Horizontal Evaluation of the Clean Air Agenda Adaptation Theme

Final report

September 2017

Canada

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List of acronyms and abbreviations

ACCASP	Aquatic Climate Change Adaptation Services Program
AANDC	Aboriginal Affairs and Northern Development Canada
CAA	Clean Air Agenda
CARPAN	Climate Adaptation and Resilience Program for Aboriginals and Northerners
CCAR	Climate Change and Atmospheric Research
CCHAP	Climate Change and Health Adaptation Program for Northern First Nations and Inuit Communities
CCPSP	Climate Change Prediction and Scenarios Program
CIVI	Coastal Infrastructure Vulnerability Index
DFO	Department of Fisheries and Oceans Canada
DGAPSC	Director General Adapatation Policy Steering Committee
DGMC	Director General Management Committee
DM	Deputy Minister
DPR	Departmental Performance Report
ECCC	Environment and Climate Change Canada
FSDS	Federal Sustainable Development Strategy
G&C	Grants and Contributions
HARS	Heat Alert Response System
HC	Health Canada
INAC	Indigenous and Northern Affairs Canada
IPCC	Intergovernmental Panel on Climate Change
NISI	Northern Infrastructure Standardization Initiative
NTAI	Northern Transportation Adaptation Initiative
NRCan	Natural Resources Canada
NRTEE	National Roundtable on the Environment and the Economy
PCA	Parks Canada Agency
PHAC	Public Health Agency of Canada
PMF	Performance Measurement Framework
PPHSACC	Preventative Public Health Systems and Adaptation to Climate Change Program
PWGSC	Public Works and Government Services Canada
SCC	Standards Council of Canada
TC	Transport Canada
UNECCN	Understanding Climate-Driven Ecological Changes in Canada's North
UNFCCC	United Nations Framework Convention on Climate Change

Executive summary

Context

This report presents the results for the Evaluation of the Adaptation Theme of Canada's Clean Air Agenda, which was undertaken by Environment and Climate Change Canada's (ECCC) Audit and Evaluation Branch, in collaboration with its federal partner organizations.

The Government of Canada's Clean Air Agenda (CAA), in effect until 2015-16, was intended to address climate change and air pollutants via five program themes, one of which was the Adaptation Theme. As of December 2016, the government's climate change activities fall under the Pan-Canadian Framework on Clean Growth and Climate Change.

The CAA Adaptation Theme was a five-year (2011-12 to 2015-16), $181.62 million initiative that aimed to deliver on the federal role as defined by the Federal Adaptation Policy Framework, approved in 2011.[1] The Theme was coordinated by Environment and Climate Change Canada.

Adaptation Theme programming was organized into four streams, by goal and comprised a total of 10 program elements. Each program element was delivered by one or more of nine federal partners.

Enhance the science foundation to understand and predict climate and assess climate change impacts

- Aquatic Climate Change Adaptation Services Program (ACCASP) – Department of Fisheries and Oceans (DFO)

- Climate Change Prediction and Scenarios Program (CCPSP) – Environment and Climate Change Canada (ECCC)

- Understanding Climate-Driven Ecological Changes in Canada's North (UCECCN) – Parks Canada Agency (PCA)

Enhance public health and safety

- Heat Alert and Response Systems (HARS) – Health Canada (HC)

- Preventative Public Health Systems and Adaptation to Climate Change Program (PPHSACC) – Public Health Agency of Canada (PHAC)

Build resilience in the North and climate-sensitive Aboriginal communities

- Climate Change and Health Adaptation Program for Northern First Nations and Inuit Communities (CCHAP) – Health Canada (HC)

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[1] The Federal Adaptation Policy Framework defines the federal role as generating and sharing knowledge; building adaptive capacity to respond and helping Canadians take action; and integrating adaptation into federal policy and planning (mainstreaming).

- Climate Adaptation and Resilience Program for Aboriginals and Northerners (CARPAN) – Indigenous and Northern Affairs Canada (INAC)

- Integrating Adaptation into Codes and Standards for Northern Infrastructure (also known as the Northern Infrastructure Standards Initiative [NISI]) – Standards Council of Canada (SCC) and Indigenous and Northern Affairs Canada (INAC)

Enhance the competitiveness of climate-sensitive economic sectors and systems

- Enhancing Competitiveness in a Changing Climate (also referred to as the NRCan Adaptation Program) – Natural Resources Canada (NRCan)

- Northern Transportation Adaptation Initiative (NTAI) – Transport Canada (TC)

The evaluation is horizontal in scope and examines the Adaptation Theme across the 10 program elements. The evaluation covers the time frame from 2011-12 to mid-2014-15, (representing approximately two-thirds of the funding period) and also, where appropriate, looked at relevant activity in the remainder of 2014-15. The evaluation examined two key areas:

- Relevance: the extent to which the Adaptation Theme addressed a continued need, was aligned with federal priorities and was aligned with federal roles and responsibilities

- Performance: the extent to which the Adaptation Theme achieved intended outcomes and demonstrated efficiency and economy

The current evaluation collected data on nine of the 10 program elements. Transport Canada conducted an independent evaluation of the NTAI in 2014-15 and the results of the Transport Canada evaluation were incorporated into the current evaluation.

Findings and conclusions

Relevance

Evaluation findings indicate that there is a continued environmental, societal and economic need for initiatives to assist Canadians in adapting to climate change and the risks and opportunities it creates. Most key informants reported that climate change needs would not be met effectively in the absence of Adaptation Theme programming.

The Adaptation Theme is aligned with federal priorities related to protecting Canadians, promoting economic growth and development and addressing the sustainability of natural resources and priorities related to the North, including those reported in Canada's Northern Strategy. The Theme and program elements also align with Canada's Federal Sustainable Development Strategy (FSDS) and are consistent with federal roles and responsibilities, including those as established by related Acts and the Federal Adaptation Policy Framework. The federal government is viewed by key informants as being well positioned to provide leadership and information and to facilitate collaboration on climate change adaptation.

Performance – efficiency and economy

Overall, program elements comprising the Adaptation Theme appear to be generally well designed and delivered; however, some areas for improvement related to information sharing, increasing engagement and performance measurement were noted.

The different program elements use a variety of program delivery methods to work towards achieving intended outcomes. A majority of key informants indicated that the design of program elements is appropriate for meeting the intended outcomes. Knowledge exchange with stakeholders is identified as a critical aspect of the Adaptation Theme's program design. While some stakeholder engagement is occurring, more could be done to encourage the participation of existing and potential stakeholders, to increase effectiveness. The products and activities of the program elements are generally perceived to be of high quality and useful to external stakeholders; however, some reported that it was difficult to find them and that activities have not been well advertised.

Governance at the program element level is clear and effective. At the Adaptation Theme level, three committees exist to collectively manage and coordinate the delivery of the Theme activities federally and across jurisdictions. Despite this, there was a strong desire for more collaboration and information sharing among program elements, as well as among federal and non-federal program partners.

Findings suggest that program resources are being used efficiently and economically. Examples of effective cost-savings practices include the use of information technologies to assist with communication, collaboration and outreach and the use of networks to promote activities and share information. Funding for Adaptation Theme activities includes both new and existing funding. Coordinated horizontal financial reporting occurs for the Adaptation Theme; however, the report provides details for new funding only. Some federal partners were unable to provide budget or expenditure figures for their existing funding or details to sufficiently account for variances between new or existing funding and actual expenditures. As a result, it is not possible to present a comprehensive picture of the total budget and expenditures for Adaptation Theme activities over the four-year period from 2011-12 to 2014-15.

A logic model and performance measurement framework (PMF) for the Adaptation Theme are in place; however, the Theme-level PMF does not adequately capture all relevant intended outcomes for all program elements. While some performance data is being collected and reported by program elements through means such as corporate reporting, a number of issues were observed indicating that insufficient data is being collected to support an assessment of Theme-level results. Program staff and senior managers indicated that performance data is used for reporting at the program element level and provided examples of the use of data in decision making.

Performance – effectiveness

Overall, program elements are making progress towards achieving the Adaptation Theme immediate outcomes. Progress is being made towards recognition by targeted communities and

sectors of the need for adaptation and for assessing their risks and opportunities arising from climate change. Adaptation measures are being identified, and awareness of relevant adaptation measures among targeted communities and sectors and collaboration on climate change adaptation are increasing. The evaluation also found early evidence of progress toward intermediate and final outcomes, examples of which include developing research facilities, planning around food security and implementing ground stability systems as part of adapting to climate change. However, the longer term nature of these outcomes means available evidence is still somewhat limited; it is too early to conclude on the extent of progress towards reducing the vulnerability of individuals, communities, regions and economic sectors to the effects of climate change.

Recommendations

Based on the nature of this evaluation focused on the overall Adaptation Theme and the diversity of the different Adaptation program elements, the recommendations reflect observations that were common to most program elements. Accordingly, the recommendations are broadly worded and reflect the understanding that, while generally applicable across all elements, each responsible department will specify through its management responses and action plans how these recommendations should best be addressed for the respective program elements.

Recommendations 1, 2 and 3 are directed to senior management[2] of each of the nine federal organizations that have been involved in delivering the Adaptation Theme programming. Recommendation 4 is directed to all departments, with the exception of INAC and TC. No areas of concern were found in reviewing the financial information provided by these two departments.

Recommendation 1

Review current adaptation program delivery to identify opportunities to expand engagement among new and existing stakeholder groups and increase awareness of information, products or activities.

Recommendation 2

Review mechanisms for collaboration and information sharing between the Adaptation program elements, as well as with other federal and non-federal program partners, in order to leverage best practices and resources and avoid duplication of effort.

Recommendation 3

Review the current performance measurement framework and data to improve tracking and reporting on progress toward Adaptation-theme level intended results.

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[2] Each department will determine the appropriate senior manager to whom the recommendations should be directed.

Recommendation 4

In collaboration with the departments' respective Chief Financial Officers, review current processes for opportunities to improve program tracking and reporting of financial information for Adaptation program elements.

Management response

Due to the number of participating departments and the diversity of program elements involved in the Adaptation theme, each partner department is encouraged to develop its own individual management action plan in response to the evaluation's recommendations in the manner that best addresses its particular circumstances. These responses should be coordinated with other federal Adaptation partners, as appropriate.

Accordingly, the individual departmental management responses are not included in the body of the report. It is the responsibility of each participating department to develop and publish its own management responses under separate cover.

1.   Introduction

This report presents the results of the Evaluation of the Adaptation Theme of Canada's Clean Air Agenda (CAA), which was conducted by Environment and Climate Change Canada's (ECCC's) Audit and Evaluation Branch, in collaboration with the other eight federal departments that deliver the 10 program elements of the Adaptation Theme. The evaluation was identified in ECCC's 2014 Departmental Risk-Based Audit and Evaluation Plan. It was conducted in order to meet commitments to evaluate the initiative, as well as to respond to the Treasury Board Policy on Evaluation requirement that all direct program spending be evaluated at least once every five years.

2.   Background

2.1   Program profile

The former CAA, in effect until 2015-16, was intended to address climate change and air pollutants via five streams of programming, one of which was the Adaptation Theme.[3] As of December 2016, the Government of Canada's climate change activities fall under the Pan-Canadian Framework on Clean Growth and Climate Change. Most of the programs under the Adaptation Theme now fall under Adaptation and Climate Resilience, one of the four main pillars of the new framework.

The Adaptation Theme was coordinated by ECCC and included eight other federal partners: Fisheries and Oceans Canada (DFO), Health Canada (HC), Indigenous and Northern Affairs Canada (INAC), Natural Resources Canada (NRCan), Parks Canada Agency (PCA), Public Health Agency of Canada (PHAC), Standards Council of Canada (SCC) and Transport Canada (TC). Domestic action on adaptation by the Government of Canada is guided by the 2011 Federal Adaptation Policy Framework.

The Adaptation Theme included a total of 10 program elements organized into four streams that focus on building the science base needed to inform decision making; protecting the health and well-being of Canadians; building resilience in the North and Aboriginal communities; and enhancing competitiveness in key economic sectors.[4] A brief description of the 10 program elements follows, organized by stream. Additional detail regarding the four streams and ten program elements is included in Appendix A.

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[3] The other four themes were the Clean Air Regulatory Agenda, Clean Energy, Clean Transportation and International Actions.
[4] Adaptation to climate change has been defined as the "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation and autonomous and planned adaptation." Source: Intergovernmental Panel on Climate Change Glossary

Enhance the science foundation to understand and predict climate and assess climate change impacts

- Aquatic Climate Change Adaptation Services Program (ACCASP) [DFO] – development of knowledge of climate change risks, impacts and opportunities in relation to oceans and fisheries[5]

- Climate Change Prediction and Scenarios Program (CCPSP) [ECCC] – provision of scientific information and data to assist with policy development and adaptation planning

- Understanding Climate-Driven Ecological Changes in Canada's North (UCECCN) [PC] – assessment of how ecological integrity and traditional land use may be affected by climate-driven changes in northern national parks

Enhance public health and safety

- Heat Alert and Response Systems (HARS) [HC] – support of health authorities to plan for and respond to extreme heat events and reduce the vulnerability of citizens to heat-related illnesses and death and by implementing heat alert and response systems in at-risk communities[6]

- Preventative Public Health Systems and Adaptation to Climate Change Program (PPHSACC) [PHAC] – expansion of research and the development of improved surveillance methods to advance the understanding of the health implications of climate change on water-borne, food-borne and vector-borne[7] diseases, to inform the development of practical adaptation strategies and tools to protect the health of Canadians

Build resilience in the North and climate-sensitive Aboriginal communities

- Climate Change and Health Adaptation Program for Northern First Nations and Inuit Communities (CCHAP) [HC] – funding of community-driven research projects to assist communities to determine their health and adaptation priorities, conduct research and develop culturally appropriate adaptation strategies or action plans and communication materials

- Climate Adaptation and Resilience Program for Aboriginals and Northerners (CARPAN) [INAC] – working with organizations, institutions and communities to assess and develop management strategies to adapt to the impacts of a changing climate, undertake risk and vulnerability assessments and identify appropriate actions required to reduce risks, focusing on the areas where the impacts of climate change are already visible and vulnerability is high (for example, infrastructure, water quality and availability)

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[5] This program element is focussed on developing supports for DFO programs and management decisions. It does not provide direct services to the general Canadian public.

