

Development of a Performance Measurement Framework for the Leadership Fund

by

Spencer Matthewman
B.Sc., Simon Fraser University, 2020

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We acknowledge and respect the Ləkʷəŋən (Songhees and Xʷsepsəm/
Esquimalt) Peoples on whose territory the university stands, and the
Ləkʷəŋən and W_SÁNEĆ Peoples whose historical relationships with the land
continue to this day.

Supervisory Committee

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Abstract

Announced in Budget 2016 as part of the Pan Canadian Framework on Clean Growth and Climate Change, the Low Carbon Economy Fund aimed to advance Canada towards meeting its Paris targets by providing financial support for GHG reducing and clean growth projects. The client, Environment and Climate Change Canada's Methodology and Evaluation Division, requested the development of a performance measurement framework for the Low Carbon Economy Leadership Fund (i.e., the Leadership Fund) to summarize key findings and general themes and support its recapitalization. The study employs a gap analysis to develop key performance indicators by assessing current performance mechanisms, defining a desired state based on available program data, and addressing the gaps between those states. Methods include a review of funding agreement and internal progress reports for each portfolio component across the three implementation stages. All components are classified by geographic region, component type, and economic sector to support the thematic analysis, with individual inclusion and exclusion criteria. A database is developed to support the analysis of data and key visualizations. While findings show the Fund is 39% less cost-effective from the original funding agreement execution to current data, the results narrative highlight key trends in average emissions reductions, cost-effectiveness, and project survivability across sectors, regions, and funding mechanisms. These trends underscore important successes and lessons learned across the portfolio and provide opportunities for improvement in the Fund's recapitalization.

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List of Acronyms & Abbreviations

| Abbreviation | Definition |
|---------------------|---|
| AIP | Approval in Principle |
| CPT | Cost-per-tonne |
| ECCC | Environment and Climate Change Canada |
| GHG | Greenhouse Gas |
| GOC | Government of Canada |
| IPCC | Intergovernmental Panel on Climate Change |
| KPI | Key Performance Indicator |
| LCEF | Low Carbon Economy Fund |
| MED | Methodology and Evaluation Division |
| mtCO ₂ e | Megatonnes of Carbon Dioxide Equivalent |
| NDC | Nationally Determined Contribution |
| PCF | Pan Canadian Framework on Clean Growth and Climate Change |
| RAT | Risk Assessment Tool |
| tCO ₂ e | Tonnes of Carbon Dioxide Equivalent |
| UNFCCC | United Nations Framework Convention on Climate Change |

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Chapter 1 – Introduction

Climate change is characterized as a “super wicked” policy issue due to the intersection of four features: “time is running out; those who cause the problem also seek to provide a solution; the central authority needed to address it is weak or non-existent; and, partly as a result, policy responses discount the future irrationally” (Levin et al., 2012, p. 123). There is near unanimous consensus among the scientific community that urgent action is required to mitigate the risks of climate change (IPCC, 2018). Driven by greenhouse gas (GHG) emissions, average global temperatures have increased by 1°C compared to pre-industrial levels (IPCC, 2018). In Canada, average temperatures have increased at twice this rate since 1948 (Lemmen & Bush, 2019). Rising temperatures are responsible for increased extreme weather patterns, rising oceans, and receding glaciers (IPCC, 2018). While there remains uncertainty to the future distribution of climate changes impacts, leading experts agree that limiting global warming to 1.5°C compared with 2°C would mitigate the extent and the number of people exposed to climate risks and decrease the risk of climate poverty for millions (IPCC, 2018).

In 2015, the Government of Canada (GOC) signed the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC), establishing the goal of limiting global warming to below 2°C and aiming for 1.5°C (UNFCCC, 2016). Under the agreement, each signatory committed to setting progressively ambitious GHG emission reduction targets, known as Nationally Determined Contributions (NDCs), every five years based on national circumstances (ECCC, 2022a). Canada’s first NDC committed to reduce GHG emissions 30% below 2005 levels by 2030, while their third committed to reduce GHG emissions 45-50% below 2005 levels by 2035 (GOC, 2017, 2025). Signatories also committed to transition their financial markets to support low-carbon economic development. In response, Canada has prioritized funding programs to drive emissions reductions, alongside other market-based measures, investment tax credits and regulations (GOC, 2025).

