). *Reflections on Success – A Sustainable Future in a Changing Climate*. Retrieved August 19, 2009 from, http://www.ainc-inac.gc.ca/enr/clc/cen/pubs/ros/ros-eng.asp

62 Ibid.

The evaluation found no evidence of duplication with other programs. None of the funded projects received funding from another climate change adaptation program. Key informant interviews provided two explanations for this:

- No other formal climate change programs aimed at the North exist.
- The Program works with other federal departments involved in climate change adaptation activities, such as NRCan and Environment Canada (EC), to ensure their programs do not duplicate each other.

As a result of the Program, projects have leveraged about $1.9 million in financial and in-kind resources from other federal departments, provincial governments, professional associations/consultants, and community organizations. This includes $164,000 of financial resources and $366,000 of in-kind resources in 2008–09, and $330,000 of financial resources and $1 million of in-kind resources in 2009–10.

Complementary activities

Although the Program does not duplicate or overlap with other programs, the evaluation found some evidence that complementary activities are occurring. The literature indicates that the territorial governments are beginning to develop territory-wide climate change action plans.

- ***Yukon Government Climate Change Action Plan.*** In February 2009, the Yukon government released a Climate Change Action Plan, which builds on the Climate Change Strategy that it released in 2006. Some of the planned actions are being conducted with funding from the Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program.[63]
- ***Nunavut Climate Change Adaptation Plan.*** During the summer of 2008, the Nunavut Climate Change Adaption Plan (NCCAP) was in development and a draft version of the Plan was expected to be ready for circulation in the fall of 2008. Several of the projects funded through the Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program are intended to support the development of the NCCAP.
- ***Northwest Territories Climate Change Impacts and Adaptation Report.*** In 2008, Northwest Territories Environment and Natural Resources developed the *Northwest Territories Climate Change Impacts and Adaptation Report*. The report describes the climate change impacts being observed in the Northwest Territories and identifies the adaptation measures being undertaken to respond to those impacts.

The literature also provides examples of northern communities that are adapting to climate change, without assistance from the Program; however, most of these adaptations are reactive responses to immediate threats and involve behavioural changes such as taking extra care and caution while travelling, altering hunting practices, preparing for anticipated flooding. They are not implementing large-scale, expensive adaptation projects without support from other sources.

- ***The Council of Yukon First Nations.*** The Council of Yukon First Nations (CYFN), representing 11 of the 14 First Nations in Yukon and four Gwich'in First Nations in the

[63] Yukon Government. (2009). *Yukon Government Climate Change Action Plan.* Retrieved September 10, 2009 from, http://www.environmentyukon.gov.yk.ca/pdf/YG_Climate_Change_Action_Plan.pdf

Mackenzie Delta region, is developing climate change adaptation strategies at the community level. Its climate change strategy is built around three themes: 1) core capacity to coordinate and manage Yukon First Nation responses to climate change impacts; 2) support for directed community research; and 3) communication, public education, and partnership development. CYFN's approach to enhancing the adaptive capacity of local communities is to provide the climate change concerns of Yukon First Nations to the right people at the right time. Additionally, Yukon First Nation Elders have established the Elders Panel on Climate Change, which has participated in and helped direct CYFN's work on climate change.[64]

- ***Arctic Bay and Igloolik, Nunavut.*** Table 3 identifies the adaptation strategies that are being implemented in Arctic Bay and Igloolik. Similar responses have been documented throughout Nunavut.[65]

Table 3: Arctic Bay and Igloolik community members' adaptation strategies

Climate change impact	Adaptation strategy
Unpredictability of weather, wind, and ice	▸ Taking extra food, gas, and supplies in anticipation of potential dangers when venturing out on the land
	▸ Making sure they travel with others when possible
	▸ Being risk adverse by avoiding travelling on the land or water if they expect bad weather
	▸ Using TV and radio weather forecasts to complement traditional forecasts
	▸ Taking along new equipment, such as personal location beacons, immersion suits, and satellite phones when venturing out on the land
Waves or stormy weather (for summer boating)	▸ Waiting in the community for adequate conditions
	▸ Identifying safe areas where shelter can be found prior to travel
Snow covered thin ice	▸ Avoiding snow covered areas
	▸ Taking extra care while travelling
Reduced accessibility to hunting areas	▸ Waiting in the community until hunting areas are accessible
	▸ Switching species and location
	▸ Developing new access routes (e.g., overland travel instead of ice travel)
	▸ Sharing country[66] food