[6] This program element is also known as Heat Resiliency Program. At-risk communities include older adults, infants and young children, people with chronic illness or who are physically impaired, the socially disadvantaged, newcomers and transient populations (for example, tourists), certain occupational groups and the physically active. Source: Heat Alert and Response Systems to Protect Health: Best Practices Guidebook, Health Canada.

[7] The term "vector-borne diseases" refers to diseases transmitted through insects. Source: Climate Change and Public Health Factsheets, Public Health Agency of Canada.

- Integrating Adaptation into Codes and Standards for Northern Infrastructure (also known as the Northern Infrastructure Standards Initiative (NISI)) [SCC and INAC]) – development of national standards to address climate-related risks to Northern infrastructure design, planning and management

Enhance the competitiveness of climate-sensitive economic sectors and systems

- Enhancing Competitiveness in a Changing Climate (also referred to as the NRCan Adaptation Program) [NRCan] – leading the development and sharing of knowledge, tools and practices to assist decision makers in the analysis and implementation of adaptation in the regions and natural resource sectors.

- Northern Transportation Adaptation Initiative (NTAI) [TC] – improvement of the resilience, responsiveness and adaptability of Canada's northern transportation system, including incorporating climate change considerations into infrastructure design and maintenance, building northern science capacity and working with stakeholders to develop strategic adaptation measures for northern transportation infrastructure to ensure a sustainable northern transportation system.

2.2   Governance and management

Three committees govern the work of the Adaptation Theme. These committees provide guidance and coordination on policy development within the federal government and between levels of government and coordinate the management of the program elements.

The Director General Adaptation Policy Steering Committee (DGAPSC) is an interdepartmental committee designed to advance a coordinated approach to climate change adaptation at the federal level. Led by ECCC's Strategic Policy Directorate, the committee coordinates the development of adaptation policy, guides domestic action for adaptation to the impacts of climate variability and change through the Federal Adaptation Policy Framework across the federal government and provides advice to senior officials, including the Deputy Ministers Committee on Climate Change, Energy and the Environment.

The Federal/Provincial/Territorial (FPT) Adaptation Policy Committee is intended to promote improved coordination of adaptation policy across the three levels of government. This committee, which includes federal representatives from ECCC and NRCan, fosters ongoing FPT dialogue on climate change impacts and adaptation policies and promotes information sharing among Canadian governments.

The Adaptation Theme Director General Management Committee (DGMC) was an interdepartmental committee composed of the lead Directors General (DGs) contributing to the Adaptation Theme. The DGMC was responsible for coordinating the management of the Adaptation Theme program elements in accordance with their mandate and the achievement of higher-level results in accordance with the CAA. Coincident with the end of the funding for the Theme, the DGMC is no longer active as of March 2016.

2.3   Resource allocation

From 2011-12 to 2015-16, the approved funding for the Adaptation Theme totalled $181,625,809. This approved funding amount is a combination of new funding and funding from the existing reference levels. The existing funding accounted for 18% of the total funding and was allocated to seven of the nine involved organizations. New and existing funding for the four-year period from 2011-12 to 2014-15, which was the focus of the present evaluation, totalled $147,911,516. Details on the approved funding and expenditures by year for each program element can be found in Appendix B.

2.4   Intended outcomes

A logic model was approved by the DGMC in 2012. In preparation for the evaluation, in 2014, the logic model was revised in collaboration with the evaluation committee, which included program and evaluation representatives from all nine participating organizations. The updated logic model (see Appendix C) maps the 10 program elements to their respective activities, outputs and intended outcomes. The intended outcomes for the Theme are as follows:

Immediate outcomes

- Targeted communities and sectors recognize the need for adaptation
- Targeted communities and sectors assess their risks and opportunities arising from climate change
- Adaptation measures have been identified to address risks and opportunities arising from climate change
- Targeted communities and sectors are aware of relevant adaptation measures
- Increase collaboration on climate change adaptation

Intermediate outcomes

- Targeted communities and sectors address adaptation in their planning
- Targeted individuals, communities and sectors implement adaptation measures

Final outcomes

- Reduced vulnerability of individuals, communities, regions and economic sectors to the impacts of climate change
- Increased capacity of individuals, communities and economic sectors to adapt to climate change

3. Evaluation design

3.1 Purpose and scope

The evaluation was identified in ECCC's 2014 Departmental Risk-Based Audit and Evaluation Plan. It was conducted in fiscal years 2014-15 and 2015-16 in order to meet commitments to evaluate the initiative, as well as to respond to the Treasury Board Policy on Evaluation requirement that all direct program spending be evaluated at least once every five years.

Data was collected and analyzed for all 10 program elements. However, this was an evaluation of the overall CAA Adaptation Theme, as opposed to an evaluation of individual program elements. As such, the findings presented reflect the overall results for the Theme and the degree of detail provided at the individual program level is limited.

Data collection for nine of the elements was conducted by R.A. Malatest and Associates Ltd between October 2014 and March 2015. TC's Evaluation and Advisory Services conducted a separate, independent evaluation of its NTAI in fiscal year 2014-15, the results of which were integrated into this evaluation report.

The evaluation covers the period from 2011-12 to mid-2014-15, which is approximately two-thirds of the funding period, although relevant activity in the remainder of 2014-15 was also considered. The evaluation examined issues of relevance and performance (including effectiveness, efficiency and economy).

3.2 Evaluation approach and methodology

The following data collection methodologies were used to address the evaluation issues and questions. Further details on the evaluation methodologies can be found in Appendix D.

Document review

Documents from the program elements, as well as the Adaptation Theme overall, were reviewed. Thematic analysis was used to summarize the information from the documents under each evaluation question.

Data review

This review was primarily based on the performance data reported for indicators identified in the Adaptation Theme Performance Measurement Framework (PMF) for nine of the program elements as of November 2014. Although the evaluation assessed program performance relative to the outcomes listed in the revised logic model, the PMF nonetheless contained performance measurement information that was relevant to these revised outcomes.

Key informant interviews

Key informant interviews were conducted with program representatives and individuals external to the program. Since data collection for the NTAI was conducted separately as part of TC's evaluation of this program, the interviews covered nine of the 10 program elements. A total of 90 interviews were conducted with 89 key informants (one individual provided feedback on two program elements). Thirty-five (35) or two of every five interviewees represented senior management and program managers who were directly involved in the delivery of program elements, while the remaining 54 interviewees represented stakeholders not directly involved in program delivery, including federal representatives; provincial, territorial and municipal organizations; Indigenous peoples; academics; and industry.

Survey

An online survey of external stakeholders was conducted between January 27, 2015 and February 24, 2015, to collect feedback on the relevance of the initiative and the achievement of outcomes. External stakeholders from eight of 10 program elements were invited to respond to the survey, because the small number of ECCC CCPSP stakeholders (fewer than 20) was not sufficient to generate reliable survey results and TC had already completed its own evaluation of the NTAI. A total of 148 individuals responded to the survey from a sample of 638, representing a 23% response rate. Respondents were invited to answer questions for up to two of the program elements with which they were most familiar.[8]

Case studies

Case studies were conducted for four Adaptation theme initiatives, including:

- SakKijanginnatuk Nunalik: Building Sustainable Communities in the Face of Changing Climate, with a focus on the Municipal Water Sub-Project (from INAC's CARPAN)

- Coastal Infrastructure Vulnerability Index (from DFO's ACCASP)

- Forest Change Initiative (from the NRCan Adaptation Program)

- Climate Change, Adaptation and Acute Gastrointestinal Illness[9] in the Canadian North (from the PHAC's PPHSACC)

Data were collected for the case studies through document and file reviews and interviews with key stakeholders.[10] The intent of the case studies was not to generalize results to the program element overall, but rather to identify program insights, such as achievements, external factors and best practices and lessons learned.

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[8] As such, the survey collected 182 program element-specific responses from 114 respondents who commented on a single program element and from 34 respondents who provided feedback concerning two program elements.

[9] Changing weather patterns stemming from climate change are believed to increase the occurrence of infectious disease, including waterborne and foodborne diseases.

[10] The number of interviews per case study was as follows: SakKijanginnatuk Nunalik: Building Sustainable Communities in the Face of Changing Climate (2); National Coastal Infrastructure Vulnerability Index (3); Forest Change Initiative (3); and Climate Change, Adaptation and Acute Gastrointestinal Illness in the Canadian North (4).

3.3   Challenges and limitations

Challenges experienced during the conduct of the evaluation, and the related limitations and strategies used to mitigate their impact, are outlined below.

1. Intended outcomes and performance measurement strategies were not fully identified for half of the program elements and the quality of existing performance measurement strategies varied considerably (see section 4.2.4 for a more detailed discussion). Due to limited Theme-related performance data, the evaluation evidence relied heavily on the findings from key informant interviews. To compensate for this, evidence from interviews was triangulated with that from other methodologies such as the survey and, to the extent possible, the document review. Case studies were also used to gather more detailed information on selected projects from individual program elements and to identify insights that may be useful to other program elements.

2. A horizontal evaluation of a relatively heterogeneous array of activities with different areas of focus (that is, health, environment and infrastructure) poses challenges in terms of data aggregation to demonstrate the collective contribution of program element activities to Thematic outcomes. Furthermore, the diversity of Theme activities complicated measurement (that is, customization of data collection instruments to reflect 10 program elements) and the development of Theme-level findings. To address this challenge, the analysis considered the unique aspects of individual program elements and assessed how each element related to the overall Theme's relevance and performance. Further, survey and interview guides included standard questions to gather the same feedback for different program elements, to facilitate aggregation. While the evaluation considered each of the 10 program elements, the focus was on an assessment of the overall Adaptation Theme.

4.   Findings

This section presents the findings by evaluation issue (relevance and performance) and by the related evaluation questions. For each evaluation question, a rating is provided based on a judgment of the evaluation findings. The rating statements and their significance are outlined below in Table 1. A summary of ratings for the evaluation questions is presented in Appendix E.

Table 1: Definitions of standard rating statements

Statement	Definition
Acceptable	The program has demonstrated that it has met the expectations with respect to the issue area.
Opportunity for improvement	The program has demonstrated that it has made adequate progress to meet the expectations with respect to the issue area, but continued improvement can still be made.
Attention required	The program has not demonstrated that it has made adequate progress to meet the expectations with respect to the issue area and attention is needed on a priority basis.
Not applicable	There is no expectation that the program would have addressed the evaluation issue.
Unable to assess	Insufficient evidence is available to support a rating.

4.1   Relevance

1.1.1. Continued need for program

Evaluation issue: relevance	Rating
1. Is there a continued need?	Acceptable

Given the wide-ranging impacts of climate change, there is a continued environmental, societal and economic need for initiatives to assist Canadians in adapting to climate change, as well as the risks and opportunities it creates.

Environmental, societal and economic need

- The combined global average land and ocean temperature increased by 0.85°C from 1880 to 2012, and warming within Canada is occurring at roughly twice the global rate. According to an Intergovernmental Panel on Climate Change (IPCC) 2013 report, most aspects of climate change will persist for many centuries, even if CO_2 emissions are stopped, generating a need for initiatives to assist Canadians to adapt to the effects of rising sea levels, decreasing ice levels, thawing permafrost and more frequent extreme weather events.

- Although economic evidence for Canada is limited, "climate change is expected to impose accelerating costs [in Canada], rising from an average value of $5 billion per year in 2020 to an average value of between $21 billion and $43 billion per year by 2050."[11]

- The effects of climate change are having wide-ranging repercussions resulting from disruption of transportation, loss of natural resources and risks posed to critical infrastructure as well as to health:

  o The forestry sector is a multi-billion dollar industry that supports thousands of jobs and hundreds of communities. Climate change has altered ecological environments which affect forest growth and productivity.

  o The Nunatsiavut area, located along the northern coast of Labrador, has experienced steep increases in temperatures since 1993, leading to unprecedented reductions in snow and sea ice cover. Rising temperatures have caused rapid landscape and biophysical changes in the region, affecting infrastructure, community services and the wellbeing of residents.

  o Permafrost degradation is resulting in increased and more frequent occurrences of potholes, sinkholes, slumping and settlement issues in transportation infrastructure. Failure to address transportation infrastructure vulnerabilities could increase infrastructure maintenance costs in the future and hinder economic development in the North.

  o Changing climate has the potential to affect health status in many harmful ways (for example, related to extreme weather, air quality and illness from food-, water- and rodent-transmitted diseases), which in turn have the potential to lead to a number of economic and social impacts (for example, loss of life, changed welfare, costs to the health care system and impacts on productivity).

