



Indian and Northern  
Affairs Canada

Affaires indiennes  
et du Nord Canada

## ***Final Report***

# ***Evaluation Update of the Climate Change Adaptation Program: Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program***

***Project Number: 1570-7/10006***

FEBRUARY 2011

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

*CIDM#: 3443271*

**Canada**

# Table of Contents

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<b>TABLE OF CONTENTS</b> .....	<b>II</b>
<b>LIST OF TABLES AND CHARTS</b> .....	<b>IV</b>
<b>EXECUTIVE SUMMARY</b> .....	<b>VI</b>
Conclusion .....	ix
Recommendations .....	x
<b>MANAGEMENT RESPONSE AND ACTION PLAN</b> .....	<b>XI</b>
<b>1. INTRODUCTION</b> .....	<b>1</b>
1.1 Scope and timing of evaluation .....	1
1.2 Outline of the report.....	1
1.3 Program profile.....	2
<b>2. METHODOLOGY</b> .....	<b>7</b>
2.1 Overview .....	7
2.2 Evaluation issues and questions .....	7
2.3 Evaluation methods.....	8
2.4 Data sources and analysis .....	8
2.3 Evaluation limitations and mitigating strategies.....	10
2.4 Quality control .....	11
<b>3. EVALUATION FINDINGS – SUMMARY OF THE 2009 IMPLEMENTATION EVALUATION</b> .....	<b>12</b>
3.1 Relevance, design and delivery update.....	13
<b>4. PERFORMANCE – RESULTS</b> .....	<b>15</b>
4.1 Collaboration .....	15
4.2 Available information and expertise.....	16
4.3 Identification and assessment of climate change risks.....	18
4.4 Capacity to adapt to climate change .....	20
4.5 Action to reduce vulnerability .....	22
4.6 Unintended Outcomes.....	24
4.7 Best practices and lessons learned.....	25
<b>5. RESULTS – ECONOMY, EFFICIENCY &amp; COST-EFFECTIVENESS</b> .....	<b>26</b>
5.1 Economy .....	26
5.2 Efficiency.....	28
5.3 Cost-Effectiveness .....	28
5.4 Potential improvements to economy and efficiency.....	29
5.6 Alternative approaches.....	30
<b>6. SUMMARY OF FINDINGS, CONCLUSIONS &amp; RECOMMENDATIONS</b> .....	<b>34</b>

6.1 Summary.....	34
Conclusion .....	36
6.3 Recommendations .....	37
<b>ANNEX A: KEY INFORMANT INTERVIEW SELECTION CRITERIA.....</b>	<b>38</b>

## *List of Tables and Charts*

---

<b>TABLE 1: INTENDED OUTCOMES .....</b>	<b>3</b>
<b>TABLE 2: PROGRAM RESOURCE REQUIREMENTS .....</b>	<b>4</b>
<b>TABLE 3: EXPENDITURES .....</b>	<b>4</b>
<b>TABLE 4: KEY INFORMANT INTERVIEW REPORTING.....</b>	<b>9</b>
<b>TABLE 5: COMMUNITY WELL-BEING INDEX SCORES FOR BENEFICIARY COMMUNITIES .....</b>	<b>14</b>
<b>TABLE 6: FUNDING RECIPIENTS BY TYPE AND FISCAL YEAR.....</b>	<b>15</b>
<b>TABLE 7: DESCRIPTION OF SCIENTIFIC ASSESSMENT PROJECTS .....</b>	<b>20</b>
<b>TABLE 8: DESCRIPTION OF ADAPTATION PLANNING PROJECTS.....</b>	<b>23</b>
<b>TABLE 9: COST OF PROJECTS, 2008–09 TO 2010–11.....</b>	<b>28</b>
<b>CHART 1: TYPE OF PROJECT .....</b>	<b>38</b>
<b>CHART 2: LOCATION OF FUNDED PROJECTS .....</b>	<b>38</b>
<b>CHART 3: FUNDING YEAR.....</b>	<b>38</b>
<b>CHART 4: RECIPIENT CATEGORY .....</b>	<b>39</b>

## ***List of Acronyms***

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ACIA	Arctic Climate Impact Assessment
AFN	Assembly of First Nations
CAA	Clean Air Agenda
CCAP	Climate Change Adaptation Program
CWI	Community Well-being Index
CYFN	Council of Yukon First Nations
EC	Environment Canada
EPMRB	Evaluation, Performance Measurement and Review Branch
EPMRC	Evaluation, Performance Measurement and Review Committee
ERR	Environment and Renewable Resources Directorate
HC	Health Canada
HMARF	Horizontal Management, Accountability and Reporting Framework
INAC	Indian and Northern Affairs Canada
ITK	Inuit Tapiriit Kanatami
IPY	International Polar Year
NAO	Northern Affairs Office
RMAF	Results-based Management Accountability Framework
NRCan	Natural Resources Canada
NRTEE	National Roundtable on the Environment and Economy
TBS	Treasury Board Secretariat

# ***Executive Summary***

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## **Introduction**

### ***Program profile & purpose of evaluation***

This report presents the findings, conclusions, and recommendations of the Update Evaluation of Indian and Northern Affairs Canada's (INAC) Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program, which forms part of Canada's Clean Air Agenda (CAA). Over the past three fiscal years (2008-09 to 2010-11), this Program has provided over \$10 million to Aboriginal and northern communities and other organizations working at the local-level to assess and identify climate change risks and develop and implement projects and plans that increase community-level capacity to address climate change impacts.

The present evaluation was conducted as a follow-up to a 2009 implementation evaluation which focused on relevance of adaptation programming and the design and delivery of the Program. In accordance with the Treasury Board Secretariat's (TBS) directive on the evaluation function (effective April 2009), the present evaluation completes the evaluation requirement for this program through an examination of the Program's achievement of outcomes, and its economy, efficiency and cost-effectiveness.

### ***Scope and timing of evaluation***

The evaluation focuses on program performance from September 1, 2008 (the date when projects first received funding) to October, 2010 (the start of the evaluation). Following TBS requirements, the evaluation scope includes both \$10.2 million in contributions funding and \$3.8 million in related administrative departmental spending. INAC's Evaluation, Performance Measurement and Review Branch and the consulting firm Prairie Research Associates Inc. jointly conducted the evaluation between October 2010 and January 2011.

## **Methodology**

Building on the relevance and design and delivery findings of the 2009 implementation evaluation, the evaluation posed the following questions: 1) What progress has the Program made toward achieving its intended outcomes? 2) Have there been unintended outcomes as a result of the Program? 3) How efficient and cost-effective is the Program? 4) How does the relationship between the Program and its partners contribute to cost-effectiveness? and 5) Are there more cost-effective and efficient means of achieving the objectives of the Program? A matrix of indicators and data sources for each evaluation question guided all stages of the evaluation. Further quality control was ensured through internal peer review and review of the methodology report, preliminary findings PowerPoint presentation and draft report by program representatives.

The evaluation questions were addressed with information drawn from the following data collection tasks: document review; administrative and financial data review; file review; and key informant interviews. Interviews were conducted with 24 respondents representing program staff

and management; project proponents; other federal government departments with related climate change programs and territorial and provincial climate change directors and coordinators.

The evaluation encountered a number of limitations. An absence of baseline data made it difficult to determine the general capacity of Aboriginal and northern communities to address climate change issues and the extent to which the program has raised awareness. Information on the value of the program and communities' use of climate change information in planning and decision-making processes was not available in project final reports and the accuracy of information gathered from project leaders and INAC staff was not verified with community members. Most importantly, the timing of the evaluation in the final year of the three year program meant that the evaluation must focus on the Program's progress toward outcomes, rather than arriving at firm conclusions concerning the extent to which the program has achieved its intermediate and long-term outcomes. Mitigating strategies were put in place for each of the identified limitations.

## **Key findings**

### ***Continued need / Responsiveness to need***

There is continued need for the Program. There is a need to continue to build capacity and work with communities that have not begun to engage in adaptation planning. It appears that the Program may not have reached communities in greatest need of support or those requiring immediate support. Possible explanations are that communities in need of support may not have the capacity to participate in the Program; without a formal call for proposals, the Program may not have identified communities in greatest need and, finally, given its short duration, the Program targeted communities that were ready to begin working on adaptation projects.

### ***Outcomes –Performance***

#### **Collaboration**

The Program worked to strengthen its relationships with other federal departments and territorial governments. It fostered the development of relationships between scientists, consultants, experts, and communities. Despite these efforts, some projects have experienced challenges. Several have found it difficult to achieve long-term commitments and shared vision. Additionally, there is significant staff-turnover at the community and territorial levels that can hinder relationship building. Finally, some community members are experiencing consultation fatigue and are reluctant to participate in climate change discussions.

#### **Access/availability to information**

The Program has contributed to increased availability of climate change information and expertise. Almost half of the funded projects focused on assessment of climate change risks and impacts. To a lesser extent, projects facilitated information-sharing and the development of adaptation tools. Nonetheless, there is a need to increase community-level coordination of adaptation work and sharing of project results. There is also a need to continue the work underway in participating communities and to engage new communities in adaption projects.

## **Increased ability to assess climate change risks**

Most of the funded projects identified climate change risks and, in large part, this process directly involved community members. These projects identified a vast range of climate risks from permafrost degradation to flooding to reduced ice thickness. In addition, projects identified a number of specific impacts to communities associated with these risks such as infrastructure vulnerability, loss of traditional land-use practices and cultural identity and food security issues. Although many communities in a geographical area face the same core set of risks, the magnitude of risk varies across communities. Few communities have recognized opportunities from climate change.

Another noteworthy finding in relation to the Program's role in increasing communities' ability to assess risks was that roughly one quarter of funded projects involved the scientific assessment of risks including those to water, permafrost and sea-level rise. These projects provide vital data for planning activities and climate change trend analysis.

## **Capacity**

The Program is increasing awareness of climate change within participating communities. However, there is a continued need to raise awareness of climate change impacts as some community members question whether the changes experienced simply reflect unusually variable weather conditions. Additionally, there is a need for repeat messaging.

The Program has begun to increase the capacity of participating communities to adapt to climate change. In part, this is the result of increased awareness of risks and possible adaptation strategies. It also results from increases in communities' ability to understand, support, and benefit from research, particularly through projects that actively engage community members. More generally, the Program's close relationship with territorial governments has increased capacity at that level. Nonetheless, many communities lack the financial and human resources required to engage in adaptation planning, pointing to the need for continued work in this area.

The evaluation found some evidence that communities are developing adaptation plans. By the end of the Program, adaptation plans will be in place for 15 communities. The evaluation found mixed evidence relating to the usefulness of these plans, though it should be noted that it is difficult to draw conclusions on this point given the fact that plans have either only recently been completed or are still underway. On the whole, plans that apply a community-based approach and successfully integrate climate change data appear more likely to be incorporated into community-level decision-making.

## **Unintended outcome: Actions to reduce vulnerability**

Some projects have resulted in actions taken to reduce vulnerability to climate change. Few communities have begun to implement projects. Implementation of projects is one step ahead of the long-term expected outcome of the Program.

## ***Results – Economy, Efficiency & cost-effectiveness***

The Program complements other CAA Adaptation Theme Programs, the National Roundtable on the Environment and Economy work on Climate Change Adaptation, and the Public



Infrastructure Engineering Vulnerability Committee (PIEVC) national engineering vulnerability assessment. To a limited extent, evidence suggests that the Government of Canada's program for International Polar Year duplicates the Program as these two programs fund similar adaptation projects.

## **Successes**

The Program provided 75 percent of its available funding to projects and planned and actual expenditures were closely aligned. The Program funded 86 projects, thereby exceeding its goal by 26 projects. The Program attempted to maximize its efficiency by coordinating administrative activities with INAC's ecoENERGY Program, having regional offices set-up funding agreements, travelling to more than one community during trips to the North and co-funding projects where possible.

The Program demonstrated cost-effectiveness by leveraging \$5.2 million funding and in-kind resources from other sources. However, little sharing of information resources across and between communities occurred and few funded projects are replicable because they are location-specific

## **Areas for improvement**

According to key informants, several opportunities to improve the economy and efficiency of the Program exist. Information and resources including tools and manuals could be more effectively shared across communities. INAC headquarters' relationship with regional offices could be strengthened to improve the Program's understanding of regional issues. Program-related communications could be increased to raise awareness about the Program. Project funds could be distributed to projects in a more timely fashion (depending on constraints involved with INAC financial processes). Program and project duration could be expanded to limit the time involved in applying for funding. Proposals could be solicited through a formal call to enable the Program to better target specific projects. Finally, a joint funding application could be established with other programs and departments.