Source: Ford et al., 2007, pp. 154–155

- ***Sachs Harbour, Northwest Territories.*** Sachs Harbour is using several adaptive measures to address climatic and environmental changes:
  - Hunters are staying closer to the community while out on the ice to avoid increasingly unpredictable sea-ice conditions;
  - Weather and environmental conditions are being closely monitored due to increased unpredictability;
  - All-terrain vehicles instead of snowmobiles are used for travel when there is inadequate snow cover; and
  - New lakes are being used for fishing when erosion has made it difficult to fish or when fish stocks have been depleted.[67]

64 Furgal, C., and Prowse, T.D. (2008): Northern Canada. In *From Impacts to Adaptation: Canada in a Changing Climate 2007.* Lemmen, D.S., Warren,, F.J., Lacroix, J., & Bush, E. (Eds). Ottawa: Government of Canada, pp. 57–118.

65 Ford, J. et al. (2007). Reducing Vulnerability to Climate Change in the Arctic: The Case of Nunavut, Canada. *Arctic, 60*(2), pp. 150-166.

66 Country food is the traditional food of Aboriginals, such as food gathered from fishing and hunting.

- ***Aklavik and Fort Liard, Northwest Territories.*** Aklavik and Fort Liard have implemented adaptation strategies to address flooding. They include:
  - Developing strong awareness of signs and conditions preceding a flood event;
  - Moving belongings in preparation for anticipated flooding;
  - Broadcasting flooding-related information within the community; and
  - Developing evacuation procedures.[68]

Although a small number of key informants acknowledged that some communities are reactively adapting to climate change out of necessity, they indicated that communities require additional resources to formulate proactive responses. These resources would help bring communities together to share best practices and lessons learned and facilitate the development of collaborative networks across communities.

5.2 Design and delivery

This section provides the findings related to the design and delivery of the Program. It discusses the Program objectives, implementation, management and accountability, performance measurement, and best practices/lessons learned.

5.2.1 Program objectives

This section responds to the following evaluation question: *Has the Program been implemented (or is it on track to being implemented) as planned?*

The evaluation found that all of the funded projects support the Program's objectives to assess and identify risks and opportunities related to the impacts of climate change and to develop climate change adaptation plans. The Program is funding projects that are designed to raise awareness of climate change, identify climate change risks and opportunities, generate new scientific knowledge, help build capacity to adapt to climate change, and begin work on developing adaptation plans (see Section 5.3 for information on preliminary results). Projects closely relate to the Program objectives and rationale for the Program because, through the proposal review process, program staff work extensively with proponents to ensure proposals meet Program and departmental requirements and the specific needs of communities.

However, the second objective of the Program (see Section 3.1) requires clarification. This objective suggests the Program is intended to assist northerners to develop *and* implement climate change adaptation projects and/or plans. Much of the Program focuses on the development of adaptation planning. Most costs related to implementation (e.g., infrastructure and capital costs) are not eligible for funding as the Program does not have access to the financial resources needed to support implementation projects.

---

67 Ford, J.D. & Smit, B. (2004). A Framework for Assessing the Vulnerability of Communities in the Canadian Arctic to Risks Associated with Climate Change. *Arctic, 57*(4), pp. 389-400.

68 Ibid.

5.2.2 Program was implemented as planned

This section responds to the following evaluation question: *Has the Program been implemented (or is it on track to being implemented) as planned?*

The evaluation found considerable evidence that funded projects are on track and have been implemented as planned. Although several key informants mentioned that there have been delays in issuing funding to projects, in most cases, it has not impacted the scope of the funded projects or Program recipients' ability to complete their projects on time. However, some key informants reported that delays in receiving funding can make it challenging to complete projects on time, especially since they are only funded for one-year at a time. They also said that short summers in the North can further exacerbate this challenge.

Although the Program met its target of funding 20 or more projects per year; it funded 21 projects in 2008–09 and 26 projects in 2009–10 (and is expecting to receive five more proposals), expenditures on contribution agreements were lower than projected in 2008–09. The Program's original budget included $3.1 million for contribution agreements in 2008–09, $3.6 million in 2009–10; and $3.5 million in 2010–11. However, forecasted expenditures for 2009-2010 were increased to $4.1 million due to a re-profiling of $500K of funding from 2008-09 to 2009-10.

According to the file review, and as shown in Table 4, the Program committed $1.4 million to projects in 2008–09 and $2.9 million in 2009–10. However, according to the Program's financial reports, project-related expenditures for 2008-09 were only $1.2 million. The reason for this difference is unclear.