- Similar to the documented evidence, key informants also noted examples of climate change impacts on physical health, food security and infrastructure. For instance, emerging diseases such as West Nile virus and Lyme disease affect physical health; food security has been affected by such climate change-induced effects as delayed migrations (for example, the Atlantic salmon run); and changes to permafrost have affected infrastructure in the North. It was also noted that the agri-food industry is vulnerable to climate change, as changes in temperature could impact such things as crop management and the ability to harvest.

- A majority of key informants reported that climate change needs would not be met effectively in the absence of Adaptation Theme programming. Some key informants noted a continued need for specific research and tools such as climate forecasts, risk assessments and capacity building tools and for information on how to adapt Northern and coastal infrastructure.

- Furthermore, documented information gaps include data on how climate change has affected public health in Northern communities, information regarding climate change impacts on northern transportation infrastructure and information for business and industry on climate change impacts and adaptation responses.

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[11] National Round Table on the Environment and the Economy (NRTEE, 2011). Paying the Price: The Economic Impacts of Climate Change for Canada. pp.35 and 40.

Complementarity

- Although adaptation work is conducted by a large number of groups at the international, federal, provincial, territorial and local levels, key informants were generally of the opinion that the Theme programming was designed to encourage complementary work, identify cross-cutting issues and common stakeholder needs and provide a central forum to share concerns, data and tools to reduce the duplication of efforts across jurisdictions.

- Key informants identified other specific federal government programs that address issues related to climate change adaptation, beyond those encompassed under the Theme. These programs were considered to complement and not duplicate the Theme's program elements. Examples include:

  o HC's First Nations and Inuit Public Health Protection program, which provides environmental public health research, surveillance and risk analysis in the areas of climate change, health adaptation and biomonitoring directed to on-reserve First Nations and Inuit and First Nations living above the 60th parallel.

  o INAC's Canadian High Arctic Research Station Initiative, which seeks to improve Canada's knowledge of the Arctic in order to improve environmental stewardship, economic opportunities and the quality of life of Northerners through the establishment of the Canadian High Arctic Research Station.

  o ECCC's Climate Change and Clean Air Regulatory Program, which is designed to develop sector-based approaches to regulating air pollutants and controlling greenhouse gas emissions and to promote science-based approaches to inform the development of new standards and regulations.

1.1.2. Alignment with federal government priorities

Evaluation issue: relevance	Rating
2. Is the program aligned to federal government priorities?	Acceptable

The Adaptation Theme is aligned with federal priorities related to protecting Canadians, promoting economic growth and development and addressing the sustainability of natural resources, as well as priorities related to the North, including those reported in Canada's Northern Strategy. The Theme and program elements also align with Canada's Federal Sustainable Development Strategy (FSDS).

- The 2011 Federal Budget provided funding to continue to protect Canada's natural environment and address environmental risks, including funding for projects to improve our understanding of climate change impacts. Canada's Northern Strategy also outlines priorities closely aligned with the Adaptation Theme, specifically those focussed on promoting social and economic development and protecting the North's environmental heritage. Furthermore, the 2013 Speech from the Throne underlined that investment in the North and Northern communities and infrastructure was a priority.

- FSDS 2013-16 included a climate change adaptation target to *"*Facilitate reduced vulnerability of individuals, communities, regions and economic sectors to the impacts of climate change through the development and provision of information and tools."[12]

- Adaptation Theme partner organizations recognize the need to address climate change adaptation in their Reports on Plans and Priorities. On a similar note, federal key informants also generally indicated alignment between the Adaptation Theme and federal priorities. Reference was made to aspects related to different elements of the Adaptation Theme, such as: protecting vulnerable communities; reducing the impact of health threats; supporting economic development and prosperity; conserving natural and cultural parks and areas; contributing to the sustainability of natural resources; developing Northern infrastructure; and supporting the Northern Strategy.

1.1.3. Alignment with federal roles and responsibilities

Evaluation issue: relevance	Rating
3. Is the program consistent with federal roles and responsibilities?	Acceptable

Activities undertaken as part of the Adaptation Theme are consistent with federal roles and responsibilities, including those established by related Acts and the Federal Adaptation Policy Framework. The federal government is viewed as being well-positioned to provide leadership and information and to facilitate collaboration on climate change adaptation.

- Authority for the work undertaken by federal partners involved in the Adaptation Theme is established by a number of different Acts.[13] The Canada Transportation Act, the Department of Health Act and the Department of Indian Affairs and Northern Development Act, among others, authorize engagement in activities for the health and benefit of Canadians as they relate to their respective federal partners. Program activity under the Theme is also consistent with federal responsibilities related to geographic areas (for example, oceans), Indigenous people on reserve and interprovincial and international matters. Documentary evidence also supports alignment between the activities being undertaken as part of the Adaptation Theme and the mandates or missions of the involved federal partners.

- The Adaptation Theme is also consistent with the roles of the federal government set out in the Federal Adaptation Policy Framework, which was approved by Cabinet in 2011. The Framework notes that "[t]he Government of Canada is well positioned to mobilize economies of scale to generate and deliver fundamental knowledge and information that can be applied across the country" and that "the federal government is particularly well-positioned to support

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[12] Environment Canada. Planning for a Sustainable Future: A Federal Sustainable Development Strategy for Canada 2013-2016. Sustainable Development Office, Environment Canada. 2013. p. 34.
[13] Examples include the Canada Transportation Act, the Canadian Environmental Protection Act, 1999, the Department of the Environment Act, the Department of Health Act, the Department of Indian Affairs and Northern Development Act, the Constitution Act, 1982, the Indian Act, the Department of Natural Resources Act, the Fisheries Act, the Oceans Act, the Parks Canada Agency Act, the Public Health Agency of Canada Act and the Resources and Technical Surveys Act.

the development and dissemination of climate change information, guidance and tools that help Canadians to adapt."[14]

- In addition, Canada is a party to the United Nations Framework Convention on Climate Change (UNFCCC), which includes commitments on monitoring and research defined in Articles 4 and 5.

- Findings from the key informant interviews further support the conclusion that the work of the Adaptation Theme is consistent with federal roles and responsibilities. For example, the Theme is generally considered to:

  o align with departmental mandate and missions

  o provide leadership on climate change adaptation as it affects national health and safety

  o be well-positioned to provide national consistency

  o be a trusted source of information, since it employs climate change experts and has the capacity to conduct reliable research and a facilitator of research and tool development

  o provide forums wherein stakeholders from provinces, territories, municipalities, Indigenous communities and industries could work collaboratively to approach climate change adaptation through the sharing of ideas and knowledge

4.2   Performance – efficiency and economy

1.1.4.   Program design

Evaluation issue: performance – efficiency and economy	Rating
4. Is the program design appropriate for achieving its intended results?	Opportunity for improvement

The 10 program elements within the Adaptation Theme use a variety of program delivery mechanisms, and the design of program elements is generally thought to be appropriate for meeting intended outcomes. Knowledge exchange with stakeholders is identified as a critical aspect of program design. While some stakeholder engagement is occurring, more could be done to encourage the participation of existing and potential stakeholders to increase effectiveness.

- A majority of key informants indicated that the design of program elements is appropriate. They identified a variety of delivery mechanisms that work towards achieving intended outcomes. Examples of different program models include funding projects to develop outputs; conducting training and information sharing with stakeholders; and conducting research and innovation, developing models and projections or developing standards and tools to adapt to climate change while involving experts.

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[14] Government of Canada (EC). Federal Adaptation Policy Framework. 2011. p. 3.

- Survey results also indicate that program element designs are generally appropriate and viewed to be of good quality. Large majorities of survey respondents rated the program elements' products and activities as very or somewhat credible (97%), up-to-date (91%), comprehensive (89%), timely (84%) and available in an accessible format (82%). The quality of activities received similarly strong ratings, with respondents rating the activities with which they were familiar as somewhat or very informative (95%), well-organized (94%) and effective (94%).

- The usefulness of program outputs was also rated very highly. On average, 92% of respondents rated the information generated or knowledge gained through Theme activities as somewhat or very useful to their organization. Similarly, almost all Adaptation products were, on average, rated as somewhat or very useful to their organization by more than nine in 10 respondents (95%). Across all programs, communication with the federal government regarding program activities or products was rated as somewhat or very easy by at least 75% of respondents. Communication with HC's CCHAP was rated as "very easy" by 81% of the survey respondents.

- In contrast, survey ratings were lower for the degree to which products and services were rated as easy to find, with 60% indicating the products and services were somewhat or very easy to find, suggesting there may be an opportunity to increase the visibility of program activities and products.

- A key component of this Theme is knowledge exchange with stakeholders in order to "understand which information is needed, how to deliver our knowledge products and in which format" that would best suit the needs of the users. The document review and case studies identified several examples where the program elements engaged with stakeholders to define stakeholder needs and target activities.

  o Selection committees for HC's CCHAP include community, government and non-government representatives. The committees evaluate proposals and make recommendations regarding funding.

  o PC's UCECCN conducted workshops with stakeholders to better refine information needs.

  o ECCC's CCPSP conducted workshops with stakeholders to improve understanding of the supply of and demand for climate information and to improve coordination to ensure that accessible and timely information is available to decision makers. More broadly, ECCC worked to advance the Federal Adaptation Policy Framework across the federal government (for example, through presentations to the Deputy Ministers Committee on Climate Change, Energy and the Environment) and led interdepartmental policy coordination to improve communications and linkages among program elements.

  o SCC's and INAC's NISI conducted interviews with local area experts to assess the information gaps that need to be addressed. The Northern Advisory Committee on Adaptation Codes and Standards, composed of representatives from Yukon, Northwest Territories, Nunavut and Nunavik, was established to guide work related to this program element.

- o Working groups in the Adaptation Platform organized by the NRCan Adaptation Program brought together stakeholders from governments, national industry and professional organizations, industry sector champions and academia to review particular topics (for example, mining and coastal management) to produce State of Play reports and create programs of work. This work was discussed at biannual plenary meetings. Platform members also had access to a shared online workspace to further their collaboration.

- o The work of TC's NTAI involved funded projects and related discussions and presentations through networks that scoped potential impacts of climate change on the northern transportation system and identified specific vulnerabilities in the transportation system.[15]

- o The case study of DFO's ACCASP Coastal Infrastructure Vulnerability Index project shows DFO's Science and Small Craft Harbours experts were engaged to develop a coastal climate change vulnerability index for use by the Small Craft Harbours program. Similarly, NRCan's Forest Change Initiative case study found that the forest sector helped to gather information on the impacts of climate change on Canadian forests and developed strategies to address these impacts.

- Despite the examples cited above, almost half of all key informants expressed that, while progress was being made, greater efforts were required to improve the level of engagement with existing external stakeholder groups and to reach out to other stakeholders. Identified stakeholder groups included:

  - o other federal government departments such as DFO, NRCan, Agriculture and Agri-food Canada, and the National Research Council

  - o other levels of government such as provinces, territories, municipalities, and communities

  - o industry, academics, non-governmental organizations, emergency preparedness groups, and Indigenous stakeholders

- Benefits of increased engagement with these stakeholders, as identified by interviewees, include:

  - o increased potential to leverage external skills and technical capacity

  - o increased capacity-building

  - o improved knowledge and understanding of target audiences to better understand their needs and enable the development of more tailored deliverables

  - o expanded use of adaptation information

  - o increased dissemination and greater uptake of new adaptation tools

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[15] The networks of expertise, one of which is related to transportation built on permafrost and the other to marine transportation, include stakeholders from the territories, provinces, universities and colleges and, to a lesser extent, the private sector. (Source: TC. Evaluation of the Northern Transportation Adaptation Initiative. March 2015. p.2.)

1.1.5. Program governance and management

Evaluation issue: performance – efficiency and economy	Rating
5. To what extent is the governance structure clear, appropriate and effective for achieving expected results?	Opportunity for improvement

Governance for individual program elements appears to be clear and effective. Adaptation Theme-level committees collectively manage and coordinate the Adaptation Theme federally and across jurisdictions and meet regularly to share information on results and best practices. Despite this, a need was identified for improved integration and coordination among program elements and federal and non-federal program partners to promote efficiencies.

- Although governance at the program element level was not a specific focus of this evaluation, several examples of program-level structures, such as steering committees and technical committees, are in evidence. In addition, most of the projects examined in the case studies have formal, documented governance structures. For the most part, key informants generally indicated that, within program elements, decision-making processes are transparent, structures are clearly documented and there is a good understanding of reporting requirements and roles and responsibilities.

- In terms of governance at the Adaptation Theme level, as described in section 2.2, there are three Theme-level committees that focussed on managing and coordinating the delivery of the Theme's activities federally and across different jurisdictions, including:

  o An interdepartmental Director General Adaptation Policy Steering Committee (DGAPSC), which advances a coordinated policy approach to climate change adaptation at the federal level, supported by working-level collaboration;

  o An interjurisdictional FPT Adaptation Policy Committee, which promotes improved coordination of adaptation policy across federal, provincial and territorial governments; and

  o An interdepartmental Director General Management Committee (DGMC), which coordinates the Adaptation Theme programs.[16]

- All three Theme-level committees have Terms of Reference (TOR) and met on a regular basis over the timeframe covered by the evaluation.[17]

- A DGMC workshop to share information on results, best practices and lessons learned was held in September 2014. This was viewed positively by interviewees as a method of collaborating and sharing information. However, there was no evidence of other similar mechanisms aimed at facilitating information sharing among program elements. Further, in the view of some

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[16] As of March 2016, the DGMC is no longer active. The Director General of Atmospheric Science and Technology Directorate of ECCC was the chair of the DGMC. (Source: Clean Air Agenda Adaptation Theme Renewal Directors General Management Committee: Terms of Reference (version 5a) December 2013.)