## **Alternative approaches**

The cross-jurisdictional review revealed that other jurisdictions are taking a number of different approaches to adaptation support. These include incorporating adaptation into existing programming channels (e.g. infrastructure funding); providing training to planners; developing toolkits and manuals for planning exercises; providing information through online databases and funding macro studies on climate change adaptation. Additionally, some key informants felt that adaptation planning could potentially be integrated into other planning processes given the availability of adequate modeling, climate change scenarios and other climate change assessment information.

## **Conclusion**

The Program appears to be on-track to achieve its intended immediate and intermediate outcomes. The Program has fostered collaboration with other federal departments involved in the

Adaptation Theme of the CAA, territorial governments and a range of others on adaptation projects. It has increased participating communities' awareness of climate change risks and impacts and increased the availability of climate change adaptation information and tools. It has supported assessment of climate risks and development of some adaptation plans.

Despite the Program's successes, more time is needed to fully realize outcomes and improvements can be made to help achieve future success. Many communities lack capacity to participate in adaptation projects. Few communities have begun to implement projects to reduce their vulnerability to climate change. Improvements can be made to the Program to better target communities in need as well as those with existing capacity. The benefits of funded projects can be maximized through more efficient and effective processes.

## **Recommendations**

The evaluation offers the following recommendations to improve the success, efficiency and cost-effectiveness of the Program:

1. To increase its ability to identify and reach communities in need and better align efforts with regional strategies, INAC should:
  - a. Continue to strengthen relationships with INAC regional offices.
  - b. Continue to seek opportunities to work with provincial and territorial climate change offices.
2. To increase communities' awareness of funding opportunities, secure a broader range of applicants and better target funding, INAC should:
  - a. Continue to proactively inform individual communities of funding opportunities.
  - b. Solicit applications through a formal call for proposals.
3. To provide Aboriginal and northern communities with one-window access to funding opportunities, INAC should explore opportunities for coordinating its call for proposals and application processes with other similar programs.
4. To take advantage of the climate change adaptation research that has been completed, INAC should find additional ways to share results across communities through, for example, integrating data into the Government of Canada's International Polar Year database.

# *Management Response and Action Plan*

**Project Title:** Evaluation Update of the Climate Change Adaptation Program: Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program  
**Project #:** 1570-7/10006

Recommendations	Actions	Responsible Manager (Title / Sector)	Planned Start and Completion Dates
1. To increase its ability to identify and reach communities in need and better align efforts with regional strategies, INAC should: a. Continue to strengthen relationships with INAC Regional Offices. b. Continue to seek opportunities to work with provincial and territorial climate change offices.	We <u>do</u> concur. (do, do not, partially) Future programming (subject to renewal) will formalize information exchange processes and seek opportunities to work more closely with INAC Regional Offices and other jurisdictions	Sheila Gariépy, Director, Environment and Renewable Resources / Northern Affairs Organization	Start Date: <i>Upon program initiation</i> Completion: March 31, 2012
2. To increase communities' awareness of funding opportunities, secure a broader range of applicants and better target funding, INAC should: a. Continue to proactively inform individual communities of funding opportunities. b. Solicit applications through a formal call for proposals.	We <u>do</u> concur. (do, do not, partially) Future programming (subject to renewal) will a) develop a communications strategy to target and inform communities of funding opportunities; b) solicit applications through a formal call for proposals	Sheila Gariépy, Director, Environment and Renewable Resources / Northern Affairs Organization	Start Date: <i>Upon program initiation</i> Completion: March 31, 2012
3. To provide Aboriginal and northern communities with one-window access to funding opportunities, INAC should explore opportunities for coordinating its call for proposals and application processes with other similar programs.	We <u>do</u> concur. (do, do not, partially) Future programming (subject to renewal) will work closely with federal departments delivering complementary programs to more closely align the call for proposal and proposal application processes.	Sheila Gariépy, Director, Environment and Renewable Resources / Northern Affairs Organization	Start Date: <i>Upon program initiation</i> Completion: March 31, 2012
4. To take advantage of the climate change adaptation research that has been completed, INAC should find additional ways to share results across communities through, for example, integrating data into the Government of Canada's International Polar Year database.	We <u>do</u> concur. (do, do not, partially) Future programming (subject to renewal) will work closely with communities to facilitate information exchange	Sheila Gariépy, Director, Environment and Renewable Resources / Northern Affairs Organization	Start Date: <i>Upon program initiation</i> Completion: March 31, 2012

**I recommend this Management Response and Action Plan for approval by the Evaluation, Performance Measurement and Review Committee**

*Original signed by*

**Name: Judith Moe**

**Position: Acting Director, Evaluation, Performance Measurement and Review Branch**

**I approve the above Management Response and Action Plan**

*Original signed by*

**Name: Janet King**

**Position: Assistant Deputy Minister, Northern Affairs Organization**

**MRAP was signed by A/Director of EPMRB and Sr. ADM/ Regional Operations Sector on February 15, 2011**

*The Management Response / Action Plan for the Evaluation Update of the Climate Change Adaptation Program: Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program were approved by the Evaluation, Performance Measurement and Review Committee on February 22, 2011.*

# 1. Introduction

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This report provides the findings, conclusions, and recommendations of the Update Evaluation of Indian and Northern Affairs Canada's (INAC) Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program (the Program), which forms part of the Adaptation Theme of the Clean Air Agenda (CAA) of the Government of Canada.

The present evaluation was conducted as a follow-up to a 2009 implementation evaluation which focused on relevance of adaptation programming and the design and delivery of the Program.<sup>1</sup> In accordance with the Treasury Board Secretariat's (TBS) directive on the evaluation function (effective April 2009), the evaluation update examines the Program's achievement of outcomes, and its economy, efficiency and cost-effectiveness, thereby completing the evaluation requirement for the Program.

The objectives of the Program are to assist Aboriginal and northern communities to assess and identify climate change risks and develop and implement projects and plans that increase community-level capacity to address climate change impacts.<sup>2</sup> To achieve these objectives, this three-year (2008–09 to 2010–11), \$14 million Program awards contributions to territorial governments, non-governmental organizations, Aboriginal organizations, related federal departments such as Natural Resources Canada (NRCan), communities and other northern institutions, and associations to help northern and Aboriginal communities understand the impacts of climate change and take steps to adapt or respond to anticipated changes.

## 1.1 Scope and timing of evaluation

The evaluation focuses on program performance from September 1, 2008 (the date when projects first received funding) to October, 2010 (the start of the evaluation). Following TBS requirements, the evaluation scope includes both \$10.2 million in contributions funding and \$3.8 million in related administrative departmental spending. INAC's Evaluation, Performance Measurement and Review Branch (EPMRB) and the consulting firm Prairie Research Associates Inc. jointly conducted the evaluation between October 2010 and January 2011.

## 1.2 Outline of the report

The remainder of Section 1 describes the Program. Section 2 defines the evaluation scope and outlines the evaluation methodology. Section 3 summarizes the findings of the 2009 implementation evaluation. Section 4 presents the findings for program performance and Section

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<sup>1</sup> INAC (2009). *Implementation Evaluation of INAC Climate Change Adaptation Program: Assist Northerners in Assessing Key Vulnerabilities and Opportunities Program*. Retrieved January 21, 2011, from, <http://www.aadnc-aandc.gc.ca/aiarch/arp/aev/pubs/ev/cca/cca-eng.asp>

<sup>2</sup> Indian and Northern Affairs Canada (INAC) (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Results-based Management and Accountability Framework and Risk Based Audit Framework*.

5 presents the findings of efficiency and cost-effectiveness. Section 6 concludes the report and offers recommendations.

## 1.3 Program profile

This section provides a brief overview of the Program including the Program background, objectives and expected outcomes, resources and management structure. Additional information about the Program is available in the 2009 implementation evaluation report.

### 1.3.1 Background

Through an extensive literature review, the 2009 implementation evaluation found evidence, from both scientific and local observations, that climate change poses significant risks to Canada's northern regions. Conversely, it is expected that climate change will present opportunities for resource extraction and other economic development. Research suggests that climate change will have substantial effects on a number of areas including the environment and ecosystems of the North; Indigenous traditional lifestyles and resource sustainability, development and conservation.<sup>3</sup>

In response to climate change, many jurisdictions are combining mitigation measures (i.e. greenhouse gas emission reduction) with adaptation strategies. While mitigation plays an important role in slowing and preventing climate change, it is clear that climate change impacts will be felt in many regions of the world, particularly high risk areas such as Canada's arctic. Adaptation efforts similar to those supported through INAC's climate change program help communities apply a proactive approach to preparing for climate change.

### 1.3.2 Objectives and expected outcomes

The objectives of the Program are to assist Northerners to:

- ▶ “Assess and identify risks and opportunities related to the impacts of climate change; and
- ▶ Develop and implement climate change adaptation projects and/or plans to increase the capacity of Aboriginal and northern communities to address the impacts of a changing climate.”<sup>4</sup>

The Program does not fund the implementation of adaptation planning. Eligible projects include those that:

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<sup>3</sup> Arctic Climate Impact Assessment (ACIA). (2004). *Impacts of a Warming Arctic*. New York: Cambridge University Press. Retrieved October 30, 2009, from <http://www.amap.no/acia/>; Hinzman, L.D. et al. (2005). Evidence and Implications of Recent Climate Change in Northern Alaska and Other Arctic Regions. *Climate Change*, 72, pp. 251-298; Ford, J., et al. (2007). Reducing Vulnerability to Climate Change in the Arctic: The Case of Nunavut, Canada. *Arctic*, 60(2), pp. 150-166; Furgal, C., & Prowse, T.D. (2008): Northern Canada. In *From Impacts to Adaptation: Canada in a Changing Climate 2007*. Lemmen, D.S., Warren, F.J., Lacroix, J., & Bush, E. (Eds). Ottawa: Government of Canada, pp. 57–118.

<sup>4</sup> INAC (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Results-based Management and Accountability Framework and Risk Based Audit Framework*.

- ▶ “Assess the risks and vulnerabilities to Aboriginal and northern communities related to the impacts of climate change;
- ▶ Support the preparation of action plans focusing on economic, social, cultural, environmental, and security issues;
- ▶ Address major issues related to climate change, such as:
  - Emergency management and food security,
  - Integration of climate change impact considerations into land use and community planning processes,
  - Vulnerability of community infrastructure and of industrial and resource sectors,
  - Development of adaptation management options, and
  - Taking into account long-term changes to major project lifecycles; and
- ▶ Result in specific tangible adaptation measures to address critical community issues such as storm surges and coastal erosion.”<sup>5</sup>

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

**Table 1: Intended outcomes**

<b>Timing</b>	<b>Intended outcomes</b>
Long-term outcome	▶ Increased capacity of Aboriginal people and northerners to adapt to climate change impacts
Intermediate outcomes	<ul style="list-style-type: none"> <li>▶ Increased professional and institutional capacity related to adaptation to climate change</li> <li>▶ Aboriginal and northern communities have access to support to develop and implement adaptation planning and actions</li> <li>▶ Guidance material for developing safer and more reliable infrastructure</li> <li>▶ Planning decisions are based on identified risks</li> </ul>
Immediate outcomes	<ul style="list-style-type: none"> <li>▶ Access to information and increased technical expertise on adaptation to climate change</li> <li>▶ Climate risks evaluated and responses to risks identified</li> <li>▶ Greater collaboration in place for the design of effective solutions</li> </ul>
Source: INAC (2008). <i>Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Results-based Management and Accountability Framework and Risk Based Audit Framework.</i>	

### **1.3.3 Program resources**

TBS allocated the Program \$14 million in funding over the three-year period 2008–09 to 2010-11. As Table 2 below shows, the Program’s planned expenditures for each fiscal year were: \$4.7 million in 2008-09, \$4.8 million in 2009–2010, and \$4.5 million in 2010–2011. Section 5 compares planned and actual expenditures. Due to the level of work required to develop and launch the Program in its first year of funding, as well as the need to build community awareness of the Program (refer to Section 4.1), program expenditures for the first two years of the Program were \$1.9 million less than anticipated. Consequently, the Program re-profiled \$600,000 to 2009–10 and \$1,550,000 to 2010–11.