Table 4: Expenditures on contribution agreements

Requirements	2008–09	2009–10	2010–11	Total
	($ '000)			
Planned expenditures	$3,100	$3,600	$3,500	$10,200
Actual expenditures based on file review	$1,437	$2,867	Not applicable	$4,304
Actual expenditures based on financial reports	$1,200	$4,100 (forecasted)	$3,500 (forecasted)	$8,800 (forecasted)

Table 5 provides the value of projects funded by region and fiscal year.

Table 5: Value of projects funded by region and fiscal year			
Region	**2008–09**	**2009–10**	**Total expenditures**
Nunavut	$371,801	$503,211	$875,012
Northwest Territories	$324,960	$853,070	$1,178,030
Yukon	$611,165	$775,417	$1,386,582
South of 60^0	$70,050	$735,237	$805,287
Other	$58,750	-	$58,750
Total	$1,436,726	$2,866,935	$4,303,661

Some implementation challenges were encountered

Although the Program was essentially implemented as planned, program staff identified the following challenges.

- *Obtaining human resources.* When the Program began, it did not have a manager and it only had two staff members. This contributed to the need to re-profile some of the funding from 2008–09 to 2009–10 as the Program did not have sufficient human resources to review proposals and manage projects. To resolve this problem, a program manager was hired and additional staff members were recruited. As of summer 2009, the Program was fully staffed.

- *Obtaining communications approval.* The Program has not been able to produce brochures or develop a website due to delays in obtaining communications approval. To overcome this challenge, program staff proactively contacted communities to tell them about the Program and help them identify research needs and prepare proposals. Because of this, the Program did not receive as many proposals for the first funding cycle as anticipated and many of the Program recipients had participated in previous INAC programs. Nonetheless, program managers said that awareness of the Program is increasing. They also noted that the Program is beginning to launch a website.

- *Processing contribution agreements.* Funding proposals are reviewed as they are received, which means contribution agreements are processed on an ad hoc basis. Internal procedures have delayed the processing of contribution agreements, which causes delays in issuing funding to Program recipients. This can make it difficult for Program recipients to complete their projects within the fiscal year. This issue has not been resolved.

- *Overstating the existing adaptive capacity of communities.* The Program also has not been able to determine the adaptive capacity of some communities. This makes it difficult for the Program to target communities that INAC has not worked with or that have not begun to address climate change. The Program Advisory Committee, which is in development, may be able to help address this issue.

- *Identifying northern organizations with a mandate to conduct adaptation planning.* The Program has had difficulty identifying northern organizations with a mandate to conduct adaptation planning. The Program Advisory Committee and/or INAC regional offices may be able to help address this issue.

Program recipients also identified some implementation challenges, which, to this point, have not affected their ability to complete their projects.

- *Preparing proposals.* Some proposals required extensive revisions to meet the requirements of the Program and INAC.

- *Identifying/engaging relevant stakeholders/decision makers.* It can be difficult for proponents to know if they have included all of the relevant key players in their project.

- *Coordinating/communicating with large collaborations.* It can be challenging and time-consuming to manage large collaborations. Sometimes Program recipients do not have the resources to sufficiently manage large groups.

- *Covering researchers' travel costs to the North.* Sometimes there is not enough room in the budget to cover multiple trips to communities. Additionally, travel can be uncertain in inclement weather.

- *Waning community enthusiasm.* Communities can lose interest in projects when there are delays or if the results do not lead to immediate action.

5.2.3 Formal management structures are in place

This section responds to the following evaluation question: *To what extent is the management and accountability structure in place and functioning as anticipated?*

There is substantial evidence that the Program has developed and implemented formal management structures as planned, except for the Advisory Committee. Table 6 lists and describes the management and accountability structures that the Program developed and put in place in its first year of operation. It also identifies some challenges encountered in this area.

Table 6: Management and accountability structures

Management/ accountability structure	Description	Challenges
Operational Management Guide	This guide defines the management structures and process used to implement the Program. It describes the management framework (including staff roles and responsibilities); targeted recipients; program resources; management challenges; the proposal submission and review processes; and auditing and reporting requirements.	Program objectives are unclear (see Section 5.2.1)
Applicant Guide	This guide identifies the Program objectives and eligibility requirements. It also includes a template to guide the preparation of proposals (refer to the Program description in Section 3.0).	Although proposals are to be prepared in accordance with the Applicant Guide, the file review determined that many of the proposals involving multi-year projects do not clearly describe the work to be completed in the current funding year. Proposals for multi-year projects are required to describe the overall project and then identify the work to be completed in the current funding year. However, information on the different phases of the project tends to appear throughout the proposal, which makes it difficult to determine activities, outputs, and outcomes associated with the current year.
Technical Review Committee	This committee, comprised of program staff and chaired by the Program Manager, reviews proposals (see Section 3.4) and makes funding	None