[17] Meeting agendas indicate that, between 2011 and 2014, the DGAPSC met three times a year beginning in 2011; the FPT Adaptation Policy Committee met twice a year starting in 2012; the DGMC met annually until 2013.

interviewees, it was not clear how effective the DGMC was as a mechanism for collaboration and information-sharing.

- Despite the existence of these horizontal committees to coordinate Theme activities, views were mixed regarding the extent to which the committees are having the desired effect. While several positive references to horizontal meetings were made, a few senior managers and nearly half of key informants across all remaining groups reported a desire for more collaboration and information sharing among program elements, as well as among federal and non-federal program partners. Both interviewees and survey respondents suggested that greater collaboration would help to support effective program delivery and could provide opportunities for increased efficiency such as:

  o potential for reduced duplication of effort from leveraging tools and practices developed or used by other program elements

  o adoption of shared useful practices such as a method of ecosystem classification to standardize ecosystem descriptions and coordinate ecological assessments across areas of interest to multiple program elements

  o efficiencies from coordinating communication among stakeholders within the different program elements who are working on similar projects (for example, organizing joint meetings)

  o sharing similar challenges and discussing potential solutions

- Although structured differently than the overall Adaptation Theme, NRCan's Adaptation Platform, a component of the NRCan Adaptation Program, was noted as a good example of a mechanism that provides opportunities for communication at both senior and working levels by providing a space to discuss ideas and challenges with others working on the Adaptation Theme, as well as with experts in the field. The Adaptation Platform consists of a plenary body of senior-level representatives and a series of thematic working groups composed of working-level experts from governments, national industry and professional organizations, industry sector champions and academia.[18] Involvement in the working groups is based on identified themes, such as a natural resource sector (for example, mining), or a cross-sectoral or regional focus (for example, northern regions).

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[18] It is important to note that the thematic working group participants are intended to collaborate on meeting common objectives "[b]y jointly defining the nature of the problem and the type of actions needed and pooling their resources." The focus of these working groups is therefore not necessarily the same as that of the work being undertaken within the individual Adaptation Theme program elements and communications undertaken through this mechanism occur in a context that includes external stakeholders and representatives from federal organizations.

1.1.6. Program efficiency and alternatives

Evaluation issue: performance – efficiency and economy	Rating
6. Is the program implemented in an efficient and economical manner?	Opportunity for Improvement

Findings suggest that program resources are being used efficiently and economically. Examples of effective practices to reduce program delivery costs include regular use of information technologies to assist with communication, collaboration and outreach and the use of networks to promote activities and share information. Due to limitations in the financial data, it is not possible to present a comprehensive picture of the total funding, including both new and existing funding, or expenditures for Adaptation Theme activities over the four-year period from 2011-12 to 2014-15.

- Evidence indicates that program elements encouraged operational efficiencies by leveraging networks to promote activities and share information. For example:

  o HC's HARS program element uses existing working groups or networks (where they exist) and increased its reach by partnering with The Weather Network.

  o The NRCan Adaptation Platform uses members' networks to share information and publicize its webinar series.

  o First Nations and Inuit representatives participated in HC's CCHAP's project selection process and reached out to networks in their communities and regions to promote the program.

  o ECCC's CCPSP worked with the Natural Sciences and Engineering Research Council's Climate Change and Atmospheric Research (CCAR) Initiative, providing support to external researchers whose projects contributed to or improved climate prediction science.

- Documents and performance data indicate that program elements were able to leverage funds through collaborations. For example:

  o PMF performance data indicate that for every dollar that DFO's ACCASP invested in research projects and adaptation tools in 2013-14, 80 cents of cash and in-kind contributions were provided.

  o Between 2011-12 and 2014-15, NRCan's Adaptation Program's Earth Sciences Sector component leveraged $1.23 from non-federal sources for every dollar of federal G&C funding.

  o Twelve of the 37 projects examined in TC's NTAI evaluation included financial or in-kind support from partners outside of TC, resulting in an estimated $1.05 million in non-federal funding.

- Evidence also shows that program elements make regular use of information technologies to assist with communication, collaboration and outreach, to help to reduce program costs. For example:

  o HC's CCHAP and SCC's and INAC's NISI both developed websites to keep partners and stakeholders informed.

  o The Adaptation Platform component of the NRCan Adaptation Program used an online workspace and teleconference calls to manage and share the knowledge and serve as mechanisms for working group collaboration.

  o HC's HARS and the NRCan Adaptation Program used webinars to share information and build capacity. PHAC program representatives also noted the use of webinars and conference presentations.

  o Key informants noted that TC's NISI sometimes used web or conference calls in lieu of in-person meetings. The savings were then reallocated to developing other standards.

- Key informants generally reported that program operations are efficient, as supported by regular reporting, work plans, process and tracking documents and governance and advisory meetings. Key informants also identified some best practices that program elements currently employ to support efficient and economic program delivery, such as engaging with relevant stakeholders to leverage their capacities. This included working with intermediary regional organizations with the knowledge, skills and connections to distribute information to local end-users; building relevant capacity in Northern communities; and increasing project buy-in and uptake via partnerships and a participatory approach.

- When asked about lessons learned, other key informants suggested ways to further improve delivery, including:

  o increased interaction among those who deliver the programs

  o increased engagement with communities and local experts

  o early engagement with stakeholders overall

  o improved or increased focusing of resources on the highest priority (or most vulnerable) regions, sectors and infrastructure

- A majority of key informants did not identify alternative models that would achieve similar outcomes at a lower cost and a majority of program managers reported that the level of funding was sufficient to reach current program goals.

- Coordinated horizontal financial reporting occurs for the Adaptation Theme. This is provided in a consolidated CAA Spending Overview report, prepared by ECCC's Corporate Services and Finance Branch and submitted to the Treasury Board Secretariat. This financial report identifies both the planned and actual expenditures approved by the Chief Financial Officer of each organization participating in the Adaptation Theme. However, the CAA Spending Overview report only provides details on new funding.

- As mentioned in section 2.3, total funding for the Adaptation Theme activities included both new and existing funding. New funding for all nine organizations accounted for the majority of total funding (82%). Existing funding accounted for 18% of the total and was distributed across seven of the nine organizations. Financial tables are provided in Appendix B.

- Only three of seven organizations with existing funding were able to provide full expenditure details related to the Adaptation Theme; the remaining four organizations had difficulty providing expenditure details and provided only partial information or no expenditure details at all for existing funding.[19] In addition, not all organizations provided details to sufficiently account for variances between budgets and expenditures for both new and existing funding. As such, it was not possible to present a comprehensive financial picture of the total expenditures for the Adaptation Theme activities.

1.1.7. Performance measurement

Evaluation issue: Performance – efficiency and economy	Rating
7. Are performance data being collected and reported? If so, is this data being used to inform senior management decision makers?	Opportunity for Improvement

A logic model and performance measurement framework (PMF) for the Adaptation Theme are in place; however, the Theme-level PMF does not adequately identify all relevant intended outcomes for all program elements. While some performance data is being collected and reported by program elements through means such as corporate reporting, a number of issues were observed, indicating that the data collected is inadequate to support an assessment of Theme-level results.

Performance measurement

- Although an Adaptation Theme-level PMF was established, an analysis of the document revealed that it did not adequately identify all relevant intended outcomes for each of the program elements. Immediate outcomes were identified for all program elements, but only five of the 10 program elements had one or more intermediate outcomes listed and only two program elements included a final outcome.[20] Indicators and targets were specified for outputs and most of the identified outcomes.[21]

- As of December 2014, all program elements had provided some performance data to report on the progress of indicators identified in the Theme-level PMF. However, several issues were identified with the performance data, such as misalignments between the reported data and the

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[19] Expenditure details for the funding from existing funding were received from TC, PCA and ECCC between December 2015 and March 2016 and expenditure details that accounted for a portion of existing funding were also received from NRCan during this time. Expenditure details for the existing funding were received from DFO in May 2016 and details to account for other portions of NRCan's funding from existing reference levels were received in June 2016. PHAC provided some information in May 2016 regarding existing funding for the 2013-14 year. SCC did not provide information related to existing funding.

[20] The five program elements that list at least one intermediate outcome are CARPAN, CCHAP, the NRCan Adaptation Program, HARS and NISI. The two programs that list a final outcome are CCHAP and HARS. Of the five, only NISI had not received funding in 2007-08 for similar programs, under the Clear Air Adaptation Theme.

[21] One program element had not identified a target at the intermediate outcome level, due to insufficient historical data.

target or outcomes,[22] missing data[23] and incomplete data.[24] Only two of the five program elements with intermediate outcomes reported data on these outcomes.[25] As a result, there is insufficient data to determine the degree of progress towards meeting the targets for approximately half of the indicators in the PMF.

- A review of the available data indicated that program elements frequently used the approach of reporting output data as a proxy for outcome data in the PMF, despite the fact that outputs were not always clearly related to outcomes. For example:

  o ECCC's CCPSP provided data on the number of downloads of climate model output datasets for the outcome "Targeted communities and sectors recognize the need for adaptation".

  o PHAC's PPHSACC reported presentations delivered to stakeholders as evidence that the outcome "Targeted communities and sectors assess their risks and opportunities arising from climate change" was being achieved.

  o SCC's and INAC's NISI provided the number of participants at a workshop for the outcome "Targeted individuals, communities and sectors implement adaptation measures."

- A few interviewees indicated that performance data is being collected to some degree, while others identified additional types of performance data that would be beneficial. Suggestions included:

  o data on the effects of activities at a community or population level

  o collection of pre and post data to analyze changes in awareness at the targeted community or sector and general public levels

  o analysis of output use and whether use affects climate change adaptation (for example, local applications of tools, changes in responses to extreme events)

Reporting and use of performance data

- Although there is no overarching reporting mechanism for the performance of the Theme, corporate reporting within each of the federal organizations provides information on progress towards achieving outcomes for the individual program elements. However, the structure and detail of reporting of Adaptation information is inconsistent across organizations. Examples of progress reporting in Departmental Performance Reports (DPRs) include program narratives, summaries of progress and lessons learned:

  o HC's DPR described progress regarding HARS in a narrative format, identifying the number of partner communities and giving examples of the work completed.

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[22] For example, instead of reporting the proportion of community-based projects resulting in the development of adaptation strategies and action plans, as per the target of 75%, CCHAP reported the number of funded projects.
[23] For example, ACCASP did not provide data for 2011-12 and 2012-13.
[24] For example, the data reported for HARS for 2011-12 and 2012-13 noted that workshops were held but did not indicate the number held.
[25] The two program elements are CARPAN and NISI. The intermediate outcome being referred to is: Targeted individuals, communities and sectors implement adaptation measures.

- o NRCan's DPR summarized progress on the Adaptation Platform in a narrative that reports the number of members, new products, amount of funding approved and funds leveraged through partnerships.

- Program staff and senior managers indicated that performance data is used for reporting and also provided some examples of the use of this data in strategic planning and decision making at the program level.

4.3   Performance – effectiveness

Evaluation issue: performance – effectiveness	Rating
8. To what extent have intended outcomes been achieved as a result of the program?	
Immediate outcomes	
1. Targeted communities and sectors recognize the need for adaptation	Acceptable
2. Targeted communities and sectors assess their risks and opportunities arising from climate change	Acceptable
3. Adaptation measures have been identified to address risks and opportunities arising from climate change	Acceptable
4. Targeted communities and sectors are aware of relevant adaptation measures	Acceptable
5. Increase collaboration on climate change adaptation	Acceptable
Intermediate outcomes	
1. Targeted communities and sectors address adaptation in their planning	Acceptable
2. Targeted individuals, communities and sectors implement adaptation measures	Unable to assess
Final outcomes	
1. Reduced vulnerability of individuals, communities, regions and economic sectors to the impacts of climate change	Unable to assess
2. Increased capacity of individuals, communities and economic sectors to adapt to climate change	Acceptable

The nature and scope of intended adaptation impacts is broad and diverse and the evidence of progress is largely comprised of specific examples linked to different program elements. Overall, program elements are making progress towards achieving the Adaptation Theme's immediate outcomes. Evidence suggests that targeted communities and sectors have begun to recognize the need for adaptation, assess climate change risks and opportunities and

identify adaptation measures, while their awareness of adaptation measures and collaboration on climate change adaptation are increasing.

Despite some evidence suggesting progress towards achieving the intermediate and final outcomes, it is still too early to conclude on progress in implementing adapting measures or on progress towards reducing the vulnerability of individuals, communities, regions and economic sectors.

This section presents the evaluation findings for each intended outcome. A rating statement summarizing observed progress towards achieving each intended outcome is included at the beginning of each of the sub-sections. Ratings were based on available performance data, as well as on other data collection methods such as the interviews, survey and document analysis. Data collection instruments for key informant interviews and the survey were designed such that respondents were asked only about the program elements with which they were most familiar.