<sup>5</sup> Ibid.

Table 2 represents the Program's planned expenditures for 2008-09 to 2010-11 and Table 3 shows actual expenditures (TB and A-base) in the first two years of the Program and planned expenditures for the final year. Planned and actual expenditures are closely aligned.

**Table 2: Program resource requirements**

Requirement	2008-09	2009-10	2010-11	Total
	(\$ '000)			
Salaries	\$454	\$454	\$359	\$1,456
Operating Expenses	\$996	\$596	\$522	\$1,862
Employee Benefits Program	\$91	\$91	\$72	\$292
Transfer Payments – Grants	-	-	-	-
Transfer Payments – Contributions	\$3,100	\$3,600	\$3,500	\$10,200
PWGSC Accommodation Costs	\$59	\$59	\$47	\$189
<b>Total</b>	<b>\$4,700</b>	<b>\$4,800</b>	<b>\$4,500</b>	<b>\$14,000</b>

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

**Table 3: Expenditures**

Requirement	2008-09	2009-10	2010-11	Total
	(\$ '000)			
Salaries	\$428	\$428	\$389	\$1,245
Operating Expenses	\$353	\$617	\$689	\$1,841
Employee Benefits Program	\$91	\$91		
Transfer Payments – Grants	-	-	-	-
Transfer Payments – Contributions	\$1,182	\$4,036	\$4,800	\$10,018
PWGSC Accommodation Costs	\$59	\$59	Not available	\$118
Corporate Support	\$123	\$115	Not available	\$238
<b>Total</b>	<b>\$2,236</b>	<b>\$5,346</b>	<b>\$5,878</b>	<b>\$13,460</b>

Sources: Program-provided financial documents.

A review of program expenditures reveals that over the three-year period, projects in the Yukon received the most funding with roughly \$2.5 million, or 25 percent of total funding. Projects benefiting communities in the Northwest Territories received approximately \$2 million (20 percent of total spending). Nunavut projects totalled \$1.2 million (12 percent of the total).<sup>6</sup> Finally, just under a third of project funding (\$3.2 million) went to projects in the four provinces of Quebec, British Columbia, New Brunswick, Nova Scotia and Newfoundland and Labrador and 12 percent (\$1.2 million) was directed at other projects.

The following funding authorities are being used to support implementation of INAC's Climate Change Adaptation Program:

- Funding Authority 334 - Contribution for promoting the safe use, development, conservation and protection of the North's natural resources. This Authority was to have expired March 31, 2010, but will be renewed April 1, 2010.
- Funding Authority 341 – Contributions for the purpose of consultations and policy development. This Authority expires March 31, 2010.

<sup>6</sup> This figure does not include O&M funding transferred to NRCAN during the first two funding years of the Program.



### ***1.3.4 Program management, key stakeholders, and beneficiaries***

#### **Project management & governance**

The Program fits into INAC's program architecture within the Environment and Renewable Resources Directorate (ERR) of Northern Affairs Organization and comprises the following:

- ▶ *Director, ERR*, who is responsible for the overall strategic management of the Program.
- ▶ *Climate Change Coordinator*, who operates immediately under the Director, ERR, and is responsible for ensuring that the Program is aligned with corporate policies within INAC's mandate.
- ▶ *Program Manager*, who oversees the program administration, delivery and reporting.
- ▶ *Program Staff*, who are responsible for the day-to-day operations of the Program including providing technical advice to applicants, supporting the Project Technical Committee, monitoring project implementation and providing support to recipients.<sup>7</sup>

The Program has eight full-time staff including one Program Manager, four Program Analysts, one Policy Analyst, one Project Officer and one Administrative Officer. In the last year of the Program, one of these staff members was seconded to another position. According to program representatives, since the inception of the Program, the distribution of human resource time and effort across various tasks was:

- Reviewing proposals and managing/monitoring funded projects: 33 percent
- Reporting, briefings, and information management: 26 percent
- Communications and developing partnerships: 16 percent
- Program analysis (advisory committee, setting priorities, defining processes): 12 percent
- Audit and evaluation: 7 percent
- Human resources and financial management: 4 percent
- Other: 2 percent

*INAC Regional staff*, liaise with project applicants and recipients, and assist in the establishment of funding agreements with local project representatives.

In addition, the Program is governed by two committees:

- ▶ *Program Advisory Committee*, comprised of representatives from northern organizations, territorial governments, and other federal departments involved in climate change adaptation and various regional stakeholders. The committee is charged with reviewing the objectives of the Program, discussing the continued relevance of these items, and providing advice to the Program on the overall direction of operations and policy. The Committee became operational in early 2010.

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<sup>7</sup> INAC (2008). *Climate Change Adaptation for Aboriginal and Northern Communities Initiative. Operational Management Guide.*

- ▶ *Project Technical Committee*, which reviews project applications and makes funding recommendations to the Director, ERR.

The Program provides funding to organizations, institutions, communities and individuals who propose a project that is well-matched to the objectives of the Program (refer to Section 1.3.2 above) and targets either northern or Aboriginal communities. Proposal requirements are designed to identify project partners and provide evidence that the project will engage communities. Proposals are selected based on their alignment with the Program's guiding principles; capacity and expertise of project team; consistency of project objectives with those of the Program, including a clear methodology of how project objectives will be achieved and the ability of the project to benefit the targeted community and other communities. The Program does not issue a formal call for proposals.

### **Key stakeholders and beneficiaries**

Key stakeholders include other federal departments, territorial and aboriginal governments, and northern and aboriginal communities.

Targeted beneficiaries are aboriginal and northern communities, national aboriginal organizations, northern organizations, aboriginal community groups (volunteer groups, community associations and institutions), territorial and aboriginal governments, professional organizations, and research institutions.

## ***2. Methodology***

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

### **2.1 Overview**

The update evaluation builds on an implementation evaluation of the Program completed in 2009. The implementation evaluation examined the core issues of relevance and performance as outlined in the TBS directive on the evaluation function (effective April 2009). Its focus was on the relevance, design and delivery and preliminary results/success of the Program. Field work was completed between July 2009 and October 2009 and the final report was tabled at INAC's Evaluation, Performance Measurement and Review Committee (EPMRC) meeting in December 2009.

This evaluation focuses on the extent to which the Program has achieved its expected outcomes. INAC's EPMRC approved the Terms of Reference for the present evaluation on September 24, 2010. Data collection and analysis was completed between October 2010 and January 2011.

### **2.2 Evaluation issues and questions**

A matrix of evaluation questions, indicators and data sources guided the evaluation. The matrix addressed two TBS core performance evaluation issues: results/success and efficiency, economy and cost-effectiveness. The evaluation questions associated with each issue were:

#### **Results/success**

1. What progress has the Program made toward achieving its intended outcomes?
2. Have there been unintended outcomes as a result of the Program?

#### **Economy, efficiency & cost-effectiveness**

3. How efficient and cost-effective is the Program?
4. How does the relationship between the Program and its partners contribute to cost-effectiveness?
5. Are there more cost-effective and efficient means of achieving the objectives of the Program?

The evaluation findings (refer to Sections 4 and 5 below) are organized according to these issues. The evaluation questions associated with each issue are listed at the start of each of the findings sub-sections.

## 2.3 Evaluation methods

This section describes the data sources and analysis processes used in the evaluation, identifies limitations and related mitigating strategies and the reviews the evaluation's quality control measures.

## 2.4 Data sources and analysis

### 2.4.1 Data sources

The evaluation methodology included four data collection tasks:

- ▶ *Document review* to update the 2009 implementation evaluation and gather evidence program performance. Examples of documents reviewed included the implementation evaluation, performance tracking spreadsheets, quarterly reports, the INAC Climate Change Division's Annual Report for 2008–09, and the Adaptation Theme-level Evaluation report. A cross-jurisdictional review was conducted to determine alternate approaches to climate change adaptation programming.
- ▶ *Administrative and financial data review* to detail the scope of the evaluation and to gather evidence on related to efficiency, economy and cost-effectiveness. This included all available performance data collected as part of the Program's Results-based Management Accountability Framework (RMAF) concerning the number of projects managed by community members, the completion of adaptation plans, risk/vulnerability assessments completed and other performance indicators. Finally, the evaluation team reviewed planned and actual expenditures and performance data.
- ▶ *File review* to gather evidence on project-level outcomes based on a review of final reports for projects funded in the 2008-09 and 2009-10 fiscal years (n=55) and progress reports for projects funded in the 2010-11 fiscal year (n=21).<sup>8</sup>
- ▶ *Key informant interviews* to gather evidence on climate risks and opportunities, partnerships and collaborations, project results and economy, efficiency and cost-effectiveness issues. A total of 28 key informants were interviewed by telephone, including program representatives (n=3), representatives of other federal departments involved in the Adaptation Theme of the CAA (n=2), project leaders (n=19), and provincial and territorial government climate change coordinators and directors (n=4).

A sample of representative project leader key informants was selected using the following considerations: geographical location of project, type of project, type of recipient, and funding year (refer to Annex A for more detail on the extent to which project leaders represented each of these categories). In order to assess the achievement

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<sup>8</sup> Note that a final report was not available for one project funded in the 2009-10 fiscal year and progress reports were not available for nine of the projects funded in the 2010-11 fiscal year.

of outcomes to the greatest extent possible, only project leaders from the first two funding cycles (2008-09 and 2009-10) were interviewed. Program managers, both from INAC and other government departments, were selected based on their direct relationship with the Program. Finally, climate change directors and coordinators from other levels of government were invited to participate from the three territories and five provinces where projects were funded.

Two technical reports with detailed summary and analysis were prepared as part of the evaluation: an updated document, data, and file review report and a key informant interview summary report.

## 2.4.2 Analysis

### *Presentation of findings*

Where possible, the evaluation findings included in Sections 4 and 5 are based on triangulation of all of the lines of evidence to ensure the strongest possible analysis and to mitigate the impact of limitations on the evaluation. The strength of the support for the findings presented is assessed as follows:

- ▶ *Substantial* – all lines of evidence provide strong support for the finding;
- ▶ *Considerable* – most lines of evidence provide some support for the finding; and
- ▶ *Some* – few lines of evidence support the finding and/or there is limited support for the finding.

Additionally, the terms listed in Table 4 are used to refer to the proportion of key informants in agreement with an opinion:

**Table 4: Key informant interview reporting**

<b>Term</b>	<b>Percentage range</b>
All	100%
Almost all	80-99%
Many	50-79%
Some	20-49%
Few	10-19%
Almost none	1-9%
None	0%

The findings section is divided into two subsections: results/success and efficiency, economy and cost-effectiveness. The headings within each section respond to the evaluation question being addressed.

### *Gender-based, sustainable development & self-governemnt analysis*

In line with departmental policies, INAC's evaluations apply gender-based and sustainable development lenses to analysis when possible. In addition, evaluation reports attempt to share lessons learned from self-government experiences. Analysis in this evaluation is limited to sustainable development analysis (refer to Section 4.4 below), the one form of analysis of the three where information was available and subject matter applied.

## **2.5 Evaluation limitations and mitigating strategies**

The evaluation encountered the following data and analysis limitations and developed mitigating strategies as a result:

- ▶ ***Benchmark comparison.*** Benchmark data on climate change awareness and capacity to address issues of climate change were not collected prior to the start of the Program. Consequently, the evaluation could not determine the extent to which the Program increased awareness of climate change adaptation issues. As a mitigating strategy, key informants were asked to comment on the extent which they believe the Program raised awareness among community members and whether communities have the capacity to adapt to climate change as a result of the Program.

This limitation impacted the ability of the evaluation to fully assess the extent to which the Program has contributed to greater awareness and increased capacity among beneficiary communities.

- ▶ ***Limited key informant perspectives.*** Information on awareness of climate change and perceptions of the value of the program were not available in project final reports. It is important to note that community members, the best source of this information, were not interviewed.

As a mitigating strategy, project leaders were asked to comment on the extent to which communities and individuals benefited from the Program.

The impact of this limitation on the evaluation was minimal as most projects are at the stage of identifying, assessing, and prioritizing risks and adaptation strategies, rather than putting these strategies into use. Nevertheless, important information relating to the Program's ability to support these community-level outcomes was only captured indirectly, leading to the risk of data bias.