Table 6: Management and accountability structures		
Management/ accountability structure	**Description**	**Challenges**
	recommendations to the Director, ERR.	
Contribution agreements	Contribution agreements are used to issue funding to Program recipients and to define the reporting requirements that projects must fulfill.	Internal processes can delay the signing of these agreements (see Section 5.2.2)
Project reporting requirements	Program recipients must submit financial reports and a final project report.	The file review determined that many of the project final reports do not explicitly report on outcomes. The Program has not created a template to guide the preparation of project reports. Therefore, project reports vary in structure and level of detail. Although they tend to include information on activities and outputs, they typically do not report on outcomes.
Project tracking system	This system is used to track proposals received, outcomes of the proposal review process, and status of the project. This system was implemented in 2009–10.	None
Performance tracking database	This database is used to track project outcomes.	The database includes information on expected outcomes of projects, but does not identify results that have been achieved (see Section 5.2.4 below)
Advisory Committee	*Has not yet been established*	Work on this Committee is underway. Program staff indicated that they are trying to coordinate the development of this Committee with the development of the Advisory Committee for INAC's ecoENERGY Program.

5.2.4 Performance measurement requires improvement

This section responds to the following evaluation question: *Is appropriate performance data being collected and reported? If so, is this information used to inform senior management?*

The evaluation found that the Program is attempting to measure performance using a project performance database, which it created and maintains, to track the following indicators for all projects:

- Number of adaptation action plan projects that are funded;
- Number of adaptation tools produced from funded projects;
- Number of funded projects that identify risks and impacts, and produce risk management strategies;
- Number of climate change risk management strategy projects that are funded;
- Aboriginal and northern capacity building projects and training initiatives (e.g., outreach and communication material, educational material, and project results that can be shared as best practices);
- Aboriginal and northern communities undertaking risk assessment, management, and communication initiatives;

- Extent to which INAC has established effective partnerships with territorial, Aboriginal, and provincial governments;

- Aboriginal and northern communities have access to adaptation resources (e.g., contribution agreements—funding for salaries, analysis and other elements, outputs from projects available as resources);

- Aboriginal and northern communities have access to resources that are directed to assessing risks and developing strategies for infrastructure management;

- Aboriginal and northern communities are undertaking or implementing adaptation planning; and

- Actions have been taken to integrate climate change risk management in planning, decision making, and project implementation.

Program staff said the performance tracking database is used to ensure diversity in type and location of projects; to identify projects' expected outcomes; to brief senior management; and to collect data for evaluations/program renewal. However, they indicated that the Program has limited resources to devote to maintaining the database.

Although the project tracking database is in place, opportunities for improvement exist. Currently, the spreadsheet simply indicates which of these outcomes each project is expected to achieve. However, it is not clear what data source is being used to populate the database, it does not describe how results were achieved, and it does not identify the communities reached, the adaptation tools developed, or which communities have completed adaptation plans. The database also suggests that each project is expected to achieve the Program's long-term outcomes, which may not be a reasonable expectation.

The Program is required to prepare annual reports. Although the 2008–09 annual report has not been completed, program staff said it is being developed.

5.2.5 Best practices and lessons learned were identified

This section responds to the following evaluation question: *What are the best practices and lessons learned from the Program?*

Key informants identified some practices believed to be successful and worthy of continuing and sharing.

Best practices

- Base programs on an equal partnership approach, not a top-down approach. Having the main players from the communities at the table will help ensure programs are designed in a way that meets community needs. Based on the focus group, the Northern Contaminants Program was identified as an example of a program that worked well.

- Use a Technical Review Committee to review proposals, which avoids placing individual staff members in the position of directly providing feedback on proposals to proponents.

This way, requirements for revisions are based on feedback from the Technical Review Committee.

- The community where the project is being implemented should always have a project representative at the community-level. This is believed to encourage participation from the community. As well, the person who develops the adaptation plan should be someone who intends to stay in the community. This will ensure that adaptation plans are relevant to the community, as well as increases the likelihood that the plans will be implemented.

- Obtaining letters of support from the community demonstrates their commitment to the project.

Lessons learned

Key informants said the following lessons have been learned through this Program:

- Ongoing promotion of the Program is needed. This raises the profile of climate change and the need for adaptation. It also helps keep communities engaged in the adaptation process.

- Communities have many priorities to address. It is important for programs to recognize that climate change is only one of the many issues that communities need to address. Integrating climate change adaptation in other programs may help communities maximize the use of their overburdened human resources, including volunteers.