Immediate outcome 1: Targeted communities and sectors recognize the need for adaptation[26] – Acceptable

Program element activities and outputs contributed to the recognition by targeted communities and sectors of the need for adaptation. Progress towards achieving this outcome was made through program outreach and information sharing with stakeholders regarding the necessity of climate change adaptation.

- Documents, performance data and case studies indicate that progress is being made towards targeted communities and sectors recognizing the need for adaptation. Specific examples of activities and outputs include:

  - PHAC's PPHSACC reported giving 53 presentations on public health and environmental change to stakeholders between 2011-12 and 2013-14.

  - Case study findings indicate that PPHSACC's Climate Change, Adaptation and Acute Gastrointestinal Illness in the Canadian North project measured and shared self-reported risk factors for gastrointestinal illness in Rigolet.

  - Performance data for HC's CCHAP for 2012-13 and 2013-14 indicate that all 27 projects funded (15 in 2012-13 and 12 in 2013-14) identified the need for adaptation plans.

  - ECCC's CCPSP, which tracks both direct data requests and online user access to its information, reported having received 61 direct individual requests over three years for temperature data from all regions of Canada and international institutions. Performance data for 2012-13 indicates that there were 21,298 downloads of climate model output datasets from the Canadian Centre for Climate Modelling and Analysis website.

  - INAC's CARPAN reported that three regional workshops (Yukon, Northwest Territories and Inuit regions) were delivered to showcase past projects, generate interest and plan for the new program. With the support of CARPAN, diverse methods of information sharing and program outreach were used to contribute to the increased recognition of

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[26] In the logic model, this outcome is linked to the following program elements: CCPSP, PPHSACC, CARPAN and CCHAP.

the need for adaptation. Examples of these methods include regular meetings to advise community members of issues, the development of an internet site focused on adaptation in relation to identified risks and corresponding workshops.

- A majority of key informants agree that the program elements contribute to this outcome through such means as information sharing activities on the effects of climate change (for example, through workshops, a training course or regional dialogues) and data and research related to the effects of climate change. In addition, the majority of the surveyed external stakeholders indicated that program element products (86%) and activities (81%) contributed to a large extent to community or sector recognition of the need for adaptation.

Immediate outcome 2: Targeted communities and sectors assess their risks and opportunities arising from climate change[27] – Acceptable

Program elements supported targeted communities and sectors to assess risks and opportunities arising from climate change through the development of models, projections and scenarios.

- Overall, the evidence suggests that solid progress is being made towards achieving this outcome, as demonstrated by several specific examples:

  o HC's CCHAP reported funding multiple First Nation and Inuit projects that assessed climate change and health risks (16 projects in 2012-13 and 12 projects in 2013-14).

  o HC's HARS reported conducting vulnerability assessments for two communities between 2011-12 and 2013-14.

  o The NRCan Adaptation Program supported eight risk assessments for coastal communities and five for the energy industry since 2013.

  o The NRCan Adaptation Program's Forest Change Initiative created an adaptation toolkit to enable stakeholders to identify risks and opportunities and implement adaptation strategies.

  o INAC's CARPAN supported projects that conducted risk and vulnerability assessments to identify areas of focus for adaptation measures (for example, such projects included the Unama'ki Water and Wastewater Vulnerability Assessment: Eskasoni First Nation).

  o TC's NTAI funded scoping studies, vulnerability assessments and monitoring/baseline studies through grants and contributions and contracts. These included, for example, projects related to assessing climate change adaptation for transportation in Arctic waters, assessing the vulnerability of the infrastructure and operations of the Port of Churchill and associated shipping routes, identifying potential impacts of climate change on the future streamflow and water levels of the Mackenzie River and assessing permafrost response to climate warming on the Dempster Highway.

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[27] In the logic model, this outcome is linked to the following program elements: CCPSP, UCECCN and CCHAP.

- o DFO's ACCASP Coastal Infrastructure Vulnerability Index project is being developed to enable managers to identify risk and adaptation strategies relative to infrastructure at DFO Small Craft Harbours coastal infrastructure sites.

- o ECCC developed a Departmental Climate Change Risk Assessment Guidance document in 2013. A workshop on this issue held in March 2013 was attended by representatives of 15 federal departments and agencies.

- Most key informants agree that the program elements have contributed to this outcome through such means as community-based risk assessments and community involvement in projects, identifying as examples PCA's UCECCN and HC's CCHAP. It was also noted by key informants that program elements contributed to this outcome by developing models, projections and scenarios that demonstrated how climate change would affect certain regions or types of infrastructure. As well, they mentioned that support was provided to communities and sectors to interpret the models and apply the information to local needs. For example:

- o ECCC's CCPSP provides scenarios and downscaling tools through the Canadian Climate Change Data and Scenarios Network website (formerly known as the Canadian Climate Change Scenarios Network) and has received over 500,000 requests for climate scenarios data between July 2012 and March 2013.

- o PCA's UCECCN conducted ecotype mapping in five Northern national parks in support of its Climate Change Vulnerability Assessment (CCVA) project.

- On average, roughly three-quarters of survey respondents rated both products and activities as having contributed to a large extent to communities and sectors assessing their risks and opportunities arising from climate change.

Immediate outcome 3: Adaptation measures have been identified to address risks and opportunities arising from climate change[28] – Acceptable

Evidence reveals numerous specific examples of adaptation measures from a majority of the Theme's relevant program elements.

- Program documents and performance data provide many examples of progress towards the achievement of this outcome. For example:

- o According to performance data for 2013-14 for PCA's UCECCN, new monitoring measures for all northern national parks were identified. These new measures were incorporated into each park's long-term operational plan for ecological integrity condition monitoring and data acquired are intended to support future climate adaptation planning.

- o Documents and performance data for 2013-14 show that all of HC's CCHAP's projects have identified adaptation measures. Funded projects that identified relevant adaptation measures include, for example, capacity building and knowledge transfer projects and projects focussed on maintaining traditional activities and food security.

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[28] In the logic model, this outcome is linked to the following program elements: ACCASP, UCECCN, HARS, PPHSACC, CARPAN, CCHAP, NISI and the NRCan Adaptation Program.

- o DFO's ACCASP reported in 2014 that adaptation tools were being developed for use by program managers in 40% of DFO's relevant program areas. As well, knowledge was being developed to support future adaptation efforts in 50% of DFO's relevant program areas.

- o During the timeframe covered by the evaluation, SCC's and INAC's NISI was working on developing four new standards intended to guide infrastructure adaptations, with a fifth standard pending.

- o NRCan Adaptation Program projects conducted cost-benefit analyses of adaptation measures in coastal management and the mining sector.

- o The Municipal Water Sub-Project case study from INAC's CARPAN found the project has identified adaptation measures and opportunities to enhance the water and wastewater infrastructure of Nunatsiavut communities.

- o CARPAN reported in 2013-14 that in the seven projects with completed adaptation plans, 14 communities have identified adaptation measures. One such project is the Climate Change Adaptation Planning within the Chippewas of Georgina Island First Nation Reserve.

- Most key informants agree that the program elements contribute to the identification of adaptation measures. Examples include tools to address chemical changes in fisheries; heat alert and response systems in municipalities and provinces; control methods for vector-borne diseases; community-specific adaptation plans; the Homeowners' Guide to Permafrost; local food security strategies; infrastructure standards; and ventilation and snow-load management guides.

- Furthermore, a majority of survey respondents reported that program element products and activities have contributed to a large extent to the identification of measures to address climate change risks (86% for both products and activities) and opportunities arising from climate change (65% and 69% for products and activities, respectively).

Immediate outcome 4: Targeted communities and sectors are aware of relevant adaptation measures[29] – Acceptable

Program elements are generally viewed by key informants and survey respondents to have contributed to awareness of relevant adaptation measures among targeted communities and sectors. Numerous examples of stakeholder outreach and knowledge transfer activities are available to support this view.

- A majority of key informants agree that the program elements contribute to this outcome. This view was generally based on having attended events or having been involved in activities that directly shared tools with communities and industry sectors. Key informants who were not of this view tended to be those who were familiar with program elements that were still developing tools, or had only recently developed them.

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[29] In the logic model, this outcome is linked to the following program elements: UCECCN, HARS, PPHSACC, CCHAP, NISI, NTAI and the NRCan Adaptation Program.

- According to key informant interview findings, efforts to increase awareness included communications and social media messaging, workshops, webinars, partnerships and committees and publications. Some specific examples include:

  o HC's CCHAP's distributed reports on adaptation measures to targeted communities and hosted Climate Change and Health Adaptation Workshops and knowledge sharing sessions for over 100 First Nation and Inuit community leaders and members from across the Arctic in the fall of 2013.

  o The NRCan Adaptation Program's held numerous meetings and discussions with Northern and government stakeholders on ongoing research related to the mining sector.

  o Workshops were held as part of the work of PC's UCECCN in eight northern communities for four northern national parks.

  o A heat and health accreditation course for healthcare professionals was developed by HC's HARS, which hosted over 200 participants and implemented a distribution strategy to enhance the reach of materials for targeted stakeholders.

- There are also several examples of continuing efforts to raise awareness among targeted audiences that are in the early stages of development or implementation:

  o Case study findings indicated that PHAC's PPHSACC's Climate Change, Adaptation and Acute Gastrointestinal Illness in the Canadian North project is working toward identifying specific adaptation measures for northern communities.

  o In response to findings from the NTAI evaluation, TC has committed to finalizing a knowledge transfer plan to communicate the knowledge gained through the NTAI investments to target audiences.

  o The case study of NRCan's Adaptation Program's Forest Change Initiative revealed that additional outreach efforts were thought to be needed to bring the models and data developed to the attention of regional partners. Funds were allocated for such efforts to take place in 2015-16.[30]

- A majority of survey respondents reported that program element products (87%) and activities (85%) contributed to a large extent to increased awareness of adaptation measures.

- As discussed in section 4.2.1, more work is needed to increase awareness and engagement of stakeholders in relation to adaptation activities, to contribute more fully to communities and sectors being able to incorporate adaptation planning and activities and reduce vulnerabilities. However, in the context of the immediate outcomes of the program, acceptable progress has been made towards targeted communities and sectors being aware of relevant adaptation measures.

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[30] NRCan program element representatives reported that, since the case study of the Forest Change Initiative was conducted, the Canadian Forest Service has produced its initial results and, as per its outreach strategy, has notified regional contacts of the resulting tools and resources available and published on its website.

Immediate outcome 5: Increase collaboration on climate change adaptation[31] – Acceptable

Program elements are generally viewed by key informants to have increased the collaboration among government, community and sector partners around climate change adaptation. Progress in this area is further supported by documented examples, performance data and survey results.

- A majority of key informants agree that the program elements have been effective in increasing collaboration on climate change adaptation. Key informants noted that collaborations have occurred among a variety of partners and stakeholders, including representatives of other government organizations (federal departments, provinces, territories, municipalities), industries, climate research organizations, universities and academics and First Nations and Inuit communities. Such collaborations ranged in complexity from sharing information to active collaboration on program design, priorities, needs assessments, research and tool development.

- NRCan's Adaptation Platform is flagged by some key informants as a best practice in encouraging collaboration. It brought together over 200 members representing all provinces and territories, eight federal departments, four industries, numerous academics and several other organizations to develop tools and conduct research. At least 16 new collaborations were established between 2011-12 and 2013-14, including four new working groups in 2013-14.

- TC's NTAI established two networks of expertise that include stakeholders from provinces, territories, universities, colleges and, to a lesser extent, the private sector: the Network of Expertise on Transportation Infrastructure in Permafrost Regions and the Network of Expertise on Transportation in Arctic Waters. The recent evaluation of the NTAI concluded that these networks are effective venues for building collaboration between territorial governments and researchers.

- ECCC's CCPSP supports participation in national and international climate science collaborations, as well as contributions to assessments on climate science and climate impacts and adaptation (domestic and international), and met with regional climate consortia to discuss the production and delivery of climate information.

- Through its HARS program, HC has been collaborating with ECCC's Meteorological Service of Canada, the Ontario Ministry of Health and Long-Term Care, Public Health Ontario and Public Health Units to harmonize HARS across the province.

- Results from the case study of DFO's ACCASP show that collaboration on the Coastal Infrastructure Vulnerability Index reduced barriers between experts in science, engineering, policy and economics within DFO. This internal collaboration is perceived to have facilitated communication, and the sharing of information and data.

- Case study results indicate that five of the 23 formal collaborations reported by PHAC's PPHSACC in 2014 were a direct result of the Burden of Illness (BOI) survey project.[32] Local

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[31] In the logic model, this outcome is linked to the following program elements: ACCASP, CCPSP, UCECCN, PPHSACC, NISI, NTAI and the NRCan Adaptation Program.

government and community stakeholders consulted throughout the project provided advice on the survey design. Ongoing communication with community members was undertaken to increase awareness of both the project's purpose and of results-sharing events held in local communities.

- In addition to the examples of collaboration outlined above at the program element level, ECCC facilitated collaboration among federal partners involved in climate change adaptation through its work in chairing governance committees (for example, the Director General Adaptation Policy Steering Committee (DGAPSC) and FPT Adaptation Policy Committee, described in [section 2.2](#)).

- A majority of survey respondents indicated that program element products (83%) and activities (82%) contributed to a large extent to increased collaboration on climate change adaptation.