- ▶ ***Achievement of outcomes.*** As the evaluation was conducted during the final year of the three-year program, it was difficult to assess the extent to which outcomes have been achieved.

As a mitigating strategy, the evaluation questions at times combine several of the Program's intended outcomes in an attempt to broaden analysis. For example, the development of guidance material for safer and more reliable infrastructure was assessed as part of availability of information. In another example, the intermediate outcome of

increased professional and institutional capacity was combined with the Program's long-term outcome of increased capacity among Aboriginal people and northerners to adapt to climate change impacts.

In addition to this approach, the evaluation focused analysis on whether the program appears to be *on track* to achieve its intermediate and long-term outcomes. When interpreting findings in Sections 4 and 5, the reader needs to consider that the Program was operational for roughly two years at the time of the evaluation.

The early timing of the evaluation had a fairly significant impact as useful outcome information, for instance relating to the use of adaptation plans, was not available.

- ▶ ***Performance and financial information.*** There was limited performance information available both at the program-level and in the final reports of projects. In addition, it was difficult to determine with accuracy the total cost of funded projects as some were able to leverage funding from a variety of sources. As a mitigating strategy, the evaluation relied on key informant interviews for much of the information related to outcomes. This was supplemented with all available performance and financial data.

The overall impact of this limitation was minimal as a representative group of key informant interviewees from several stakeholder groups and other interested parties involved more generally in climate change adaptation adequately answered evaluation questions related to performance.

## 2.6 Quality control

The following quality control measures were undertaken during the evaluation:

- ▶ An evaluation matrix based on the Program RMAF and other key program documents guided all stages of the evaluation including design of research instruments, analysis in technical reports and finally, reporting.
- ▶ PRA administered the key informant interviews and members of INAC observed many. Key informant interviews were audio-recorded and interview notes were sent back to key informants for validation.
- ▶ Representatives from the Program reviewed and provided comments on the methodology report, preliminary findings PowerPoint presentation and the draft report.
- ▶ The methodology and draft report underwent a process of internal EPMRB peer review.
- ▶ An advisory committee consisting of four members with extensive knowledge and expertise of climate change issues both north and south of 60<sup>0</sup> reviewed the 2009 implementation evaluation methodology and participated in a focus group. Input from this group was considered in the development of this evaluation update.

### ***3. Evaluation findings – Summary of the 2009 implementation evaluation***

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This section summarizes the findings of the 2009 implementation evaluation of the Program.

#### **Relevance**

- ▶ ***The Program is relevant to northerners and Aboriginal communities and addresses the continued need to adapt to climate change.*** The implementation evaluation concluded that there is a continued need for climate change adaptation planning and implementation programming in the North because:
  - This three-year program does not have the capacity or resources to reach all of the communities in the North.
  - Without continued support, communities are unlikely to implement their adaptation plans and therefore will revert to using a reactive model to respond to climate change issues.
  - No other climate change adaptation programs target the North.
- ▶ ***The Program aligns well with federal priorities.***
  - The Program forms part of the CAA, which represents Canada’s commitment to addressing climate change.
  - The Program contributes to three of INAC’s strategic outcomes: *The North, The People* and *The Land*.

#### **Design & Delivery**

- ▶ ***The Program was essentially implemented as planned although some challenges were encountered.*** Two significant implementation challenges were:
  - Delays in obtaining communications approval prevented the Program from launching a formal communications strategy to raise awareness of the funding opportunity. To overcome this challenge, program staff proactively contacted communities to tell them about the Program and help them identify research needs and prepare proposals.
  - The Program was not fully staffed until summer 2009 and there was little capacity among project leaders and awareness to build project proposals and implement the projects. Therefore, the Program did not have sufficient human resources to review proposals and manage projects. This led to the Program’s re-profiling of \$600,000 in funding from 2008–09 to 2009-10.

#### **Results**

- ▶ ***The Program is beginning to make progress toward its immediate outcomes.*** The implementation evaluation found evidence of the following progress toward outcomes:
  - A wide range of stakeholders such as scientists, consultants, experts, and communities are collaborating on climate change adaptation projects.



- The Program has brought technical expertise into northern communities and projects are developing climate change adaptation information that is accessible and relevant to these communities.
- Communities are assessing climate change risks and opportunities and defining adaptation priorities. While projects are developing adaptation tools, there are no processes in place to track how they are being used.
- It was not possible to determine whether climate change or adaptation information was being integrated in planning and decision-making processes (refer to Section 4.4 below for an update).

## **Update on implementation evaluation recommendations**

In the past year, the Program has made considerable progress in addressing the recommendations of the implementation evaluation. The Program has partnered with the Assembly of First Nations, Inuit Tapiriit Kanatami (ITK), Council of Yukon First Nations, McGill University and the Delphi Group to review existing adaptation work and conduct an environmental scan/needs assessment for each territory, Inuit land settlement areas and First Nations south of 60<sup>0</sup>. Communication and coordination have been improved by updating the Program website and increasing the regularity of meetings with INAC's ecoENERGY program, Territorial adaptation offices and INAC Regional offices. Finally, the Program has taken steps to improve the quality of performance information and reporting processes by revising the performance tracking system and completing annual reports through the Horizontal Management, Accountability and Reporting Framework (HMARF).

## **3.1 Relevance, design and delivery update**

### ***3.1.2 Need for adaptation support***

Following findings discussed in detail in the 2009 evaluation, program representatives and project leaders indicated there is a continued need for the Program. These individuals mentioned that there is a need to continue to build capacity and work with communities that have not begun to engage in adaptation planning. Similarly, there was a trend of increasing demand for the program over its three-year duration. The Program met its target of funding 20 projects per year in 2008-09 and exceeded it in 2009-10 (n=36) and 2010-11 (n=30), by June 2010, the Program was oversubscribed.

Not all communities in need of support have the necessary capacity to participate in the Program as it is currently delivered. Many program representatives and project leaders cautioned that some of the communities most in need are also faced with a number of other urgent issues and therefore may not have financial and/or human resources to devote to climate change adaptation projects.

### ***3.1.2 Responsiveness to need***

Despite increasing interest in the Program, the extent to which the Program reached new proponents decreased in each funding year. In 2008–09, 17 unique proponents received funding.

Of those, 10 received funding in 2009–10 along with eighteen new recipients. In 2010–11, the Program funded two new proponents and 19 of the previous proponents who were funded. In total, seven proponents received funding in all three years of the Program. Nevertheless, one should interpret these figures with caution as much of the success of the program can be attributed to its ability to provide sustained support to a number of projects over funding years.

The file review and key informant interviews revealed with substantial evidence that projects funded through the Program directly respond to climate change needs. However, the evaluation did not find evidence that the Program reached the communities in greatest need of support, or conversely, that it applied a structured approach to identify communities that possess existing capacity and interest (discussed in greater detail in section 5 below). An analysis of Community Well-being Index (CWB Index) scores of communities that benefited from the program, however, shows that the Inuit and First Nations communities benefiting from the Program had a slightly higher CWB Index score than the overall average for these groups. These results, shown in Table 4 below, may suggest that the program benefited communities with some existing capacity.

**Table 5: Community Well-being Index Scores for beneficiary communities**

Community	Average project CWI score	Average population CWI score
First Nations	62	57
Inuit	64	62
Other	71	77

Key informant interviewees questioned whether the Program was able to identify the communities with the greatest or most immediate need for support. Many of the reasons for this step from the fact that the Program has just recently begun and processes to target communities are not yet in place. As discussed in the implementation evaluation, the Program was not able to launch a widespread communications strategy to inform communities of the Program due to delays in approval. Therefore, the Program used mostly informal means to inform communities about the Program. For example, to solicit interest in the program, staff contacted communities and stakeholders they had existing relationships with as well as communities they believed could immediately start on projects. A few project leaders said they did not become aware of the Program until it was in its second or third year. Others said they did not have a clear understanding of the types of activities eligible for funding. Funding applications were reviewed and approved on a first-come, first-served basis, without giving consideration to need or existing capacity.

As noted above, in response to a recommendation from the 2009 implementation evaluation, the Program has been conducting a gap analysis to better target communities in greatest need as well as those with existing capacity to undertake adaptation work. In addition, some work in this area is being planned in the provinces and territories. For instance, the government of Yukon will be conducting a community needs assessment. Data from this survey will help to identify priority communities.

## 4. Performance – Results

This section provides key findings related to the results of the Program. It discusses progress towards immediate, intermediate and long-term outcomes.

### Immediate outcomes

#### 4.1 Collaboration

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

The evaluation found substantial evidence that the program contributed to successful partnerships. To a far lesser extent, collaboration challenges hindered project success.

#### Collaboration successes

##### *Program-level*

Over its three year duration, the Program funded 38 proponents including research organizations (n=13), including consulting firms and related Aboriginal organizations; community councils (n=7); Aboriginal governments (n=7); associations (n=6), such as planning and standards associations; territorial governments (n=3); and academic institutions (n=2).

Table 6 shows the number and value of projects funded by recipient type and fiscal year.

**Table 6: Funding recipients by type and fiscal year**

Proponent type	2008–09		2009–10		2010–11		Total	
	Projects							
	Number	Value	Number	Value	Number	Value	Number	Value
Research organizations	8	\$506,900	16	\$1,648,600	9	\$1,674,500	33 (38%)	\$3,830,000 (40%)
Territorial governments	2	\$95,000	6	\$820,500	7	\$760,600	15 (17%)	\$1,676,100 (17%)
Community councils	3	\$142,900	4	\$429,600	5	\$856,200	12 (14%)	\$1,428,700 (15%)
Aboriginal governments	4	\$302,500	4	\$465,300	5	\$643,300	13 (15%)	\$1,411,000 (15%)
Associations	2	\$158,000	5	\$548,900	3	\$349,500	10 (12%)	\$1,056,300 (11%)
Academic institutions	1	\$30,000	1	\$107,400	1	\$64,600	3 (3%)	\$202,100 (2%)
<b>Total</b>	<b>20</b>	<b>\$1,235,300</b>	<b>36</b>	<b>\$4,020,300</b>	<b>30</b>	<b>\$4,348,700</b>	<b>86</b>	<b>\$9,604,200</b>

Source: Program performance measurement summary spreadsheet

Funding a broad range of recipients has enabled the Program to foster the development of relationships between scientists, consultants, experts and communities. Many program representatives reported that, in addition to its role as funder, the Program has helped researchers and communities identify partners. They believe the program has been able to get the right people to provide the right information and expertise to communities.

### **CAA level**

The Program worked to strengthen its relationships with other federal departments involved in the Adaptation Theme of the CAA such as NRCan, Environment Canada and Health Canada. These departments have been working together on program renewal processes, participate in each other's workshops and are considering issuing joint calls for proposals in future programs.

Since the completion of the implementation evaluation, the Program has established a Program Advisory Committee consisting of regional stakeholders, northern organizations, territorial governments, and other federal departments involved in adaptation.

### **Collaboration challenges – Project level**

The evaluation found evidence of several challenges to collaboration at the project-level. While almost all project leaders said project-level partnerships were successful, they identified some challenges that should be considered in future partnerships:

- ▶ It can be difficult to achieve shared vision, especially if partners have different research interests or approach the project from different research disciplines.
- ▶ Community-level and territorial-level contacts change due to staff turnover.
- ▶ Community members may experience consultation fatigue if more than one project is being conducted in a specific community.
- ▶ Some community members may be reluctant to participate in discussions and workshops marketed as relating to climate change. They may associate climate change with large catastrophes or traumatic events or they may be overwhelmed by the problem.
- ▶ A recurring theme that emerged during many key informant interviews was the difficulty of maintaining long-term relationships due to the uncertain future of the Program. Program representatives reported the need to reject some good applications due to funding limitations could damage relationships. They also mentioned that partnerships are losing momentum because it is not clear what future funding, if any, will be available for adaptation-related projects. Further, a few project leaders cautioned that funding interruptions may lead to the loss of important project resources such as project coordinators, community contacts and experts whose positions depend on program funding.

## **4.2 Available information and expertise**

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

The evaluation found considerable evidence that the Program is contributing to increased availability of and access to information, technical expertise and other adaptation products. However, some evidence suggests areas for improvement and the need for additional work.