- Political processes can make it difficult for individuals located outside of the territory in question to obtain permission to conduct research.

- Adaptation plans cannot be developed in one year as the adaptation process involves many stages (see Section 5.1.1).

- Communities are unlikely to implement their adaptation plans without continued support (see Section 5.1.1).

5.3 Preliminary Results/Success

This section provides the findings related to the preliminary results/successes of the Program. It discusses collaboration, the availability of and access to climate change and adaptation information, and the use of adaptation tools and information.

In assessing progress toward intended outcomes, it is important to note that funded projects have had limited opportunity to demonstrate outcomes. At the time of the evaluation, the Program had only completed its first full year of funding and was in the process of issuing funding for the second year. Therefore, only intended outcomes are available for ongoing projects. Further, it is difficult to assess the success of the funded projects since their final reports tend not to include outcome information (see Section 4.3).

Additionally, developing climate change adaptation plans is a long-term process that involves raising awareness of climate change, identifying climate change risks/opportunities, developing

the capacity to address climate change, and drafting adaptation plans. Therefore, many of the projects will not achieve their final objectives until they have completed multiple years of work.

5.3.1 Collaboration

This section responds to the following evaluation question: *What progress has the Climate Change Adaptation Program made toward greater collaboration to address issues of climate change?*

The literature asserts the most effective adaptation policies involve the collaboration of all parties affected by climate change in a specific area.[69] One reason for this is that industry, government, communities, and individuals may perceive climate change risks and communities' adaptive capacity differently. Further, the use of Indigenous knowledge and Indigenous participation will help define the cultural impacts programs may have on their communities.[70] For example, First Nations tend to have cultural and economic ties to the land and may be unwilling or unable to relocate an entire community as an adaptation strategy. Without collaboration, the result will be varying adaptive responses and increased tensions between the parties.[71]

The evaluation found substantial evidence that a wide range of stakeholders such as scientists, consultants, experts, and communities are collaborating on projects. All 19 projects funded in 2008–09 contributed to, and all 18 projects funded in 2009–10 are expected to contribute to, greater collaboration to address climate change issues. Some of the projects established formal partnerships and others involved visiting communities to raise awareness of climate change and to try and engage communities and other stakeholders in adaptation planning. Of the projects funded in the first two years of the Program, 81 percent involved government partnerships, 68 percent involved community partnerships, and 32 percent involved other partnerships (e.g., with academics, scientists, or planners).

Key informants also confirmed that a range of stakeholders such as scientists, consultants, experts, and communities are collaborating on projects, which reflects the Program requirement that projects incorporate collaboration with other stakeholders. Key informants provided a couple of examples of how the Program contributes to collaboration:

- The Program has contributed to the development of effective collaborations with territorial governments and has encouraged territorial governments to explore ways of formulating an integrated response to climate change in the North.

---

69 Newton, J., Paci, C.D.J., & Ogden, A. (2005). Climate Change and Natural Hazards in Northern Canada: Integrating Indigenous Perspectives with Government Policy. *Mitigation and Adaptation Strategies for Global Change, 10,* pp. 541-571.; Warren, F.J. et al. (2004). *Climate Change Impacts and Adaptation: A Canadian Perspective.* Ottawa: Climate Change Impacts and Adaptation Directorate, Natural Resources Canada, Government of Canada.

70 Arctic Climate Impact Assessment. (2004). *Impacts of a Warming Arctic*. New York: Cambridge University Press.

71 Warren, F.J. et al. (2004). *Climate Change Impacts and Adaptation: A Canadian Perspective.* Ottawa: Climate Change Impacts and Adaptation Directorate, Natural Resources Canada, Government of Canada.

- The Program has helped create a strong network of researchers and communities who are interested in climate change adaptation.

5.3.2 Communities are accessing information

This section responds to the following evaluation question: *What progress has the Climate Change Adaptation Program made toward increased availability of and access to information, technical expertise, and products on adaptation to climate change?*

The evaluation found considerable evidence that the Program is increasing the availability of and access to information, technical expertise, and products on adaptation to climate change.

Key informants believe the Program is raising community awareness of climate change. Although they believe awareness is increasing, they cautioned that communities were only introduced to the concepts of risk assessment and adaptation a couple of years ago and therefore are still developing their understanding of what these activities entail. Key informants also reported that climate change does not tend to be a primary concern for communities. The evaluation could not assess the extent to which awareness has increased since baseline data was not collected prior to the start of the Program.