- As discussed in [section 4.2.1](#), more work is needed to improve the design of the Adaptation Theme in order to maximize collaboration with existing and potential stakeholders in relation to adaptation activities, ultimately to contribute more fully to communities and sectors being able to address adaptation in their planning and activities and to reduce vulnerabilities. However, in the context of how the Theme was functioning during the evaluation period, acceptable progress was made towards increasing collaboration on climate change adaptation.

Intermediate outcome 1: Targeted communities and sectors address adaptation in their planning[33] – Acceptable

Some communities and sectors are making progress in addressing adaptation in their planning. Although progress to date has been modest, this is generally thought to be acceptable for the current stage of adaptation programming.

- Survey and key informant feedback suggests that stakeholders think program elements are contributing to this outcome. A majority of survey respondents reported that program element products (81%) and activities (79%) contributed to a large extent to communities and sectors addressing adaptation in their planning. Key informants also reported that program elements are contributing to this outcome at least to some extent, but a few also highlighted that it may be too early to tell and that tools to assess this outcome were not available. It is also acknowledged that while some planning is taking place, it cannot be fully attributed to program work.

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[32] The BOI survey project was undertaken as part of the Climate Change, Adaptation and Acute Gastrointestinal Illness in the Canadian North project. Collaborations included meetings with provincial and community governments on climate change impacts, an international collaboration on approaches for analysis of climate change impacts on Indigenous people's health, a national collaboration on understanding how Indigenous knowledge can inform climate-health policy in the Arctic and an expert panel participant at an international integrated risk assessment workshop.

[33] In the logic model, this outcome is linked to the following programs: ACCASP, CCPSP, PPHSACC, CCHAP, NTAI and the NRCan Adaptation Program.

- Some examples of adaptation being considered in community and sector planning include:

    o projects funded through HC's CCHAP that developed community plans to improve food security and the sustainability of housing

    o a few early examples in which TC's NTAI research has been taken into consideration in infrastructure design and adaptation

    o the development of a blueprint by 41 partner organizations (including local governments, provincial ministries, and owners of major transportation infrastructure) linked with NRCan's Adaptation Program to adapt to catastrophic river and coastal flooding in British Columbia's Lower Mainland

    o regions developing plans in response to projections of vector-borne diseases provided by PHAC's PPHSACC

    o sectors taking the climate change models and projections provided by ECCC's CCPSP into account when planning future infrastructure

- On a similar note, case study key informants for the NRCan Adaptation Program's Forest Change Initiative project reported that it is too soon in the project timeline to observe intermediate outcomes.[34] Case study findings for PPHSACC's Climate Change, Adaptation and Acute Gastrointestinal Illness in the Canadian North Project show that although Iqaluit and Rigolet have not yet addressed adaptation in their planning, there has been progress towards identifying adaptation measures as a result of the project's outputs. The outputs have provided Iqaluit and Rigolet with information and tools to inform adaptation planning, but case study key informants noted that community follow-ups would be needed to properly assess progress toward the intermediate outcomes.

Intermediate outcome 2: Targeted individuals, communities and sectors implement adaptation measures[35] – Unable to assess

While implementation of some adaptation measures has occurred, progress is still in the early stages. As a result, it is too early to adequately conclude on the overall status of this outcome or whether progress to date is in keeping with expectations.

- The evaluation uncovered several documented or reported examples of adaptation measures having been implemented. Examples include:

    o HC's HARS program successfully piloted heat alert and response systems in four communities and provincial heat alert and response systems that are operational or in development in Manitoba, Alberta and Ontario.

    o TC's NTAI funded permafrost research related to groundwater and heat transfer, which supported the decision to pilot interceptor ditches to deflect groundwater along a limited section of the Alaska Highway.

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[34] At the time of data collection, there were approximately 1.5 years left for the five-year program.
[35] In the logic model, this outcome is linked to the following programs: UCECCN, HARS, PPHSACC, CCHAP, CARPAN, NISI, NTAI and the NRCan Adaptation Program.

- o The HARS program implemented a harmonization project in Ontario, with a pilot project involving public health units in the greater Toronto area during the Pan and Parapan American Games in the summer of 2015.

- o A thermosyphon system[36] was implemented in the Iqaluit Airport as a result of work completed by SCC's and INAC's NISI.

- o A water filtration system was implemented by HC's CCHAP to ensure that water remains clean during increased storm activity.

- o An ice monitoring network was established to monitor the stability of sea ice and was implemented with support from the CCHAP.

- o Risk maps were developed by PHAC's PPHSACC for the tracking of Lyme disease, to inform public health decision making in provinces (tools for public health professionals).

- Overall, key informants provided different views regarding this outcome. Although some key informants indicated that the program elements have contributed to communities and sectors implementing adaptation measures, others suggested it was too early to tell. Moreover, a few key informants reported that much of the implementation of adaptation measures has not yet occurred and is only planned for the future. Case study findings depict a similar picture. For instance:

- o The case study of PHAC's PPHSACC Climate Change, Adaptation and Acute Gastrointestinal Illness in the Canadian North project found that while information and tools have been developed and provided, community follow-ups are thought to be needed in order to properly assess the degree to which communities are using them to implement adaptation measures.

- o The Municipal Water Sub-Project case study from INAC's CARPAN found that although the project has developed decision-making and evaluation tools that can be used by local and regional governments in future planning and development endeavours, no evidence of the tools' use was available at the time of data collection.

- o NRCan's Adaptation Program's Forest Change Initiative project case study revealed that case study key informants deemed it to be too soon in the project timeline to observe intermediate outcomes.

- o The DFO ACCASP Coastal Infrastructure Vulnerability Index (CIVI) project case study captured the general perception that it is too early in the development process to evaluate this outcome. Once the index is fully developed, however, the coastal assets of Small Craft Harbours will have a useful adaptation tool for coastal infrastructure.

- The survey found that only a slim majority thinks program element products (64%) and activities (59%) are contributing to a large extent to the implementation of adaptation measures.

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[36] A system in which a heat transfer device extracts the heat from the soil during winter and disperses it to the environment, maintaining the stability of the frozen ground and preventing thawing.

Final outcome 1: Reduced vulnerability of individuals, communities, regions and economic sectors to the impacts of climate change[37] – Unable to assess

Findings from the survey and key informant interviews indicated that program elements have contributed to reducing the vulnerability of individuals, communities, regions and sectors to the impacts of climate change. Some interviewees reported that it is too early to assess progress towards achieving this outcome,[38] however, and examples generally relate to establishing the conditions to reduce vulnerability, rather than reducing vulnerability itself.

- A majority of survey respondents reported that program element products and activities reduce the vulnerability of communities (78% for products and 82% for activities), regions (78% and 64%, respectively) and individuals (73% and 74%, respectively) to a large extent. A majority (63%) also reported that program activities reduce the vulnerability of economic sectors to a large extent.

- Approximately half of key informants indicated that the program elements have contributed to reducing vulnerabilities. It is important to note that some key informants reported that there was not enough information to assess the program's contribution to this outcome. As well, while key informants offered a number of examples of actions that should eventually lead to a reduced vulnerability, few actually demonstrate this result. Examples of the kinds of activities that are expected to reduce vulnerabilities include:

  o Raising awareness and increasing knowledge of the risks of climate change (for example, HC's CCHAP raised awareness of the impacts of climate change in the North).

  o Involving communities and sectors in tool development, thereby better allowing the tools to be directed toward the areas of greatest vulnerability (for example, youth resiliency programs implemented under CCHAP in which youth learn culturally appropriate skills to live in a changing climate).

  o Identifying populations that are most vulnerable to the effects of climate change, such that regions and organizations can develop targeted responses (for example, PHAC's PPHSACC identified the age groups at most risk for Lyme disease).

  o Developing standards that can be used to determine which infrastructure to invest in and how to prepare infrastructure to withstand the changes brought by climate change (for example, work undertaken by SCC's and INAC's NISI).

- Case study findings also suggest that it is too early to conclude on the question of reduced vulnerabilities. PHAC's PPHSACC Climate Change, Adaptation and Acute Gastrointestinal Illness in the Canadian North project could not conclude regarding progress toward this outcome. Case study key informants noted that community follow-ups would be needed to properly assess

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[37] In the logic model, this outcome is linked to the following programs: ACCASP, PPHSACC, CARPAN, CCHAP and NISI.
[38] While six of the program elements had similar programs funded in 2007-08, the intended outcomes of the prior Clean Air Adaptation Theme differed from the 2011-12 Theme, with some of the existing programs having a different focus for services, or addressing a different aspect of adaptation. Further, as the current evaluation covered the timeframe from 2011-12 to 2014-15, an analysis of the long-term outcomes of the prior programs was outside the scope of this assessment.

progress in this regard. As well, key informants for INAC's CARPAN Municipal Water Sub-project case study reported that use of the tools in future planning activities will eventually lead to reduced vulnerabilities. They also noted that it is too early in project timelines to conclude on the extent of progress toward this outcome.

Final outcome 2: Increased capacity of individuals, communities and economic sectors to adapt to climate change[39] – Acceptable

Some progress had been made towards increasing the capacity of individuals, communities and sectors to adapt to climate change through participation in projects, knowledge sharing and enhancing research capacity.

- Documented examples of how the capacities of individuals, communities and sectors have been increased include:

  o HC's CCHAP supported projects that built research facilities in First Nations and Inuit communities.

  o Through TC's NTAI, capacity to adapt to climate change is being built among various stakeholder groups, including academic researchers, territorial and provincial policy managers and technical and engineering staff. Network meetings and workshops are noted as key venues for capacity building.

- A majority of key informants agree that the program elements contribute to increasing the capacities of individuals, communities and sectors to adapt to climate change, through such means as the provision of science-based information and tools for community and sector use (for example, risk modeling tools developed by PHAC's PPHSACC; baseline data from PCA's UCECCN to identify regional changes due to climate change).

- A majority of survey respondents indicated that program element products and activities contributed to a large extent to increasing individual (59% and 62%, respectively), community (63% and 64%, respectively), regional (60% and 65%, respectively) and the economic sector's (74% and 75%, respectively) capacities to adapt to climate change.

5. Conclusions

Evaluation findings indicate that there is a continued environmental, societal and economic need for initiatives to assist Canadians in adapting to climate change and the risks and opportunities it creates. The Adaptation Theme of the former CAA aligns with federal priorities related to protecting Canadians, promoting economic growth and development and addresses the sustainability of natural resources and the North. Activities being undertaken as part of the Adaptation Theme are consistent with federal roles and responsibilities. The federal government is viewed as being well positioned to provide leadership and information and to facilitate collaboration on climate change adaptation.

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[39] In the logic model, this outcome is linked to the following programs: CCPSP, UCECCN, HARS, PPHSACC, CARPAN, the NRCan Adaptation Program and NTAI.

The Adaptation Theme program elements use a variety of program delivery mechanisms to work towards achieving intended outcomes. They are generally considered to be appropriate for meeting intended outcomes, given funding and timeline restrictions. Although program elements generally produce products and activities perceived to be of high quality and useful to external stakeholders, some reported difficulty finding products and that activities have not been well advertised. A particularly strong dimension of program delivery was identified to be the program elements' engagement of stakeholders. Some key informants suggested there is room to further engage new or existing stakeholder groups in the work being undertaken by the program elements.

Program element governance was reported to be clear and effective. At the Adaptation Theme-level, three committees exist to collectively manage and coordinate the delivery of the Theme activities federally and across jurisdictions. Although some coordination and communication among the program elements is occurring, findings suggest there is an opportunity to increase information sharing and collaboration among the program elements within the Adaptation Theme, as well as among federal and non-federal program partners.

Findings suggest that program resources are being used efficiently. Effective practices in reducing program delivery costs include leveraging networks to promote activities and share information, leveraging funds from partners and using information technologies to assist with communication, collaboration and outreach. Coordinated horizontal financial reporting occurs for the Adaptation Theme; however, the report only provides details for new funding. Due to limitations in the financial information available from some federal partners, it was not possible to present a comprehensive picture of the total budget and expenditures for Adaptation Theme activities.

Program staff and senior managers indicated that performance data is used for reporting and provided examples of its use in decision making. A number of issues were observed, however, indicating that there is inadequate data collected to support the Theme-level PMF. A lack of data on the effects of activities at a community or population level was noted and key informants identified opportunities for improvement related to increased data collection and analysis.

Overall, program elements are making progress towards achieving the Adaptation Theme's immediate outcomes. For example, identification and awareness of relevant adaptation measures among targeted communities and sectors is increasing, as is collaboration on climate change adaptation. The evaluation also found evidence suggesting progress is being made towards achieving intermediate and final outcomes. However, progress is still in the early stages, given the longer-term nature of these outcomes, and it is too early to conclude on the Theme's progress towards achieving its final outcome of reducing vulnerability to the impacts of climate change.

6.   Recommendations

Based on the nature of this evaluation, which focused on the overall Adaptation Theme and the diversity of the different Adaptation program elements, the recommendations reflect observations that were common to most relevant program elements. Accordingly, the recommendations are broadly-worded and reflect the understanding that, while generally applicable across all elements,

each responsible federal partner should specify through its management responses and action plans how these recommendations should best be addressed for its respective program elements.

The following recommendations are directed to the senior management in each of the nine federal organizations responsible for delivering the Adaptation Theme programming, with the exception that INAC and TC are excluded from Recommendation 4. No areas of concern were found in reviewing the financial information provided by these two departments.