One funding program central to Canada’s economic action plan is the Low Carbon Economy Fund (LCEF). Announced in Budget 2016 as part of the Pan Canadian Framework on Clean Growth and Climate Change (PCF), the LCEF aims to advance Canada’s progress towards meeting its first NDC set under the Paris Agreement by providing financial support for GHG reducing and clean growth projects (ECCC, 2016). The LCEF split funding allocations across two envelopes. The Challenge Fund provides funding towards GHG emissions reducing projects for a wide range of applicants, including different orders of government, Indigenous organizations, public sector bodies, not-for-profit entities, and for-profit organizations (ECCC, 2022c). Concurrently, the Leadership Fund provides funding allocations to provinces and territories who signed the PCF to support emissions reduction and clean growth programs. With ~\$1.3 billion in allocated funding, the fund was originally projected to generate ~4.5 megatonnes of GHG emissions reductions in 2030 (mtCO_{2e}) (ECCC, 2022c).

Although Leadership’s 58 portfolio components closed on March 31, 2025, it received a ~\$800 million recapitalization to support continued funding through March 31, 2029. Now in its first year, the Leadership’s recapitalization builds on the Fund’s original objectives while introducing updated eligibility and merit criteria focused on net-zero alignment and other priority co-benefits (ECCC, 2022c). This transition period provides an opportunity to review existing performance indicators and develop a data-driven framework to assess the active portfolio. This research focuses on developing a performance measurement framework that captures key findings and themes, providing a meaningful narrative to support the Fund’s recapitalization.

1.1 Project Client

Environment and Climate Change Canada (ECCC) is the lead department overseeing Canada's commitments under the Paris Agreement. This includes setting NDCs and implementing climate mitigation programs alongside other environmental initiatives (ECCC, 2022a). At program inception, ECCC identifies policy issues through internal analysis and stakeholder input, then works with central agencies to develop preliminary options. A Memorandum to Cabinet is drafted to outline a program's rationale, objectives, and funding needs (GOC, 2023). Once approved by Cabinet, ECCC prepares a Treasury Board Submission to obtain spending authority and approve the program's terms and conditions. This process sets the foundation for detailed program design, implementation, and delivery (GOC, 2023). Within ECCC, the Programs Directorate, under the Program Operations and Regional Affairs Branch, leads Canada's climate mitigation funding programs. The Directorate's Methodology and Evaluation Division (MED), the project client, is responsible for developing methodologies to conduct technical evaluations for all programs that have GHG outcomes or other technical assessment requirements.

Annual in 2030 GHG emissions reductions and energy savings are the primary outcomes utilized under Leadership to assess each component's climate mitigation impact. The year 2030 is utilized as the benchmark for annual comparisons because it aligned with Canada's first NDC to reduce GHG emissions 30% below 2005 levels by 2030. Emissions reductions are defined as the difference between a baseline scenario (i.e., what would have occurred in the absence of the project) and the project scenario (i.e., what would occur after the project is implemented). All emissions reductions under Leadership must be incremental, meaning they must be demonstrated to occur in addition to those expected under a business-as-usual scenario or existing regulations. Applicants are also required to show that the services or incentives offered are functionally equivalent to the baseline scenario. This ensures estimated reductions reflect the funded activity, not improvements that would have happened anyway.

MED is central to each stage of the portfolio component implementation cycle. During initiation, it conducts comprehensive completeness and merit reviews of submitted proposals, assessing proposed expected outcomes, co-benefits, and associated risks. Components recommended and approved by the Minister are formalized through funding agreements outlining scope, terms, and outcomes. During execution, MED reviews portfolio component implementation through annual progress report submissions. Recipient-submitted documents include information on incremental GHG emissions reductions and energy savings. They also provide updates on portfolio component progress, financials, claims, co-benefits, and risk mitigation strategies. Program closure involves the submission of a final report confirming outcomes and lessons learned, followed by financial reconciliation.