### ***Successes***

Almost half of the funded projects (n=41) focused on assessment of climate change risks and impacts. While these projects are not intended to result in the development of adaptation plans, they are generating information and tools that communities may be able to use to inform their planning and adaptation work.

To a lesser extent, funded projects focused specifically on information-sharing activities and awareness building (24 percent, n=21) and the development of adaptation tools (9 percent, n=8).

- ▶ ***Information-sharing projects*** involved workshops (n=8); state-of-knowledge and/or gap analysis reports (n=5); development of climate change scenarios (n=4); development of success stories (n=2); and community visits to raise awareness of climate change (n=2). The eight formal workshops addressed a variety of issues such as raising awareness of climate change and data analysis. It should be noted that other types of projects, such as adaptation planning, often involved an awareness-building component. For instance, a recent audit of the Commissioner of the Environment and Sustainable Development of Government of Canada climate change adaptation including INAC's program, highlights a planning project funded in Clyde River as an example of how scientific information was successfully shared with the community through a variety of means including, workshops, presentations and community gatherings.<sup>9</sup>
  
- ▶ ***Adaptation tools*** were developed for:
  - Water-related assessments and monitoring including a protocol to conduct site-specific assessments of vulnerabilities in water and wastewater systems, an adaptation of Engineers Canada's Engineering Vulnerability Assessment Protocol, a Water Information Tool and a guidebook for the use of data loggers to measure water temperatures.
  - Assessing and monitoring infrastructure vulnerability including a methodology for conducting a vulnerability assessment of community infrastructures in terms of permafrost degradation and a methodology for the installation of adfreeze piles.
  - Community-based adaptation planning including a risk-based guide outlining a process for approaching climate adaptation issues in communities North of 60<sup>0</sup>, a workbook for community-based adaptation planning, and a success stories publication and webcast.

Project recipients indicated that these information sources and tools may be used in future projects.

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<sup>9</sup> Commissioner of the Environment and Sustainable Development. (2010, Fall). *Chapter 3 – Adapting to Climate Impacts*. Retrieved January 29, 2011 from, [http://www.oag-bvg.gc.ca/internet/English/parl\\_cesd\\_201012\\_03\\_e\\_34426.html](http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201012_03_e_34426.html)

Program representatives and some project leaders said the Program has made support available to participating communities by connecting proponents with experts and organizations to partner with. Some program recipients also mentioned that NRCan may be able to provide communities with scientific expertise and territorial governments may be able to provide planning and engineering expertise.

### ***Areas for improvement & work needed***

Although there is substantial evidence of information being shared within projects, there is a need for increased sharing of results between projects and across communities. A considerable amount of climate change research is occurring and there is a need to amalgamate and synthesize findings. Few projects are at the stage of being able to share information. However, some information is being shared through informal conversations, posting information on the Internet, and presentations to communities, Aboriginal and other organizations, and workshops and conferences. INAC posts some information about funded projects on its website<sup>10</sup> and refers communities of available information upon request; however, the Program does not formally facilitate information-sharing between communities and across funded projects. According to Program managers, these include risk assessment guidelines and Public Infrastructure Engineering Vulnerability Committee guidelines. Suggestions for improvement in this area can be found in Section 6 below in relation to efficiency and economy. Further, respondents mentioned that many of the funded projects are developing and testing methodologies and processes. These tools may become available for use in future projects.

Key informants identified several areas for improvement and additional/ongoing work.

- ▶ Some program representatives and project recipients said there will always be a need to provide outside expertise, as it cannot be expected to be retained within individual communities.
- ▶ Some program recipients discussed the need for local or territorial climate change coordinators to ensure climate change continues to be a priority, to liaise with government departments, and to connect communities with appropriate partners. Several respondents thought that there is an ongoing need for comprehensive baseline data such as climate scenarios that can be used to support decision-making.

## **4.3 Identification and assessment of climate change risks**

With information, tools and other resources such as expertise becoming increasingly available, the next question the evaluation sought to answer was to what extent are these resources being used and what role do they play in increasing community involvement in assessing risks and opportunities.

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<sup>10</sup> See, for example, the recent document published in partnership with the ecoENERGY program: INAC. (2010). *Sharing knowledge for a better future: Adaptation and clean energy experiences in a changing climate*. <http://www.aadnc-aandc.gc.ca/eng/1312222759090>

### ***Community identification of risks and opportunities***

Key informants emphasized the strong role communities have played in identifying and assessing climate change risks and opportunities. They noted that there is a high level of community interest in these discussions, and in many cases, communities have ownership over the assessment process. Based on the file review, by the conclusion of the Program, community consultations to identify risks and opportunities will have occurred in 32 communities including:

- ▶ eleven South of 60<sup>0</sup>
- ▶ ten in the Northwest Territories
- ▶ six in Yukon
- ▶ five in Nunavut.

Project leaders identified a vast range of climate risks such as increased severity and duration of extreme weather events, unpredictable freezing and thawing, permafrost degradation, flooding, landslides, reduced ice thickness, warmer waters and shoreline erosion.

Key informants reported that these climate risks can lead to impacts such as infrastructure vulnerability; diminished water quantity and quality; loss of traditional land-use practices and cultural identity (e.g., species hunted, traditional medicinal ingredients); food security issues; road wash-outs; increased risk of forest fires; introduction of invasive species and bacteria; changing animal migration patterns and increased presence of problem animals in communities. Project leaders noted that while most communities in a geographical region face the same risks, the magnitude of risk may differ. For example, they explained that some communities have different warming trends and/or permafrost conditions.

Most project leaders noted that communities have yet to recognize opportunities resulting from climate change. Some of the opportunities that were identified include a longer growing season, longer shipping season, increased tourism, increased forest growth, increased grasslands available for animals and lower heating bills.

### ***Scientific assessment***

About one-quarter of the projects (n=25) focussed on scientific assessment of climate risks laying the groundwork for regional climate change trend analysis and providing raw data which many informants felt was crucial to successful planning activities.

- ▶ Seventeen of the projects were conducted in the Territories including nine in Yukon, six in the Northwest Territories and two in Nunavut. Five were conducted South of 60<sup>0</sup> and two focussed broadly on the North.
- ▶ Most of the scientific assessment projects were led by research institutes or consultants (n=9), community councils or associations (n=7), or territorial governments and other federal government departments (n=8). One project was community-led.

Scientific assessments investigated water risks (n=8); permafrost risks (n=7); sea-level rise and sea-ice risks (n=4); risks to tree species (n=3) and other risks (n=3). Table 7 describes the projects that involve scientific assessment.

**Table 7: Description of scientific assessment projects**

Climate risk	Funded projects
Water	<ul style="list-style-type: none"> <li>▶ Four of the water-related projects were conducted in Yukon. These included a two-year project to undertake ecological monitoring of freshwater regimes in the Ta'an Kwäch ään Council Traditional Territory and a two-year project investigating adaptive management for water users.</li> <li>▶ Three of the projects were conducted in Nunavut. One involved mapping summer water sources, another involved monitoring and mapping vulnerable water supplies and the final conducted a study on sea-level rise.</li> <li>▶ One project was conducted in the Northwest Territories and involved developing a climate change scenario model for Great Bear Lake and its watershed.</li> </ul>
Permafrost	<ul style="list-style-type: none"> <li>▶ Five of the projects assessed infrastructure-related permafrost risks. Four of these projects were conducted in the Northwest Territories and one was conducted in Yukon.</li> <li>▶ Three of the projects addressed the vulnerability of infrastructure including a two-year project in the Northwest Territories to develop a methodology for conducting vulnerability assessments of community infrastructure and a one-year project in Yukon to develop an inventory of vulnerable infrastructure.</li> <li>▶ The two additional projects conducted in the Northwest Territories included a one-year project to begin a vulnerability assessment of a highway and a one-year project to develop a methodology for the installation and monitoring of adfreeze piles (building foundations dependent on the frozen ground).</li> <li>▶ Two projects involved permafrost monitoring. One was conducted in the Northwest Territories and one was conducted South of 60° (Taku River Tlingit).</li> </ul>
Sea-level rise and sea-ice risks	<ul style="list-style-type: none"> <li>▶ All of these projects were conducted South of 60°. A two-year project involved estimating sea-level rise in seven New Brunswick municipalities, mapping coastal features, and assessing vulnerabilities. Another two-year project involved collecting historical and current data on sea-ice conditions in Quebec and discussing potential climate change impacts with communities.</li> </ul>
Tree species	<ul style="list-style-type: none"> <li>▶ One three-year project assessed the adaptive capacity of tree species in Yukon.</li> </ul>
Other risks	<ul style="list-style-type: none"> <li>▶ One project assessed landscape hazards in Yukon.</li> <li>▶ One project gathered data on past and present air and ground temperatures in northern Canada.</li> <li>▶ One project assessed food security in the Canadian Arctic.</li> </ul>
Source: Final reports for funded projects	

## ***Intermediate and long-term outcomes***

### **4.4 Capacity to adapt to climate change**

This section focuses on the following evaluation question: *What progress has the Program made toward increased capacity of aboriginal and northern communities to adapt to climate change?* In addition, to the greatest extent possible, it speaks to Program outcomes concerning



professional and institutional capacity and the integration of climate change information into planning and decision-making.

A study on adaptive capacity discusses a range of conditions that together form capacity. Among others, these include the availability of technology and other information resources, human and social capital, the ability of decision-makers to manage information and a public understanding of the source of the risk and its significance.<sup>11</sup> Building on the outcome sections above, this and the next section discuss elements of this list as they apply to the development of capacity and the use of this awareness and skill set to begin to take actions to adapt to a changing climate.

As mentioned in the limitations section above, not enough time has passed to properly assess the extent to which the Program has contributed to increased capacity. With that said, early evidence points to the fact that funded projects are making progress towards this outcome.

### ***Awareness-building and influencing decision-making***

The file review found that, typically, projects do not focus specifically on building capacity, but rather involve a capacity building component. This might take the form of information sharing, or as discussed in greater detail above, active participation of community members in adaptation projects by identifying climate risks and opportunities and defining possible responses to them. Key informant interviews revealed that through this participation, these community members have gained a better understanding of the climate risks their community is facing and have learned about some of the actions they can take as individuals to begin adapting to climate change.

Many project leaders said communities are acutely aware that climate change is occurring, as they live witness it on a daily basis. Nevertheless, there is a need for continued effort in this area. Some community members are questioning whether the changes being experienced are the result of long-term climate change or simply reflect unusually variable weather. Sustained awareness of the impacts of climate change and motivation to act on this awareness often requires repeat messaging.

Some key informants said the program has increased communities' capacity to understand, support and benefit from research. For example, program representatives and project leaders noted that by engaging communities in projects, community members are developing relationships with experts, receiving adaptation training and ensuring project results/reports are useful to communities. Program representatives also indicated that involving communities in research projects helps ensure that decision-makers are accessing the information needed to inform decision-making processes.

In addition to the Program's role in raising awareness among community members, there is some indication that information from projects has begun to be fed into the realm of local-level decision-making. Several respondents agree that projects have helped community leaders make linkages between climate change and community needs. Through an understanding of basic

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<sup>11</sup> Yohe, G. & Tol, S.J. (2001). Indicators for social and economic coping capacity: Moving toward a working definition of adaptive capacity. In *Global Environmental Change* 12. pp. 25-40.

issues, these individuals have a better ability to plan and prioritize realistic actions in response to climate risks.

### ***Other capacity building activities***

Students, community members, and others have received training related to monitoring activities through six projects (7 percent). This training was related to the monitoring of permafrost, water sources, sea ice, air and ground temperatures, weather, and shoreline erosion. Other projects (n=15, 17 percent) have hired local residents to serve as project coordinators or have invited them to participate in project advisory or steering committees. It is unknown if the community members who participated in these projects have used the skills gained to support other climate change adaptation work.

The Program has worked to strengthen the capacity of territorial governments. The Program funded territorial-led projects in all three funding years. During this time, key informants said the Program increased territorial governments' understanding of the impacts of climate change, ensured climate change is considered in government and community planning processes, and created the forum to discuss joint priorities for the future. With greater capacity, informants believe territorial governments will be better able to fulfil their role as the primary source of support for northern communities. Program representatives and representatives of other federal departments believe that once additional capacity is built in territorial and Aboriginal governments, responsibility to continue adaptation planning and implementation could be devolved to them.