Recommendation 1

Review current adaptation program delivery to identify opportunities to expand engagement among new and existing stakeholder groups and increase awareness of information, products or activities.

Program outreach and information sharing are key mechanisms for increasing awareness of the need for adaptation. Program efforts to promote collaboration led to outputs that are responsive to stakeholders' needs. A majority of key informants reported that there is an opportunity to increase engagement with new and existing stakeholders. Not all stakeholder groups are considered to be adequately represented and not all opportunities to benefit from the involvement of specific stakeholder groups are currently being leveraged. As well, some respondents expressed difficulty finding products and noted that adaptation activities are not well advertised among target audiences.

Recommendation 2

Review mechanisms for collaboration and information sharing between the Adaptation program elements, as well as with other federal and non-federal program partners, in order to leverage best practices and resources and avoid duplication of effort.

Findings suggest there is a lack of awareness at the working level of activities taking place or progress made in other program elements towards the achievement of outcomes. While some coordination and collaboration among program elements has been occurring, there is an opportunity to increase information sharing and collaboration, including sharing of best practices, tools and lessons learned, among federal and non-federal partner organizations involved in climate change adaptation programming.

Recommendation 3

Review the current performance measurement framework and data to improve tracking and reporting on progress toward Adaptation-theme level intended results.

The Theme-level PMF does not adequately capture all relevant intended outcomes for all of the program elements. Only half of the program elements have one or more intermediate outcomes listed in this PMF, with even fewer listing a final outcome and very limited data was reported for these outcomes. While some relevant performance data is being collected and reported, a lack of data on the effects of activities at a community or population level was identified. There are opportunities for improvement related to increased data collection and analysis, including, for

example, the collection of pre and post data on the level of awareness at the targeted community, sector and general public levels and analyses of output utilization and its impact.

Recommendation 4

In collaboration with the departments' respective Chief Financial Officers, review current processes for opportunities to improve program tracking and reporting of financial information for Adaptation program elements.

Approved funding for the Adaptation Theme included both new funding and funding from the existing reference levels of some of the involved organizations. Although there is coordinated horizontal financial reporting on new funding to Treasury Board Secretariat, not all organizations within the Adaptation Theme were able to provide budget and/or expenditure figures for existing funding or details to sufficiently account for variances between budgets and expenditures for both new and existing funding. This in turn precluded a detailed analysis of the financial information across the Adaptation Theme program elements.

Management responses

Due to the number of participating Adaptation partners and the diversity of program elements under the Adaptation Theme, each partner department is encouraged to address the recommendations in a manner that best meets the needs of its relevant program and to coordinate with other partners as appropriate in developing its management responses. Accordingly, the individual management responses are not included in the body of this report. It is the responsibility of each partner to develop and publish its own management responses under separate cover.

Appendix A: Adaptation theme streams and program elements

Brief descriptions of the Adaptation Theme streams and the program elements within them are provided below.

1. Enhance the science foundation to understand and predict climate and assess climate change impacts

Program elements under this stream aim to address gaps in understanding the impacts and associated risks posed by climate change. They are designed to improve climate change prediction and scenarios and to better understand ecological changes in Canada's marine and northern terrestrial ecosystems.

- **Aquatic Climate Change Adaptation Services Program (ACCASP) [DFO]** – This program element aims to develop knowledge about the risks, impacts and opportunities created by climate change and to integrate it into the delivery of departmental programs and policies. The program element has three components: 1) assessment of climate change risks and vulnerabilities in four large basins, 2) research to understand the impacts of climate change and 3) research to create applied science to adapt to climate change.

- **Climate Change Prediction and Scenarios Program (CCPSP) [ECCC]** – This program element has both a science and a policy component. The science component is intended to provide scientific expertise, information and tools (for example, global and regional climate models, future climate scenarios, information on climate extremes for infrastructure design, codes and standards, tailored websites), in order to provide foundational knowledge for understanding and predicting climate change for effective federal, provincial, territorial and community adaptation planning and the development of climate policy at the global and regional levels. It aims to generate information on climate change and variability and tools to facilitate integration of this information into decision making. The policy component is intended to provide policy support in the form of analysis and coordination within and among departments for issues associated with climate change adaptation. As federal policy lead for adaptation, ECCC's work includes advancing the Federal Adaptation Policy Framework and policy development and coordination for senior policy committees such as the Deputy Ministers Committee on Climate Change, Energy and the Environment.

- **Understanding Climate-Driven Ecological Changes in Canada's North (UCECCN) [PCA]** – This program element is aimed at better understanding how climate change is affecting and is predicted to influence ecological changes in the North at scales relevant to national park management and how these changes will affect ecological integrity and traditional lifestyles in the North. The approach is to intensify and focus park inventory, monitoring, research and modeling to assess current change and to predict how park ecosystems and traditional use may change under a range of scenarios in the near future. Information from this program element is intended to support local and regional park co-operative management decisions and to provide a comprehensive assessment of how arctic terrestrial systems are changing across the North.

2.   Enhance public health and safety

Programs under this stream aim to expand on previous work to enable existing systems (for example, emergency response) and individual Canadians to effectively respond to health-related climate risks by extending the infectious disease research and surveillance program and expanding the heat alert and response systems to additional high-risk communities and regions. Program elements include:

- **Heat Alert and Response Systems (HARS) [HC]** – The objectives of this program element are to take concrete action to reduce the vulnerability of Canadians to extreme heat by supporting the adoption of HARS in at-risk communities and to enhance the capacity of the health care system to prevent, diagnose and treat heat-related illnesses, especially among vulnerable populations, through the provision of accredited training to health care professionals. The program focuses on four areas of activity: establish pilot provincial and regional HARS; expand HARS into highly vulnerable regions and communities; increase the network of experts to maximize sharing and development of information; and develop, in collaboration with partners, accredited training materials for public health professionals.

- **Preventative Public Health Systems and Adaptation to Climate Change Program (PPHSACC) [PHAC]** – The objective of this program element is to protect the health of Canadians by developing adaptation strategies to address the impacts of climate change on vector-borne, water-borne and food-borne diseases. The program element was designed to focus on six areas: developing risk modeling tools and databases for scenario-based projections of the impacts of climate change on public health risks from microbial threats to food and water safety; testing and refining a climate change infectious disease toolkit designed to help decision makers mitigate public health risks; developing a public health and water-borne illness research tool by compiling public health-issued water advisories and associated attributable water-borne illnesses; conducting a study on the burden of gastrointestinal illness in the Canadian North; establishing a public health network to facilitate federal knowledge transfer on climate change health and adaptation; and conducting an economic valuation of the health impacts related to climate change.

3.   Build resilience in the north and climate-sensitive Aboriginal communities

This stream aims to support adaptation work in the North and climate sensitive Aboriginal communities in order to contribute to the implementation of key federal policies, such as the Northern Strategy and to advancing the development of safe, sustainable and prosperous northern communities through programs designed to integrate climate risks into codes and standards for northern infrastructure and by enabling the development of adaptation plans. Program elements include:

- **Climate Change and Health Adaptation for Northern First Nations and Inuit Communities (CCHAP) [HC]** – This program element has three main objectives: to enable northern First Nations and Inuit communities to identify and assess key vulnerabilities and health impacts related to climate change; to develop scientific and community-relevant

information to support northern First Nations and Inuit communities in adapting to climate change; and to combine traditional knowledge with formal science through community-based research to support sound adaptation policy development. The intent is to provide funding to assist communities to determine their health and adaptation priorities, conduct research and develop adaptation plans that meet most pressing needs.

- **Climate Change Adaptation and Resilience Program for Aboriginals and Northerners (CARPAN) [INAC]** – This program element is intended to continue to fund the development of community-relevant information and tools for Aboriginal and Northern communities, governments and organizations to assess vulnerabilities to climate change and to develop adaptation plans. This is expected to result in plans, actions and decisions that enhance the resiliency of communities. It is intended to focus on areas where the impacts of climate change are already visible and vulnerability is high (for example, infrastructure, water quality and availability).

- **Integrating Adaptation into Codes and Standards for Northern Infrastructure (NISI) [SCC and INAC]** – This program element, also known as the Northern Infrastructure Standards Initiative (NISI), is delivered through a partnership between SCC and INAC. It is intended to help Aboriginal and Northern communities build and design safer and more resilient infrastructure by applying building codes, standards and related instruments. It is intended to deliver a coordination mechanism between the federal departments and agencies engaged in Northern infrastructure; a Northern panel, building on existing structures and networks in the North pulling together practitioners involved in infrastructure issues across the North; the identification of gaps and needs with respect to the adequacy of codes and standards; a risk assessment identifying categories of infrastructure impacted by climate change in the North and a plan addressing those risks; new guidelines to address priority categories; and a process to incorporate new guidelines into existing standards and codes or to develop new standards reflecting the unique circumstances of the North.

4. Enhance the competitiveness of climate-sensitive economic sectors and systems

This stream aims to assist decision makers within all levels of government and among stakeholder groups in understanding the relevance of climate change on their operations and equip them with the tools and information needed to effectively adapt.

- **Enhancing Competitiveness in a Changing Climate (also referred to as the NRCan Adaptation Program) [NRCan]** – This program element is designed to reach the private sector, specifically natural resource sectors including forestry and mining and the communities whose economies are closely tied to them, since they are particularly sensitive to climate change through impacts on resource supply, consumer demand and natural hazards (for example, flooding, wildfires) impacting infrastructure and the cost of getting products to market. It is intended to work with Regional Adaptation Collaboratives (RAC), including providing contributions to develop, transfer and integrate targeted adaptation information and tools.

- **Northern Transportation Adaptation Initiative (NTAI) [TC]** – The objectives of this program element are to improve the resilience, responsiveness and adaptability of Canada's northern transportation system by incorporating climate change considerations into infrastructure design and maintenance, by mitigating future maintenance costs and losses in economic productivity and by building northern science capacity; and work with stakeholders to develop strategic adaptation measures for northern transportation infrastructure to ensure a sustainable northern transportation system.

Appendix B: Financial information from 2011-12 to 2015-16

Table B.1   Approved funding totals – 2011-12 to 2015-16

Program name	2011-12			2012-13			2013-14		
	New	Existing	Total	New	Existing	Total	New	Existing	Total
ACCASP	$2,200,000	$640,000	$2,840,000	$5,180,000	$634,000	$5,814,000	$3,570,000	$634,000	$4,204,000
CCPSP	$5,938,000	$1,628,940	$7,568,940	$5,960,000	$1,628,940	$7,588,940	$5,980,000	$1,451,940	$7,431,940
UCDECCN	$540,000.	$410,000	$950,000	$530,000	$416,000	$946,000	$480,000	$424,000	$904,000
HARS	$1,700,000		$1,700,000	$1,800,000		$1,800,000	$1,800,000		$1,800,000
PPHSACC	$1,730,000	$90,000	$1,820,000	$3,260,000	$90,000	$3,350,000	$3,200,000	$90,000	$3,290,000
CCHANFNIC	$600,000		$600,000	$2,350,00		$2,350,000	$2,350,000		$2,350,000
CARPAN	$1,410,000		$1,410,000	$4,420,000		$4,420,000	$4,790,000		$4,790,00
NISI	$500,000	$18,353	$518,353	$500,000	$18,353	$518,353	$500,000	$18,353	$518,353
NISI	$200,000		$200,000	$200,000		$200,000	$200,000		$200,000
NISI Program Total	$700,000	$18,353	$718,353	$700,000	$18,353	$718,353	$700,000	$18,353	$718,353
ECCC	$4,000,000	$12,875,000	$16,875,000	$8,000,000	$1,530,000	$9,530,000	$8,000,000	$1,530,000	$9,530,000
NTAI	$360,000	$124,448	$484,448	$3,120,000	$124,448	$3,244,448	$2,820,000	$124,448	$2,944,448
TOTAL	$19,178,000	$15,786,741	$34,966,741	$35,320,000	$4,441,741	$39,761,741	$33,690,000	$4,272,741	$37,962,741

Program name	2014-15			2015-16			Five-year Total		
	New	Existing	Total	New	Existing	Total	New	Existing (% total funding)	Total
ACCASP	$2,800,000	$628,000	$3,428,000	$2,800,000	$628,000	$3,428,000	$16,550,000	$3,164,000 (16%)	$19,714,000
CCPSP	$5,980,000	$1,451,940	$7,431,940	$5,980,000	$1,451,940	$7,431,940	$29,838,000	$7,613,700 (20%)	$37,453,700
UCDECCN	$450,000	$432,000	$882,000	$410,000	$436,000	$846,000	$2,410,000	$2,118,000 (47%)	$4,528,000
HARS	$1,600,000		$1,600,000	$1,600,000		$1,600,000	$8,500,000		$8,500,000

Program name	2014-15			2015-16			Five-year Total		
	New	Existing	Total	New	Existing	Total	New	Existing (% total funding)	Total
PPHSACC	$2,130,000	$90,000	$2,220,000	$1,680,000	$90,000	$1,770,000	$12,000,000	$450,000 (4%)	$12,450,000
CCHANFNIC	$2,350,000		$2,350,000	$2,350,000		$2,350,000	$10,000,000		$10,000,000
CARPAN	$4,660,000		$4,660,000	$4,740,000		$4,740,000	$20,020,000		$20,020,000
NISI	$500,000	$18,353	$518,353	$500,000	$18,353	$518,353	$2,500,000	$91,765 (4%)	$2,591,765
NISI	$200,000		$200,000	$200,000		$200,000	$1,000,000		$1,000,000
NISI Program Total	$700,000	$18,353	$718,353	$700,000	$18,353	$718,353	$3,500,000	$91,765	$3,591,765
ECCC	$8,000,000	$1,530,000	$9,530,000	$7,000,000	$1,530,000	$8,530,000	$35,000,000	$18,995,000 (35%)	$53,995,000
NTAI	$2,400,000		$2,400,000	$2,300,000		$2,300,000	$11,000,000	$373,344 (3%)	$11,373,344
TOTAL	$31,070,000	$4,150,293	$35,220,293	$29,560,000	$4,154,293	$33,714,293	$148,818,000	$32,805,809 (18%)	$181,625,809

Note: Amounts include Public Works and Government Services Canada (PWGSC) accommodation amounts.