1.2 Issue Definition

Under the Leadership Fund's further distribution of funds model, ECCC signs agreements with a jurisdiction (i.e., a province or territory), but work is carried out by ultimate recipients (e.g., a public entity, private corporation, etc.). The ultimate recipient holds an agreement with the jurisdiction, not with ECCC. The province or territory submits annual progress reports for each component to ECCC, who does not have direct contact with individual ultimate recipients. As a result, when developing performance indicators, it is essential to work within the limits of pre-existing reporting structures. ECCC utilizes several reporting mechanisms throughout the Leadership Fund's implementation cycle. Primary outcomes are reported annually through the Departmental Results Framework's Performance Information

Profiles. These indicators are mandated by the Treasury Board of Canada Secretariat, a central agency responsible for expenditure management, including the approval and review of departmental spending to ensure alignment with government priorities (GOC, 2024). Performance Information Panels are utilized for evaluating programs that support core departmental outcomes.

Internally, annual “Health Checks” use predefined Key Performance Indicators (KPIs) to assess the status of the portfolio and highlight component-specific issues. For example, one KPI compares total portfolio GHG emissions reductions year over year, identifying components with the most significant increases or decreases. Health checks are not publicly available as they outline specific funding agreement details between the GOC and recipients. For each component, the Risk Assessment Tool prescribes a risk level through weighted likelihood and impact scores. Risk scores inform varying portfolio component management strategies such as claim holdbacks or increased reporting stringency. In consultation with the client, there is consensus that better integrating Leadership data into existing performance mechanisms will support the development of a performance measurement framework that captures key findings of the active portfolio and informs recapitalization strategy. The client notes that current mechanisms are limited in scope and scale, relying on single-year implementation data and limited datasets to provide high-level summaries focused primarily on program administration. While they were not designed to use broader program data, this limits their ability to highlight key findings or improvement opportunities for recapitalization.

As ECCC’s financial accountability has increased alongside the federal government’s emphasis on climate change mitigation, there is a need to enhance performance measurement tools that fully leverage existing Leadership data. With the Fund’s recapitalization in its first year of implementation, reviewing the active portfolio presents an opportunity to identify key trends, assess challenges, and inform more accurate future funding decisions. Given the similarities in eligibility and merit criteria between the Leadership Fund and its recapitalization, an analysis of past performance can directly inform improvements. For example, identifying areas of high GHG uncertainty could increase the accuracy of proposal eligibility and merit assessments conducted during the initiation phase, processes which directly consider the performance of previous programs. As the division responsible for conducting technical assessments of Leadership proposals and tracking outcomes throughout implementation, MED is well positioned to leverage its existing data and processes to develop KPIs that form the foundation of a performance measurement framework.

1.3 Project Deliverables

This project explores the following research question: How can existing administrative data from the Leadership Fund be better leveraged through a revised set of performance indicators to assess the Fund’s active portfolio and inform its recapitalization? To address this question, the study applies a gap analysis methodology to: (1) assess the current state of performance measurement tools used under the Leadership Fund; (2) define a desired state by reviewing data available at each implementation phase (3) identify the gaps between current and desired practices; and (4) develop and apply those KPIs to identify key findings and themes to support the Fund’s recapitalization strategy.

The project client, MED, is also the primary recipient of the research. The findings from the gap analysis will support MED in evaluating the successes and shortcomings of the active Leadership portfolio and will inform future performance reviews of this Fund and others managed by the Programs Directorate. A gap analysis was selected as the primary methodology

because it offers a structured approach for assessing existing systems rather than designing new ones. This approach was particularly well-suited to answer the research question, where administrative Leadership data was accessible but underutilized in existing performance assessment tools. Qualitative methods such as interviews were not pursued due to time constraints and departmental limitations, further reinforcing the appropriateness of the methodology.

The scope of the research is limited to secondary data collected through the 58 Leadership Fund portfolio components. Given the limited number of Leadership Fund components, the short implementation timeframe, and the variability among recipients and program objectives, the study does not include statistical correlation analyses or formal economic evaluations such as cost-benefit assessments. Instead, the evaluation focuses on developing indicators that provide a narrative of key findings and themes to support the Fund's recapitalization.