Finally, the Program's role in facilitating community engagement and increasing community capacity sets communities on the right track to achieve sustainable development. It is clear that the Program directly contributes to several of INAC's sustainable development principles among others including: engagement of interested local communities and organizations when planning and implementing federal programs and decisions based on the best available, scientific, traditional and local knowledge. Of course, sustainable development will occur only if the funded projects influence decision-making, or spur-on individual and community level action to address climate change issues.

## **4.5 Action to reduce vulnerability**

This section responds to the following evaluation question: *What progress has the Program made toward aboriginal and northern communities taking action to reduce their vulnerabilities from and adapt to climate change impacts and realize opportunities?*

### ***Adaptation planning***

The evaluation found some evidence that communities are developing adaption plans. By the end of the Program, adaptation plans will be in place for 15 communities including seven communities in the Northwest Territories, five communities in Nunavut, and three communities South of 60<sup>0</sup>. The plans are being developed through 10 projects (or 12 percent of all projects); nine of these received more than one year of funding. The following are noteworthy findings related to the Program's support of adaptation planning:

- ▶ The Program directed \$2.0 million in funding (or 21 percent of all the funding provided to projects) to the development of adaptation plans.
- ▶ Most of the adaptation plans are being prepared under the guidance of an external consultant. Research or professional organizations are leading six of the projects. Three of the projects are being led by Aboriginal governments; one of these Aboriginal governments worked with an external research organization to develop the adaptation plans for the communities in its jurisdiction.
- ▶ The development of a community adaptation plan can take one to three years to complete. The process typically involves the development of a project advisory committee and community consultations to identify and prioritize risks/opportunities and plan potential adaptation strategies. It may also involve special projects to further assess specific risks. Typically the organization or researcher leading the project will prepare a draft adaptation plan for review and approval by the community.

Table 8 provides a brief overview of the ten projects expected to result in the development of an adaptation plan in fifteen communities.

**Table 8: Description of adaptation planning projects**

Lead	Communities	Cost	Duration	Approach
Canadian Institute of Planners	Nunavut: <ul style="list-style-type: none"> <li>- Cambridge Bay</li> <li>- Kugluktuk</li> <li>- Whale Cove</li> <li>- Arviat</li> <li>- Iqaluit</li> </ul>	Total: \$537,000  Per community: \$107,400	3 years	<ul style="list-style-type: none"> <li>- Establishing a Partner Team</li> <li>- Conducting a literature review to identify climate change priority issues for Nunavut</li> <li>- Holding community meetings to obtain information on specific climate change issues, discuss barriers, and begin designing adaptation plans</li> <li>- Drafting adaptation plans</li> <li>- Reviewing the adaptation plans with communities</li> </ul>
Tlicho Government with support from Ecology North	Northwest Territories: <ul style="list-style-type: none"> <li>- Behchoko</li> <li>- Gameti</li> <li>- Wekweeti</li> <li>- Wha Ti</li> </ul>	\$648,000  Per community: \$162,000	2 years	<ul style="list-style-type: none"> <li>- Holding public information meetings</li> <li>- Interviewing Elders</li> <li>- Consulting with community governments, technical experts and residents</li> <li>- Drafting community profiles</li> <li>- Drafting adaptation plans</li> </ul>
Ecology North	Northwest Territories: <ul style="list-style-type: none"> <li>- Tsiigehtchic</li> </ul>	\$338,000	2 years	<ul style="list-style-type: none"> <li>- Summarizing scientific research on topics related to climate change in the Gwich'in region</li> <li>- Preparing a community profile</li> <li>- Hiring a community coordinator</li> <li>- Holding planning workshops</li> <li>- Meeting with local advisory committees</li> <li>- Conducting an assessment of Church Hill as well as a housing assessment</li> <li>- Conducting a permafrost mapping project</li> <li>- Developing a draft adaptation plan and reviewing it with local agencies</li> </ul>
Arctic North Consulting	Northwest Territories: <ul style="list-style-type: none"> <li>- Paulatuk</li> <li>- Ulukhaktok</li> </ul>	Total: \$195,000  Per community: \$97,500	1 year	<ul style="list-style-type: none"> <li>- Holding community workshops</li> <li>- Developing hazard maps</li> <li>- Assessing the vulnerability of wastewater treatment facilities and drinking water</li> <li>- Prioritizing adaptation options</li> <li>- Drafting adaptation plans</li> </ul>

**Table 8: Description of adaptation planning projects**

Lead	Communities	Cost	Duration	Approach
Hesquiaht Band	Clayoquot First Nations, British Columbia: <ul style="list-style-type: none"><li>- Ahousaht</li><li>- Hesquiaht</li><li>- Tia-o-qui-aht</li></ul>	Total: \$250,000  Per community: \$83,000	2 years	<ul style="list-style-type: none"><li>- Establishing a Project Steering Committee</li><li>- Hiring community members to lead part of the research</li><li>- Developing baseline climate data and climate projections</li><li>- Holding public community meetings and school events</li><li>- Conducting community interviews</li><li>- Developing an impact and vulnerability assessment, as well as an adaptation plan</li></ul>

Source: Final reports for funded projects

The evaluation found some evidence that the adaptation plans funded through the Program were worthwhile investments. Though only recently completed or still underway, key informants were optimistic that adaptation planning would influence decision-making and that elements of the plans would be implemented, depending on associated costs. Another benefit of the planning process cited was its ability to bring together numerous viewpoints and knowledge from a range of community members, experts and other stakeholders.

Alternatively, a few program recipients suggested that some of the adaptation plans that have been prepared may not be as useful to the communities as initially intended. Possible reasons for this are that these adaptation plans were not based on concrete data, there was little community representation in consultations and there was no community ownership of the planning process.

## 4.6 Unintended Outcomes

### *Implementation*

Although implementation of adaptations and other actions was not an objective of the Program, the evaluation found some evidence that communities are beginning to take action to reduce their vulnerability to climate change.

Although many program recipients indicated that communities have yet to begin implementing adaptation projects, they provided some examples of actions communities are taking to respond to climate change as a result of knowledge and resources gained through the Program. These include: changing travel routes, hunting different species, planning development on higher ground and constructing breakwaters.

Based on the file review, three of the funded projects specifically involved implementation activities (although reports were only available for two of them).

- ▶ One project involved developing two sea ice safety courses – one for K to 12 students and the other for young adults and apprentice hunters – and continuing sea ice monitoring activities, which began in 2006 with funding from the National Science Foundation.
- ▶ A second project involved holding workshops related to fuel tank and hazardous material awareness.

## 4.7 Best practices and lessons learned

### *Best practices*

A number of key informant interviewees from all groups shared best practices and lessons learned around climate change initiatives:

- *Information database.* To address a lack of coordination in information management, one province is developing a one-stop adaptation information database that will include key information about climate change vulnerability, tools to help communities adapt, climate change modelling and scientific data from Natural Resources Canada and Environment Canada.
- *Resilience-based capacity-building.* Two provinces have adopted a resilience-based approach to community capacity-building. Instead of taking a risk mitigation approach, these provinces encourage resilience in the face of vulnerability. The underlying belief to this approach is that strong communities will naturally be better able to adapt to the impacts of climate change as they occur. Moreover, this approach is in keeping with an Aboriginal worldview.
- *Assisting communities with the proposal process.* Although this process requires intensive time and effort on the part of INAC, it helps develop community capacity to prepare proposals, increases the quality of proposals and may enable the Program to fund a broader range of applicants.
- *Requiring projects to involve community representation.* By requiring projects to involve community participation, the Program has helped ensure that funded projects are relevant to communities and contributes to building community capacity to engage in adaptation work.

### *Lessons learned*

- *Involving a wide range of stakeholders in projects can increase their success.* Key informants said it is important to involve as many stakeholders as possible in projects. A greater number of perspectives brought to the table may, in turn help ensure projects are relevant to multiple stakeholder groups. They also said projects should involve elders, adults, and youth. In particular, they emphasized the importance youth play in advocating for changes in practices.
- *Projects should consider traditional lifestyles and culture.* Key informants noted that projects may be more successful if they incorporate traditional lifestyles and cultures. For example, they reported that more community members will attend climate change discussions if they involve a feast rather than formal community meetings. They also explained that projects should identify community values and then relate the research to those values. This helps demonstrate the benefits of the project to the community.

## 5. Results – Economy, efficiency & cost-effectiveness

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This section responds to the following evaluation questions:

- ▶ *How economical, efficient and cost-effective is the Program?*
- ▶ *How does the relationship between the Program and its partners contribute to program cost-effectiveness?*
- ▶ *How could the economy and efficiency of the Program be improved?*

### 5.1 Economy

Economy is achieved when resources (financial, human and material) are acquired at the lowest possible cost.<sup>12</sup> The evaluation approached this issue from both a macro level – reviewing the extent to which the Program complements and duplicates other Government of Canada programs – and a program-specific level with attention given to whether tools, information and other material is being produced economically.

#### *Duplication and complementarities with other programs*

The implementation evaluation lists several initiatives that complement the Program including the action plans of territorial governments. In addition to these, the present evaluation found evidence that the Program complements the following programs:

- ▶ The ecoENERGY for Aboriginal and Northern Communities Program, which is another CAA Program that INAC is delivering. This four-year (2007–08 to 2010–11), \$15-million program seeks to reduce greenhouse gas emissions from Aboriginal and northern communities by facilitating their transition to clean, renewable energy, and supporting investment in energy infrastructure and knowledge resources.<sup>13</sup>
- ▶ The National Round Table on the Environment and the Economy (NRTEE) has prepared a report on adapting infrastructure to climate change in Northern Canada. The report assessed risks to infrastructure and evaluated three risk-based mechanisms that may influence the vulnerability of infrastructure to climate change: codes and standards, insurance and disaster management.<sup>14</sup>
- ▶ Engineers Canada and Natural Resources Canada, through the Public Infrastructure Engineering Vulnerability Committee (PIEVC), conducted a national engineering vulnerability assessment of four categories of public infrastructure: buildings; roads and

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<sup>12</sup> Auditor General of Canada. (1990). *Comprehensive auditing manual*.

<sup>13</sup> INAC. (2010, Oct. 27). *ecoENERGY for Aboriginal and northern communities overview*. Retrieved November 17, 2010, from, <http://www.aadnc-aandc.gc.ca/eng/1100100034258>

<sup>14</sup> The National Round Table on the Environment and the Economy. (2009). *True north: Adapting infrastructure to climate change in Canada*.

associated structures; storm water and wastewater systems and water resources. One of seven case studies was conducted in the North.<sup>15</sup>

The evaluation found evidence of limited duplication between the Program and the Government of Canada's program for International Polar Year (IPY) 2007–2008, which through funding of 43 projects was the largest-ever international program of scientific research focused on the Arctic and Antarctic regions.<sup>16</sup> The objectives of IPY and the Program are similar in that they support research and assessment work of climate change impacts and adaptation. Several examples of similar projects funded are assessment of ice-thickness and permafrost conditions; the identification of vulnerabilities associated with climate change in northern communities; the incorporation of traditional community practices into adaptation; and the impacts of climate change on forests and fresh and salt water systems.

Both the Program and the IPY have funded identification/assessment of climate change risks and adaptation projects led by academic organizations, First Nations councils and government recipients.<sup>17</sup> One noteworthy difference between the two is the enhanced community focus of the Climate Change Adaptation program, though IPY and the Program share the goal of directly involving northerners in research and assessment activities. Finally, as a larger program, IPY is better positioned to fund larger projects.

### ***Economy in community-level inputs***

Economy can be achieved through the sharing of resources across and between communities. For instance, without templates, background information of what worked and did not work in other communities, time and resources can be wasted in the duplication of efforts. As mentioned above in relation to available information, the Program is at an early stage of information sharing, including tools and templates that may help communities to achieve economy in the future.

The issue of replication of projects and project results, though not explicitly stated as an objective of the program, was identified in the evaluation methodology as an area of interest to try to determine whether economy might be achieved through limiting duplication of efforts. With one exception – the replication of ice monitoring techniques – key informants could not provide any examples of projects that had been replicated given the early stage of the Program. Some respondents did not believe that many funded projects are replicable because they are location-specific. However, they indicated that some methodologies, tools and processes used in various projects could be replicable.