The evaluation found some evidence that projects are contributing (or are expected to contribute) to increasing the availability of and access to information, technical expertise, and products on adaptation to climate change. According to the file review:

- Almost all of the projects (95 percent) involve outreach, communication, and/or education activities. This includes 100 percent (n=19) of the projects in 2008–09 and 95 percent (n=17) of the projects in 2009–10.

- The majority of projects (84 percent) involve capacity building or training. This includes 74 percent (n=14) of the projects in 2008–09 and 100 percent (n=18) of the projects in 2009-10.

- Half of the projects (51 percent) aim to increase the capacity of communities to conduct and/or apply science. This includes 37 percent (n=7) of the projects in 2008–09 and 71 percent (n=12) of the projects in 2009–10.

- Fewer than half of the projects (43 percent) involve the distribution of results. However, none of the 19 projects funded in 2008–09 involved this activity, likely because many of them focused on building capacity (n=16, 84 percent) and assessing climate change risks (n=12, 63 percent) and opportunities.

- Less than one-quarter of the projects provided access to support to develop plans (24 percent) or developed new adaptation approaches (22 percent). This reflects that the development of plans is a long-term process that must be undertaken in stages, beginning with raising awareness; identifying and prioritizing risks and opportunities; identifying adaptation strategies; and then preparing the adaptation plan. Within this spectrum of activities, some communities may also need to engage in capacity building.

- Few projects in the first year of the Program (n=3) provided access to support to develop plans or involved the development of new adaptation approaches (n=2).

- None of the 37 projects created new experts. Rather, communities are collaborating with existing experts on their projects.

Key informants said experts are working with communities to increase their understanding of climate change risks and adaptation approaches, and Program recipients reported that projects are developing climate change adaptation information that is accessible and relevant to northern communities. To increase distribution of project results, program managers noted that the Program intends to post completed project reports on its website once it is launched.

These results suggest that most communities are in the first stages of adaptation planning: assessment of community vulnerabilities/adaptive capacity. Following completion of this stage, they will begin to develop adaptation plans and then implement them.

5.3.3 Communities are using tools and information

This section responds to the following evaluation question: *What progress has the Climate Change Adaptation Program made toward achieving the following intended outcomes: Northern communities and user groups are using tools and information to assess climate change risks/opportunities and to plan adaptation strategies?*

The evaluation found some evidence that northern communities and user groups are using tools and information to assess climate change risks and opportunities and plan adaptation strategies.

Some communities are beginning to engage in adaptation planning; however, they are in the early stages of this process. The file review determined that:

- Almost all of the projects (95 percent) evaluated (or plan to evaluate) climate risks and opportunities. This includes 100 percent (n=19) of the projects in 2008–09 and 95 percent (n=17) of the projects in 2009–10.

- About two-thirds of the projects (65 percent) identified (or plan to identify) responses to risks and opportunities. This includes 58 percent (n=11) of the projects in 2008–09 and 76 percent (n=13) of the projects in 2009–10.

- Only one project reported basing planning decisions on identified risks and opportunities.

- None of the project reports discussed integrating climate change information into community planning and decision-making processes. Further progress toward this outcome will be investigated in the upcoming summative evaluation.

Program managers reported that although projects are developing adaptation tools, there are no processes in place to track how communities are using them.

The evaluation did not find evidence to support whether planning decisions are being based on identified risks and opportunities or if climate change information or adaptation information is being integrated in planning and decision-making processes. The project files did not contain this information, program managers said it is difficult to comment on whether communities are considering climate change in their decision-making processes, nor were Program recipients able to offer any insights.

5.3.4 Program resulted in one unintended outcome

This section responds to the following evaluation question: *Have there been unintended outcomes (positive or negative) as a result of the Program?*

The evaluation found some evidence that the Program has resulted in one unintended outcome. According to Program recipients, the Program has helped develop the capacity of communities to prepare proposals and engage in networking.

5.4 Alternatives

This section provides findings related to Program alternatives. It responds to the following evaluation question: *Are there more cost-effective and efficient means of achieving objectives of the Climate Change Adaptation Program?*

The evaluation found considerable evidence that the Program is the best approach to support climate change adaptation planning. As discussed in Section 5.1.1, it targets the North; has the flexibility required to respond to the needs of northern communities; encourages community involvement in projects; and helps communities that participated in the Program conduct climate change-related groundwork (also see Sections 5.3.2 and 5.3.3). Additionally, as Section 5.3.1 indicates, the Program fosters collaboration between partners who may not typically work together, including governments, communities, and experts (e.g., scientists, academics, and planners).