Table B.2   Total budget and expenditures for 2011-12 to 2014-15*

Program Element [Organization Name]	New Funding (B)	Existing (C)	Total Approved Funding (D=B+C)	Budget (E)**	Actuals (F)***	Variance (G=F-E)	% Variance (H=G/F)
ACCASP [DFO]	$13,750,000	$2,536,000	$16,286,000	$13,750,000	$12,606,474	-$1,143,526	-9.1%
CCPSP [ECCC]	$23,860,000	$6,161,760	$30,021,760	$23,860,000	$20,224,123	-$3,635,877	-18.0%
UCECCN [PCA]	$2,000,000	$1,682,000	$3,682,000	$2,046,706	$1,971,989	-$74,717	-3.8
HARS [HC]	$6,900,000	-	$6,900,000	$6,900,000	$8,314,100	$1,414,100	17.0%
PPHSACC [PHAC]	$10,320,000	$360,000	$10,680,000	$8,904,600	$7,914,600	-$990,000	-12.5%
CCHAP [HC]	$7,650,000	-	$7,650,000	$7,650,000	$6,873,900	-$776,100	-11.3%
CARPAN [INAC]	$15,280,000	-	$15,280,000	$15,280,000	$15,036,789	-$243,211	-1.6%
NISI [INAC]	$800,000	-	$800,000	$800,000	$742,378	-$57,622	-7.8%
NISI [SCC]	$2,000,000	$73,412	$2,073,412	$2,000,000	$2,000,000	-	0.0%
NRCan Adaptation Program [NRCan]	$28,000,000	$17,465,000	$45,465,000	$28,000,000	$25,414,300	-$2,585,700	-10.2%
NTAI [TC]	$8,700,000	$373,344	$9,073,344	$9,093,135	$7,930,799	-$1,162,336	-14.7%
Total Across all Program Elements	$119,260,000	$28,651,516	$147,911,516	$118,284,441	$109,029,452	-$9,254,989	-8.5%

Source: Information on Budget (E) and Actuals (F) is from the CAA Spending Overview 2011-2016, prepared by ECCC's Corporate Services and Finance Branch. Note that Budget figures are taken from the "Planned Spending" column of the CAA Spending Overview report.

* Note: Amounts include PWGSC accommodation.

** Budget reflects the total of the approved new funding that was allocated to the program elements.

***Actuals indicate the expenditures of the approved new funding.

Appendix C: Logic model for the Adaptation Theme[40]

Final outcomes	Reduced vulnerability of individuals, communities, regions and economic sectors to the impacts of climate change				Increased capacity of individuals, communities and economic sectors to adapt to climate change				
	A E F G H				**B C D E F J K**				

Intermediate Outcomes	Targeted communities and sectors address adaptation in their planning				Targeted individuals, communities and sectors implement adaptation measures				
	A B E G J K				**C D E F G H J K**				

Immediate Outcomes	Targeted communities and sectors recognize the need for adaptation **B E F G**	Targeted communities and sectors assess their risks and opportunities arising from climate change **B C G**		Adaptation measures have been identified to address risks and opportunities arising from climate change **A C D E F G H J**		Targeted communities and sectors are aware of relevant adaptation measures **C D E G H J K**		Increase collaboration on climate change adaptation **A B C E H J K**	

Outputs	Analyses, assessments and research reports **A B C G J K**	Adaptation plans **F**	Predictions, scenarios and models **B E**	Partnerships and networks **B D E K**	Decision support and learning tools **A B C D E J K**	Codes, standards, guidelines and related instruments **H**	Advice, information sharing, training and web sites **B D J K**	New Technologies **K**	

Activity Streams	Modelling, research and analysis **B C K**	Surveillance and monitoring **C K**	Knowledge coproduction **D J K**	System and tool development **A C D E F H J K**	Assessment – scientific, risk, opportunity, impact, economic, vulnerability **A E G F J K**	Capacity building and training **D E K**	Collaboration and engagement **D E F G H J K**	Outreach and communications **C D F G**	Adaptation Planning **F**

[40] The revised logic model maps program elements to their respective activities, outputs and intended outcomes. Each program element is aligned to at least one outcome at each level (immediate, intermediate and final).This model was used to guide the design of the evaluation's survey and interview methodologies.

Programs	Aquatic Climate Change Adaptation Services Program A[41]	Climate Change Prediction and Scenarios Program B	Understanding Climate-driven Ecological Changes in Canada's North C	Heat Alert and Response Systems D	Preventative Public Health Systems and Adaptation to Climate Change Program E	Climate Adaptation and Resilience Program for Aboriginals and Northerners F	Climate Change and Health Adaptation Program for Northern First Nations and Inuit Communities G	Integrating Adaptation into Codes and Standards for Northern Infrastructure H	Enhancing Competitiveness in a Changing Climate J	Northern Transportation Adaptation Initiative K
Lead	DFO	EC [now ECCC]	PCA	HC	PHAC	AANDC [now INAC]	HC	SCC and AANDC [now INAC]	NRCan	TC
Resources[42]	$19.71M	$37.45M	$4.53M	$8.5M	$12.45M	$20.02M	$10.0M	$3.59M	$54.0M	$11.37M

[41] DFO's ACCASP supports the Adaptation Theme's intended outcomes by supporting DFO programs and management, rather than through the provision of services directly to the general public.
[42] The amounts provided in the Resources row represent the total funding allocation for the Adaptation Theme activities for the five year period from 2011-12 to 2014-15, including new and existing funding and PWGSC accommodation amounts.

Appendix D: Details on evaluation methodology

Key informant interviews

Key informant interviews were conducted with program representatives and individuals external to the program. Since data collection for the NTAI was conducted separately as part of TC's evaluation of the NTAI, the interviews covered nine of the 10 program elements and were conducted in two stages. Seven interviews covering five program elements were conducted during the first phase as part of the preliminary data collection (six interviews with a total of eight key informants internal to the federal government and one interview with an external stakeholder). The second phase consisted of 82 interviews covering nine program elements (one of which specifically focused on covering two different program elements). Interviews were approximately 45 to 90 minutes in length and focused on the program element(s) with which the individual key informant had the most experience and familiarity. Key informant interview data were analyzed using a thematic approach and reviewed to identify the themes and areas of consensus and disagreement.[43] The number of interviews by program element is shown in Table D.1, while Table D.2 shows the number of interviewees who participated, according to their role within the Adaptation Theme.[44]

Table D.1: Number of interviews by program element

Program element	Number of interviews
ACCASP	7
CCPSP	11
UCECCN	4
HARS	12
PPHSACC	11
CCHAP	9
CARPAN	11
NISI	12
NRCan Adaptation Program	13

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[43] In summarizing the degree of consensus in interview findings, the following guidelines were used: "no" key informants (0%); "some/a minority" (25 to 44%); "approximately half" (45 to 55%); "a majority" (56 to 75%); "most" (76 to 94%); "almost all" (95 to 99%); and "all" (100%).

[44] Since some interviews were conducted with more than one key informant, and some key informants provided feedback on more than one Adaptation Theme element, a total of 90 interviews (Table D.1) was conducted with a total of 89 key informants (Table D.2).

Table D.2: Number of interviewees by role

Role	Number of interviewees
Senior management	10
Program management	25
Federal representatives	10
Provincial and territory representatives	11
First Nations, Indigenous or Inuit community	6
Municipal representatives	4
Academics	7
Industry	7
Other	9

Survey

A survey was conducted between January 27, 2015 and February 24, 2015 to collect feedback from external stakeholders on the relevance and achievement of outcomes. The survey was sent to external stakeholders for the participating program elements for whom email contact information was obtained.[45] The survey was primarily conducted online and respondents were initially invited to participate via email. Additional reminder emails were sent and follow-up telephone calls (which included the option to complete the survey by telephone) were conducted to maximize participation. A total of 148 individuals responded to the survey from a sample of 638, representing a 23% response rate. Respondents were allowed to answer questions for up to two of the program elements with which they were familiar. The survey was therefore able to collect 182 program element-specific responses, with 114 respondents providing data concerning a single program element and 34 respondents providing data concerning two program elements.[46] A breakdown of the types of survey respondent organizations is provided in Table D.3 and the number of responses and the corresponding percentage of the total number of responses for each program element are provided in Table D.4.

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[45] Eight of the 10 program elements were targeted with the survey. Qualitative evidence related to ECCC's CCPSP element was gathered through key informant interviews, while TC completed a separate evaluation of the NTAI.

[46] When undertaking the analysis of the survey data, "don't know" answers were excluded for the purposes of the analysis; however, "don't know" data was included in tabulations of responses for demographic data. Survey respondents were able to provide responses for up to two program elements and, for some outcomes, were able to provide multiple responses based on their familiarity with different products or activities, or with different aspects of intended outcomes. Survey results are therefore generally presented as percentages based on the number of responses received for a given question.

Table D.3: Survey respondents by organization type

Respondent organization	Number of respondents	Percentage of total number of respondents
Provincial and territorial government	37	25%
Federal government	28	19%
Non-profit organization	16	11%
First Nations, Indigenous or Inuit community	12	8%
Research or academic	12	8%
Municipal government	11	7%
Industry	10	7%
Health care	7	5%
Professional association	2	1%
Other*	12	8%
No response	1	1%

Note: Question: "What best describes the type of organization you belong to?"

*Examples of "other" organizations provided by respondents include: regional organizations, community programs and unique partnerships of municipal, provincial and First Nations leadership.

Table D.4: Survey responses, by program element[47]

Program element	Number of responses	Percentage of total number of responses
ACCASP	6	3%
UCECCN	5	3%
HARS	39	21%
PPHSACC	14	8%
CCHAP	17	9%
CARPAN	22	12%
NISI	26	14%
NRCan Adaptation Program	53	29%

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[47] Table D.4 provides the number of survey responses for each program element targeted by the survey. As noted previously, two program elements, ECCC's CCPSP element and TC's NTAI element, were not included in the survey, as feedback for these programs was captured through other means. Percentages were calculated based on 182 responses.

Note Questions: "Please select the Adaptation Theme program that you have the most experience with." and "If you would like to answer survey questions about another Adaptation Theme program that you have experience with please select it from the list below."

Case studies

Case studies were used to examine specific initiatives or projects within the Adaptation Theme. A total of four case studies were conducted. Each case study focused on a project from a different program element. Data was collected for the case studies through document and file reviews and interviews with key stakeholders (two to four interviews per case study). Interviews were conducted following a document review to facilitate informed interviews. Detailed consideration was given to the impacts of these projects in terms of how they supported, or are expected to support, the targeted community or sector in planning for and implementing adaptation measures. While it is not possible to generalize the results of case studies to the program element as a whole, the case study findings highlight aspects such as achievements, external factors, findings related to design and delivery and best practices and lessons learned to date. The case studies focused on the following four projects:

- SakKijanginnatuk Nunalik: Building Sustainable Communities in the Face of Changing Climate, with a focus on the Municipal Water Sub-Project (from the CARPAN)

- Coastal Infrastructure Vulnerability Index (from the ACCASP)

- Forest Change Initiative (from the NRCan Adaptation Program)

- Climate Change, Adaptation and Acute Gastrointestinal Illness in the Canadian North (from the PPHSACC)

Appendix E: Summary of findings[48]

Relevance

Evaluation question	Acceptable	Opportunity for improvement	Attention required	Unable to assess	Not applicable
1. Continued need for the program	●				
2. Aligned to federal government priorities	●				
3. Aligned with federal roles and responsibilities	●				

Performance

Evaluation question	Acceptable	Opportunity for improvement	Attention required	Unable to assess	Not applicable
4. Program design appropriate for achieving expected program results		●			
5. Clear, appropriate and effective governance structure		●			
6. Program implemented in an efficient and economical manner		●			
7. Performance data collected and reported		●			
8. Achievement of intended outcomes					
• Targeted communities and sectors recognize the need for adaptation	●				
• Targeted communities and sectors assess	●				

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[48] The ratings and their significance are outlined in Table 1.

Evaluation question	Acceptable	Opportunity for improvement	Attention required	Unable to assess	Not applicable
their risks and opportunities arising from climate change					
• Adaptation measures have been identified to address risks and opportunities arising from climate change	●				
• Targeted communities and sectors are aware of relevant adaptation measures	●				
• Increase collaboration on climate change adaptation	●				
• Targeted communities and sectors address adaptation in their planning	●				
• Targeted individuals, communities and sectors implement adaptation measures				●	
• Reduced vulnerability of individuals, communities, regions and economic sectors to the impacts of climate change				●	
• Increased capacity of individuals, communities and economic sectors to adapt to climate change	●				

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