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<sup>15</sup> Canadian Council of Professional Engineers. (2007). *Public infrastructure engineering vulnerability committee*. Retrieved November 19, 2010, from [http://www.pievc.ca/e/index\\_cfm](http://www.pievc.ca/e/index_cfm)

<sup>16</sup> Brief descriptions of these projects can be found at: [http://www.ipy-api.gc.ca/pg\\_IPYAPI\\_050-eng.html](http://www.ipy-api.gc.ca/pg_IPYAPI_050-eng.html)

<sup>17</sup> Note that this finding is based on a comparison of all funded projects at the end of these two programs. As a result, it updates the findings of the 2009 implementation evaluation.

## 5.2 Efficiency

Efficiency is achieved when the maximum output is produced for any given set of resources or inputs, or when minimum inputs are needed for any given quantity and quality of service provided.<sup>18</sup> The evaluation found the following evidence of Program efficiency.

- ▶ The Program has coordinated administrative activities with INAC's ecoENERGY Program (based in part on a recommendation from the implementation evaluation). According to program representatives, these two programs share a joint website, report jointly and have streamlined approval processes.
- ▶ During the past three years, almost 75 percent or \$10.0 million of the Program's funding was provided to projects through contribution agreements. The Program funded 86 projects, thereby exceeding its goal by 26 projects. Of the remaining expenditures, nine percent of Program resources (\$1.2 million) was used to fund salaries for eight staff members.

Additional efficiency measures include: working with INAC regional offices to set-up funding agreements; travelling to more than one community during trips to the North and co-funding projects where possible (the Program co-funded one project with Health Canada in 2010-11).

## 5.3 Cost-Effectiveness

Cost-effectiveness is achieved when intended outcomes are achieved for the least possible cost. The evaluation found some evidence that the Program is cost-effective, but noted a number of areas for improvement.

The ability of funded projects to leverage additional funding suggests that the Program is a cost-effective investment. Indeed, some key informants mentioned that securing additional funding for projects was made possible through the Program's initial investment. Overall, funded projects have leveraged \$5.2 million in funding and in-kind resources from other sources, an amount greater than 50 percent of Program funding. Table 9 shows the cost of projects by funding year.

**Table 9: Cost of projects, 2008–09 to 2010–11**

Activity	2008–09	2009–10	2010–11	Total	% of Total
	\$ '000				
Funds approved	\$1,235	\$4,020	\$4,349	\$10,000	65%
Estimated amount covered by non-Program sources	\$877	\$2,422	\$1,916	\$5,215	35%
Estimated total project cost	\$2,112	\$6,422	\$6,265	\$15,215	100%

Source: Performance measurement summary spreadsheet

More generally, the evaluation found some evidence that adaptation can result in cost savings. Using several climate change scenarios, a study based in Alaska estimates comparisons between infrastructure costs with and without adaptation measures. The potential savings from adaptations prove to be small in the short term, but become much more substantial farther into the future with

<sup>18</sup> Auditor General of Canada. (1990). *Comprehensive auditing manual*.



costs decreasing as much as 45 percent.<sup>19</sup> These projections require implementation funding that is not available through the Program; however, the Program's support of infrastructure vulnerability assessments could contribute to this outcome.

## 5.4 Potential improvements to economy and efficiency

Key informants offered various suggestions to improve the efficiency and economy of the Program. Many of these relate to design and delivery improvements that would also better enable the Program to more effectively target promising projects.

- ▶ ***Continue to improve relationships between INAC headquarters and regional offices.*** This would better position regional offices to inform communities of the Program, advise INAC headquarters of communities in need of assistance and generally improve HQ's understanding of what is occurring on the ground.
- ▶ ***Improve communication and coordination with provincial climate change offices.*** Through its support of projects, INAC has developed strong relationships with several provincial government ministries. For instance, INAC, other federal government departments, Transports Québec and other stakeholders partnered on a project that is assessing infrastructure vulnerabilities in Nunavik.<sup>20</sup> However, the evaluation found that there is an opportunity to strengthen communication and collaboration with provincial climate change offices in provinces where projects are being funded. This will help to:
  - limit duplication;
  - maximize the benefit of regional work underway;
  - gain provincial legitimacy for planning projects that might aid in securing implementation funding; and
  - better apply a long-term coordinated strategy to the project-by-project funding approach taken by the Program.

Although the federal government has a unique responsibility with respect to First Nations communities and is not required to collaborate with provinces, the end result of this greater communication and collaboration, it was suggested, would be a more effective systems-based approach to addressing climate change. This approach would help transcend federal and provincial programming silos to better engage national, regional, community and individual perspectives.

- ▶ ***Increase program-related communications.*** This may involve a communications strategy that better targets potential beneficiaries to increase the number of communities that are aware of the Program, thereby resulting in a broader range of applicants. It may also involve the development of newsletters and other communications materials to keep

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<sup>19</sup> Larsen, P. & Goldsmith, S. (2007, June). *Estimating future costs for Alaska public infrastructure at risk from climate change*. Anchorage: Institute of Social and Economic Research, University of Alaska Anchorage.

<sup>20</sup> Transports Québec. (2010). *Climate change and marine infrastructures in Nunavik*. Retrieved February 1, 2011, from <http://www.inframaritimes-nunavik-cc.mtq.gouv.qc.ca/ENGLISH/PARTNERS/Pages/default.aspx>

stakeholders informed of the research being conducted through the Program. Program managers agree that adequate communication is an important part of the program and said that communications material has advanced to the greatest extent possible given constraints in INAC's communications approval process.

- ▶ ***Distribute funds to projects on time.*** Although projects are approved by February, communities often do not receive funding until June. This has implications for the timing of data collection and can limit the amount of time available to analyze and report on collected data. As discussed in the 2009 implementation evaluation, INAC's finance policies and processes have inhibited the distribution of funds on a timely basis.
- ▶ ***Expand Program and project duration.*** The current Program is three-years in duration and projects must apply for funding on an annual basis. Key informants believe extending the Program duration to five years and approving multiple-year projects based on one application, would reduce the administrative costs associated with the Program. It may also reduce the amount of time communities need to devote to preparing proposals.
- ▶ ***Solicit proposals through a formal call for proposals.*** This would achieve economy by allowing the Program to assess all of the proposals at one time, instead of at multiple times throughout the year. It would likely also achieve greater efficiency as the Program could better identify and select projects with the greatest potential for success.
- ▶ ***Provide a joint application with other programs and departments.*** This would provide communities with one-window access to adaptation funding, thereby enabling them to find the most appropriate funding source and limiting the time involved in application. Likewise, it would provide other departments with a better understanding of the adaptation work being funded in Aboriginal and northern communities and may, as a result, facilitate collaboration on projects eligible to receive funding from more than one department.

## 5.6 Alternative approaches

This section responds to the following evaluation question: *Are there more cost-effective and efficient means of achieving the objectives of the Program?*

The evaluation was not able to determine whether alternative approaches to the Program might offer enhancements to efficiency and economy. The following discussion reviews a number of different approaches being taken in other jurisdictions to provide adaptation support to communities or those developing community-level information. As with any cross-jurisdictional review, the reader must recognize that these approaches have been developed in social, political, geographical and environmental contexts that differ from those in Canada.

### 5.6.1 International adaptation initiatives

A number of international jurisdictions have national adaptation action plans in place. Less common are strategies and programs that directly fund community-level projects. Most commonly, federal governments provide support to municipalities and other communities through dissemination of information, capacity-building workshops, technical guidance, networking and various guidelines and toolkits.

The United States and Australia offer several programs comparable to INAC's adaptation program. The National Oceanic and Atmospheric Administration (NOAA), a federal US agency, has in place a one-time \$1.2 million source of funding to assist coastal communities to prepare for the impacts of climate change. This initiative focuses on emergency planning and supports rapid response community-based climate adaptation projects in coastal and Great Lakes states.<sup>21</sup> In addition to funding major national vulnerability assessments, Australia's Climate Change Adaptation Program – a \$126 million initiative – funds local-level projects through municipal councils and professional organizations. Several examples of projects include an initiative to revise or develop professional development and accreditation programs with climate change information. In addition, the program contributes to local-level capacity to assess climate change risks and develop responses.<sup>22</sup>

Unlike these examples and INAC's adaptation program, the majority of adaptation initiatives do not directly fund community projects. Generally, other alternatives seek to provide communities with technical and informational resources or contribute to a greater understanding of community vulnerabilities on a broader scale through the funding of research projects.

The cross-jurisdictional review found the most evidence of this first approach. Sweden provides important climate change baseline data including regional climate modelling, regional climate change projections and hydrological impact assessment to planners and other community-level decision-makers to provide a strong foundation for planning.<sup>23</sup> The government of Germany offers similar decision support services, while the Alaska State government provides communities with several manuals and toolkits to aid in adaptation planning.<sup>24/25</sup> Similarly, Norway's climate change adaptation program offers a course to planners and local-level decision-makers and other representatives. The course covers a number of adaptation measures

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<sup>21</sup> NOAA. (2010, September 9). *NOAA sea grant initiates \$1.2 million community climate change adaptation initiative*. Retrieved January 15, 2010, from, [http://www.noaaneews.noaa.gov/stories2010/20100909\\_seagrant.html](http://www.noaaneews.noaa.gov/stories2010/20100909_seagrant.html)

<sup>22</sup> Australian Government – Department of Climate Change and Energy Efficiency. (2010, March 23). *Climate change adaptation program*. Retrieved January 31, 2010 from, <http://www.climatechange.gov.au/en/government/initiatives/climate-change-adaptation-program.aspx>

<sup>23</sup> Mistra. (2009, Oct. 17). *SWECLIM: Swedish regional climate modeling program*. Retrieved January 31, 2011, from, <http://www.mistra.org/mistraenglish/research/completedprogrammes/sweclimswedishregionalclimatemodelingprogramme.4.1eeb37210182cfc0d680007760.html>

<sup>24</sup> Government of Germany. (2008, Dec. 17). *German strategy for adaptation to climate change*. Retrieved January 21, 2011, from, [http://www.bmu.de/files/english/pdf/application/pdf/das\\_gesamt\\_en\\_bf.pdf](http://www.bmu.de/files/english/pdf/application/pdf/das_gesamt_en_bf.pdf)

<sup>25</sup> Alaska Sea Grant Marine Advisory Program. (2011, Jan. 11). *Adapting to climate change in coastal Alaska*. Retrieved January 12, 2011, from, <http://seagrant.uaf.edu/map/climate/index.php>

including planning, water supply and sewage, health, nature management and transport.<sup>26</sup> One final example is the identification risks and development of adaptation measures by Austrian sector (e.g. agriculture, industry, tourism).<sup>27</sup>

Programs in Australia and New Zealand have supported community-focused research projects. New Zealand's Community Vulnerability, Adaptation and Resilience Program incorporates perspectives from local governments, public health professionals and Maori, New Zealand's Aboriginal population, to form a comprehensive framework for assessing climate change impacts and ways to respond to these risks.<sup>28</sup> Likewise, Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) has supported a number of research studies geared mostly at the community-level. These studies focus on information-sharing and integration of traditional knowledge into an understanding of adaptation; studies on vulnerabilities in Aboriginal communities and impacts on Aboriginal communities.

Finally, there is some evidence of professional organizations providing climate change adaptation support. For instance, the Australian Institute of Landscape Architects has developed landscape principles and associated professional development programs to increase the expertise of landscape architects to incorporate adaptive responses to landscape planning.<sup>29</sup>

### **5.6.2 Provincial and territorial adaptation initiatives**

Interviews with provincial and territorial climate change representatives and a review of provincial and territorial climate change action plans and other related information revealed that there are a number of activities underway to support adaptation activities, but few formal programs. Across Canada, action plans identify adaptation as a key issue alongside climate change mitigation. Unlike federal government programming, however, provinces and territories engage in a number of supporting activities and other innovative approaches to assessment and planning outside of formal programming. One common thread is education and awareness building through, for example, youth education, web-based information resources and community engagement forums.

Another common approach to climate change adaptation is through existing channels. One province takes the approach of identifying opportunities to address climate change issues as they apply to work already underway in other government ministries. In other examples, provinces and territories plan to conduct infrastructure assessments and incorporate adaptation knowledge into land use decision-making and building regulations.