Although the Program represents the best approach to assisting communities with climate change adaptation planning, key informants identified the following opportunities to enhance the Program:

- *Coordinating the Program with the ecoENERGY Program.* Both programs address climate change and involve the participation of northern communities. The coordination of these could enable communities to concurrently address energy- and climate change adaptation-related issues, thereby creating opportunities to develop an integrated response to the challenges they face.

- *Strengthening relationships with INAC regional offices.* As mentioned in Section 5.2.2, the Program has experienced challenges identifying northern organizations with a mandate to conduct adaptation planning. INAC's regional offices are familiar with the communities the Program targets and, therefore, could help connect the Program with communities and organizations that have not engaged in previous INAC programs or climate change adaptation planning.

- *Increasing climate change-related collaboration with other federal departments and territorial governments.* Various federal departments, including, but not limited to, INAC, NRCan, and EC, as well as territorial governments, are working to address climate change-related issues. Through increased collaboration, the departments could build on each other's area of expertise, gain knowledge of key players/stakeholders, and offer a more unified response to climate change.

- *Providing multi-year support to projects.* This would give communities confidence that each phase of their project will be supported. As described in Section 5.1.1, to achieve their overall objective, many of the funded projects require multiple phases of work. For example, a project intended to culminate with the development of an adaptation plan may require three years of work to identify and prioritize climate change vulnerabilities and opportunities (Year 1); identify adaptation strategies (Year 2); and draft and finalize the adaptation plan (Year 3). Currently, the Program only approves funding in one-year increments, thereby leading to the possibility of rejected proposals for subsequent years of funding. If this occurs, the work completed in previous funding cycles may not be continued, which creates the risk that these former projects will not achieve their intended outcomes. Although the Program does not distribute funding in multi-year agreements, it funded nearly all proposals from past recipients over the years 2008/09 and 2009/10.

- *Increasing program managers' presence in communities.* Increasing travel budgets for program managers to visit communities would enable them to further develop their relationships with communities they are working with and to develop new relationships with communities that have not previously participated in INAC programs.

- *Establishing long-term, community-based positions that focus on climate change adaptation.* Such positions would raise the profile of climate change issues and the need for adaptation. It would provide opportunities for repeat messaging, to engage community members in responding to climate change, and identify an individual to champion a continued response. These could be INAC-funded positions for community members (perhaps one per region). The Program would be responsible for defining a terms of reference and qualifications for the position as well as candidate selection.

6.0 Conclusions and Recommendations

This section provides conclusions for the evaluation and offers recommendations for consideration.

Relevance/rationale

Responsiveness to the needs of communities

The evaluation confirmed there is a continued need for adaptation in the North, to reduce the adverse impacts of climate change, and to enhance beneficial impacts. The Program is helping communities understand what efforts are being undertaken to address climate change and to determine how they can plan to adapt. However, the evaluation found considerable evidence that communities would cease adaptation planning if the Program was not available. Partly, this is because no other climate change adaptation programs that target the North exist. It also reflects the wide range of priorities communities must address.

The evaluation demonstrated that a three-year program will not be able to reach all of the communities in the North; there are some communities that have not yet engaged in adaptation planning. It also found substantial evidence that communities are unlikely to implement their adaptation plans without access to additional support.

Alignment with government priorities

The evaluation found that the Program aligns well with the priorities of the federal government and INAC. The Government of Canada has a long history of involvement in climate change initiatives and remains committed to addressing climate change today, as evidenced in its CAA. The Program also contributes to three of INAC's strategic outcomes: *The North*, *The People*, and *The Land* and builds on two former INAC programs: the ANCCP and ANCAP.

Duplication with other programs

The evaluation found no evidence of duplication with other programs. This is because no other formal climate change programs aimed at the North exist and the Program works with other federal departments involved in climate change adaptation activities to ensure their programs do not duplicate each other. As a result of the Program, projects have leveraged about $1.9 million in financial and in-kind resources from other federal departments, provincial governments, professional associations/consultants, and community organizations.

The evaluation also found some evidence that complementary activities are occurring. For example, territorial governments are beginning to develop territory-wide climate change action plans and some northern communities are adapting to climate change without assistance from the Program.

Design and delivery

Implementation

Evidence indicates that, for the most part, the Program has been implemented as planned. Funded projects support the Program's objectives to assess and identify risks and opportunities related to the impacts of climate change and to develop climate change adaptation plans. Some of the implementation challenges encountered related to working with internal services (communications, contribution agreements and human resources), determining the adaptive capacity of communities, and identifying key players. As a result of these implementation challenges, the Program had to re-profile some of the funding for 2008–09 to 2009–10.