### **5.6.3 Other alternatives**

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<sup>26</sup> Norway Ministry of Environment. (2011). *Norwegian climate change adaptation program*. Retrieved January 31, 2011 from, <http://www.regjeringen.no/en/dep/md/kampanjer/engelsk-forside-for-klimatilpasning.html?id=539980>

<sup>27</sup> Environment Agency Austria. (n.d.). *Climate change impacts in Austria*. Retrieved January 17, 2010, from, [http://www.klimawandelanpassung.at/fileadmin/inhalte/klimaanpassung/pdfs/NAS\\_Austria\\_Homepage\\_KWAS\\_011009.pdf](http://www.klimawandelanpassung.at/fileadmin/inhalte/klimaanpassung/pdfs/NAS_Austria_Homepage_KWAS_011009.pdf)

<sup>28</sup> New Zealand Climate Change Research Institute. (2010, April 2). *Strategic plan: 2010-2012*. Retrieved January 17, 2010

<sup>29</sup> Australian Institute of Landscape Architects. (2011). *Climate change*. Retrieved January 10, 2011 from, <http://www.aila.org.au/climate/>

A few key informants also mentioned that adaptation planning could be integrated into other planning processes such as comprehensive community planning or emergency planning given the availability of adequate modelling, climate change scenarios, and other assessment information. One benefit of this approach is that there are no mechanisms for enforcement or ongoing implementation of adaptation plans, whereas other plans may hold a more prominent place in community decision-making. In addition, incorporating information into other planning processes may reduce duplication of efforts and presents the opportunity to more clearly show linkages between climate change adaptation and other common community challenges.

## ***6. Summary of Findings, Conclusions & Recommendations***

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This section summarizes the evaluation findings, draws conclusions, and offers recommendations.

### **6.1 Summary**

#### ***Continued need / Responsiveness to need***

There is continued need for the Program. There is a need to continue to build capacity and work with communities that have not begun to engage in adaptation planning. It appears that the Program may not have reached communities in greatest need of support or those requiring immediate support. Possible explanations are that communities in need of support may not have the capacity to participate in the Program; without a formal call for proposals, the Program may not have identified communities in greatest need and, finally, given its short duration, the Program targeted communities that were ready to begin working on adaptation projects.

#### ***Outcomes –Performance***

##### **Collaboration**

The Program worked to strengthen its relationships with other federal departments and territorial governments. It fostered the development of relationships between scientists, consultants, experts, and communities. Despite these efforts, some projects have experienced challenges. Several have found it difficult to achieve long-term commitments and shared vision. Additionally, there is significant staff-turnover at the community and territorial levels that can hinder relationship building. Finally, some community members are experiencing consultation fatigue and are reluctant to participate in climate change discussions.

##### **Access/availability to information**

The Program has contributed to increased availability of climate change information and expertise. Almost half of the funded projects focused on assessment of climate change risks and impacts. To a lesser extent, projects facilitated information-sharing and the development of adaptation tools. Nonetheless, there is a need to increase community-level coordination of adaptation work and sharing of project results. There is also a need to continue the work underway in participating communities and to engage new communities in adaptation projects.

##### **Increased ability to assess climate change risks**

Most of the funded projects identified climate change risks and, in large part, this process directly involved community members. These projects identified a vast range of climate risks from permafrost degradation to flooding to reduced ice thickness. In addition, projects identified a number of specific impacts to communities associated with these risks such as infrastructure vulnerability, loss of traditional land-use practices and cultural identity and food security issues. Although many communities in a geographical area face the same core set of risks, the

magnitude of risk varies across communities. Few communities have recognized opportunities from climate change.

Another noteworthy finding in relation to the Program's role in increasing communities' ability to assess risks was that roughly one quarter of funded projects involved the scientific assessment of risks including those to water, permafrost and sea-level rise. These projects provide vital data for planning activities and climate change trend analysis.

### **Capacity**

The Program is increasing awareness of climate change within participating communities. However, there is a continued need to raise awareness of climate change impacts as some community members question whether the changes experienced simply reflect unusually variable weather conditions. Additionally, there is a need for repeat messaging.

The Program has begun to increase the capacity of participating communities to adapt to climate change. In part, this is the result of increased awareness of risks and possible adaptation strategies. It also results from increases in communities' ability to understand, support, and benefit from research, particularly through projects that actively engage community members. More generally, the Program's close relationship with territorial governments has increased capacity at that level. Nonetheless, many communities lack the financial and human resources required to engage in adaptation planning, pointing to the need for continued work in this area.

The evaluation found some evidence that communities are developing adaptation plans. By the end of the Program, adaptation plans will be in place for 15 communities. The evaluation found mixed evidence relating to the usefulness of these plans, though it should be noted that it is difficult to draw conclusions on this point given the fact that plans have either only recently been completed or are still underway. On the whole, plans that apply a community-based approach and successfully integrate climate change data appear more likely to be incorporated into community-level decision-making.

### **Unintended outcome: Actions to reduce vulnerability**

Some projects have resulted in actions taken to reduce vulnerability to climate change. Few communities have begun to implement projects. Implementation of projects is one step ahead of the long-term expected outcome of the Program.

### ***Results – Economy, Efficiency & cost-effectiveness***

The Program complements other CAA Adaptation Theme Programs, the NRTEE work on Climate Change Adaptation, and the Public Infrastructure Engineering Vulnerability Committee (PIEVC) national engineering vulnerability assessment. To a limited extent, evidence suggests that the Government of Canada's program for International Polar Year duplicates the Program as these two programs fund similar adaptation projects.

## **Successes**

The Program provided 75 percent of its available funding to projects and planned and actual expenditures were closely aligned. The Program funded 86 projects, thereby exceeding its goal by 26 projects. The Program attempted to maximize its efficiency by coordinating administrative activities with INAC's ecoENERGY Program, having regional offices set-up funding agreements, travelling to more than one community during trips to the North and co-funding projects where possible.

The Program demonstrated cost-effectiveness by leveraging \$5.2 million funding and in-kind resources from other sources. However, little sharing of information resources across and between communities occurred and few funded projects are replicable because they are location-specific

## **Areas for improvement**

According to key informants, several opportunities to improve the economy and efficiency of the Program exist. Information and resources including tools and manuals could be more effectively shared across communities. INAC headquarters' relationship with regional offices could be strengthened to improve the Program's understanding of regional issues. Program-related communications could be increased to raise awareness about the Program. Project funds could be distributed to projects in a more timely fashion (depending on constraints involved with INAC financial processes). Program and project duration could be expanded to limit the time involved in applying for funding. Proposals could be solicited through a formal call to enable the Program to better target specific projects. Finally, a joint funding application could be established with other programs and departments.

## **Alternative approaches**

The cross-jurisdictional review revealed that other jurisdictions are taking a number of different approaches to adaptation support. These include incorporating adaptation into existing programming channels (e.g. infrastructure funding); providing training to planners; developing toolkits and manuals for planning exercises; providing information through online databases and funding macro studies on climate change adaptation. Additionally, some key informants felt that adaptation planning could potentially be integrated into other planning processes given the availability of adequate modeling, climate change scenarios and other climate change assessment information.

## **6.2 Conclusion**

The Program appears to be on-track to achieve its intended immediate and intermediate outcomes. The Program has fostered collaboration with other federal departments involved in the Adaptation Theme of the CAA, territorial governments and a range of others on adaptation projects. It has increased participating communities' awareness of climate change risks and impacts and increased the availability of climate change adaptation information and tools. It has supported assessment of climate risks and development of some adaptation plans.



Despite the Program's successes, more time is needed to fully realize outcomes and improvements can be made to help achieve future success. Many communities lack capacity to participate in adaptation projects. Few communities have begun to implement projects to reduce their vulnerability to climate change. Improvements can be made to the Program to better target communities in need as well as those with existing capacity. The benefits of funded projects can be maximized through more efficient and effective processes.

### **6.3 Recommendations**

The evaluation offers the following recommendations to improve the success, efficiency and cost-effectiveness of the Program:

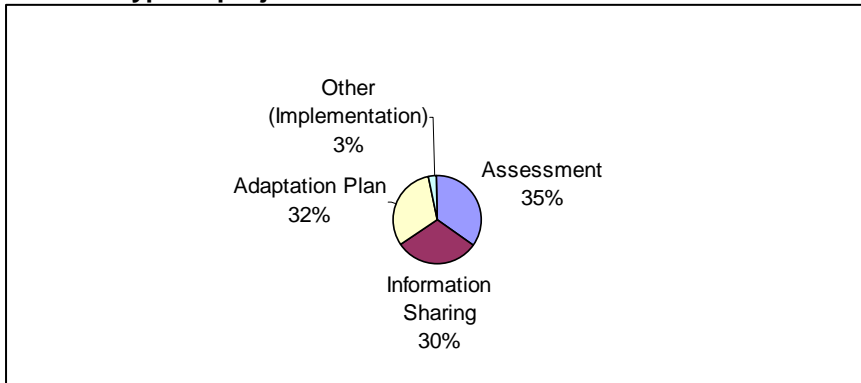
1. To increase its ability to identify and reach communities in need and better align efforts with regional strategies, INAC should:
  - a. Continue to strengthen relationships with INAC regional offices.
  - b. Continue to seek opportunities to work with provincial and territorial climate change offices.
2. To increase communities' awareness of funding opportunities, secure a broader range of applicants and better target funding, INAC should:
  - a. Continue to proactively inform individual communities of funding opportunities.
  - b. Solicit applications through a formal call for proposals.
3. To provide Aboriginal and northern communities with one-window access to funding opportunities, INAC should explore opportunities for coordinating its call for proposals and application processes with other similar programs.
4. To take advantage of the climate change adaptation research that has been completed, INAC should find additional ways to share results across communities through, for example, integrating data into the Government of Canada's International Polar Year database.

## ***Annex A: Key informant interview selection criteria***

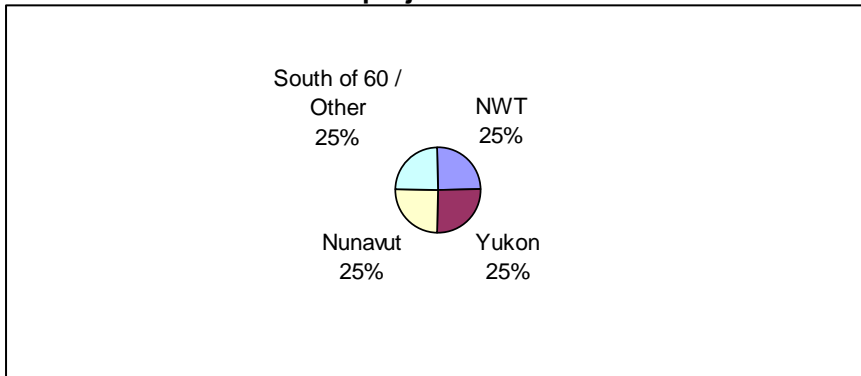
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The following criteria were used to guide the selection of the sample of nineteen projects: funding year (2008-09 and 2009-10), type of project, region and type of recipient. The charts below show the representativeness of selected projects in each of these categories.

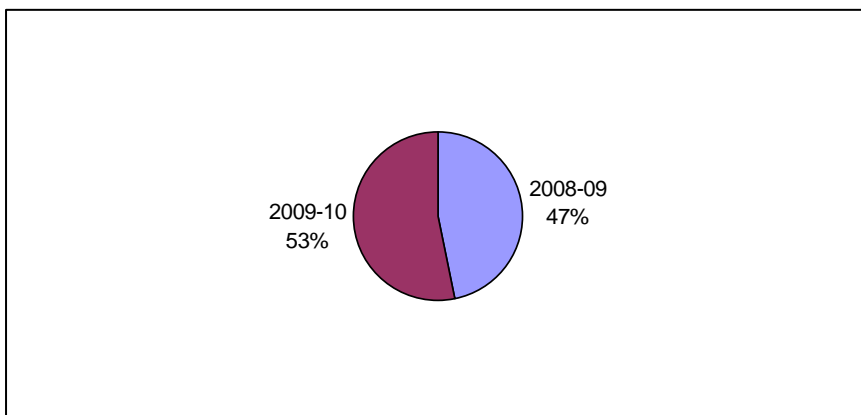
**Chart 1: Type of project**



**Chart 2: Location of funded projects**



**Chart 3: Funding year**



**Chart 4: Recipient category**