Management and accountability

There is substantial evidence that the Program has developed and implemented formal management structures such as an Operational Management Guide, Applicant Guide, and Technical Review Committee. However, the following opportunities for improvement exist: ensuring proposals clearly identify the activities, outputs, and outcomes associated with the current funding year; ensuring project reports include outcome information; establishing the Advisory Committee; and completing annual reports in a timely fashion.

Performance measurement

The evaluation found that the Program is attempting to measure performance. A project performance database is used to ensure diversity in type and location of projects; to identify projects' expected outcomes; to brief senior management; and to collect data for evaluations and program renewal. Nonetheless, opportunities to improve the database exist. Additionally, the 2008–09 annual report is still being developed.

Best practices and lessons learned

Best practices include using a Technical Review Committee to review proposals; having people who will stay in the community to develop adaptation plans; having a project representative in the community where the project is being implemented; and obtaining letters of support for the project from the community to demonstrate their commitment to the project.

Lessons learned are that programs should be based on an equal partnership approach, ongoing promotion of the Program is needed, climate change is only one of many priorities that communities must address, political processes can make it difficult for individuals outside of the North to conduct research, adaptation plans cannot be developed within one year, and communities are unlikely to implement their adaptation plans without additional support.

Preliminary results/success

- *Greater collaboration to address issues of climate change*

The evaluation found substantial evidence that a wide range of stakeholders such as scientists, consultants, experts, and communities are collaborating on projects. All of the funded projects contributed (or are expected to contribute) to greater collaboration to address climate change issues. Some of the projects established formal partnerships and others involved visiting communities to raise awareness of climate change and to try and engage communities and other

stakeholders in adaptation planning. The collaborations have helped create a strong network of researchers and communities who are interested in climate change adaptation.

- *Increased availability of and access to information, technical expertise, and products on adaptation to climate change*

The evaluation found considerable evidence that the Program is increasing the availability of and access to information, technical expertise, and products on adaptation to climate change. Although key informants and focus group participants believe the Program is raising community awareness of climate change, the evaluation could not verify this since baseline data was not collected prior to the start of the Program. However, the Program has brought technical expertise into northern communities and projects are developing climate change adaptation information that is accessible and relevant to northern communities. To increase distribution of project results, program managers noted that the Program intends to post completed project reports on its website once it is launched.

- *Northern communities and user groups are using tools and information to assess climate change risks/opportunities and to plan adaptation strategies*

The evaluation found some evidence that northern communities and user groups are using tools and information to assess climate change risks and opportunities, and plan adaptation strategies. Communities are assessing climate change risks and opportunities and defining adaptation priorities. While projects are developing adaptation tools, there are no processes in place to track how they are being used.

The evaluation did not find evidence to support whether planning decisions are being based on identified risks and opportunities or if climate change information or adaptation information is being integrated in planning and decision-making processes.

Alternatives

The evaluation found considerable evidence that the Program is the best approach to support climate change adaptation planning. The Program directly targets the North, has the flexibility to meet the needs of communities, involves communities in projects, and fosters the development of partnerships. Potential enhancements include increasing program managers' presence in communities; establishing long-term, community-based positions that focus on climate change; increasing collaboration with other federal departments and territorial governments; strengthening relationships with INAC regional offices; coordinating the Program with the ecoENERGY Program; and providing multi-year funding for projects.

6.1 Recommendations

It is recommended that INAC:

1. **Conduct an environmental scan to:**
   - **Determine the awareness of climate change and the capacity for adaptation planning in northern communities.**
   - **Ensure that the Program targets communities in greatest need of support.**

2. **Clarify Program objectives:**
    - **Develop a strategy that responds to the greatest need, allowing for transition through planning phases and into implementation.**

3. **Continue to develop a website that can be used to:**
    - **Facilitate the sharing of climate change adaptation information and tools.**
    - **Extend Program reach.**

4. **Identify and allocate specific resources to performance measurement to:**
    - **Improve proposal review to ensure performance information is clearly articulated.**
    - **Develop reporting template.**
    - **Monitor project reporting requirements / ensure quality control.**
    - **Strengthen and expand the performance tracking database.**
    - **Manage the Program's performance measurement responsibilities (i.e., annual reporting).**

5. **Increase Program efficiency and effectiveness by:**
    - **Coordinating the Program with the ecoENERGY Program.**
    - **Strengthening relationships with INAC regional offices.**
    - **Establishing an Advisory Committee, which includes representatives of other federal departments, territorial governments, and communities.**
    - **Providing multi-year support to projects.**