The study is organized as follows. Chapter 2 reviews the literature on public sector performance measurement and management. Chapter 3 presents the program management gap analysis methodology, including the study's data collection and analysis methods. Chapter 4 details the results of each KPI analysis. Chapter 5 summarizes key findings and discusses the study's limitations and contributions.

Chapter 2 – Literature Review

This literature review explores public sector performance measurement and management, defined as “the systematic collection and analysis of evidence on the outcomes of programs to make judgments about their relevance, performance and alternative ways to deliver them or to achieve the same results” (Treasury Board of Canada Secretariat, 2010). Since the 1980s, increasingly more organizations have recognized the necessity for performance measurement systems (Garengo & Sardi, 2020). Given that public services are primarily funded through state budgets, public stakeholders have been pressured to improve performance and develop mechanisms for accountability and transparency (Chowdhury & Shil, 2021; Tran & Nguyen, 2020).

Search terms were identified for relevance, including performance measurement, performance measures, performance management, public administration, public policy, public service, and government. These were then combined using Boolean operators to form the following search term: *(performance OR program OR climate) AND (management OR measurement OR measures OR indicator) AND (public sector OR public administration OR public service OR public policy OR government OR governance)*. A title search was conducted within the EBSCO database, targeting peer-reviewed academic journals published between 2010 and 2023. 157 articles were identified. Title and abstracts were reviewed for relevance, and studies that did not directly relate to performance measurement or management in the public sector were excluded. Following the screening process, seven studies were selected for detailed review. The small number of articles selected reflects the limited number of studies that address performance measurement in the context of public administration and climate policy. To broaden the scope of the review, citations within each selected article were examined, resulting in the identification of three additional relevant papers. This expanded the analysis to a total of ten papers.

A recurring theme in the literature is the complexity of defining performance measurement in public organizations. Whereas profit provides a clear and defined target in the private sector, public organizations are influenced by more ambiguous social and fiscal pressures (Arnaboldi et al., 2015; Coste & Tudor, 2013). The complexity of defining performance in the public sector has led to two opposing viewpoints. One advocates for a “business-like” approach to quantifying performance, while the other presents a systematic social critique of such methods. Both ideologies are linked to the emergence of New Performance Management (NPM), a model developed in the 1980’s that sought to apply private sector practices to public sector organizations. This study helps address a gap in the literature by analyzing both dominant ideologies of performance measurement and examining how they can inform the development of performance measurement approaches in the climate sector.

2.1 “Business-Like” Quantification

NPM models of performance measurement are the dominant approach in public organizations, where performance is linked to mechanisms of effectiveness and efficiency. The “business-like” literature is characterized in its assertion that these mechanisms are objective. For example, Coste and Tudor’s (2013) model establishes a connection between objectives and performance indicators. Objectives are specific, measurable organizational goals, while indicators are tools for evaluating these objectives. Indicators assess efficiency and effectiveness by analyzing a combination of defined inputs, outputs, and outcomes. Accordingly, leading public sector organizations are those that allocate resources efficiently to deliver the best value

for money. To support this, standardized definitions of performance measurement should be developed to enable clear goal setting and build trust in service quality.

Alongside considerations of efficiency and effectiveness, a recurring theme across the “business-like” literature is accounting-based principles such as economic efficiency or value for money. These performance measures are directly linked to expenditures, outputs, and results (Meričková et al., 2020). For example, the literature describes several quantitative means of performance measurement for public sector organizations, including KPIs and benchmarking (Arnaboldi et al., 2015). As with other quantitative models, performance is tied to value for money, focusing on economy, effectiveness, and efficiency (Arnaboldi et al., 2015). Arnaboldi et al. also highlight more recent performance measures, such as the balanced scorecard and lean management. Unlike traditional benchmarking and KPIs, these methods attempt to broaden the financial focus of performance measurement to consider other internal processes and stakeholders. However, these methods remain linked to NPM in their restriction to quantification. Arnaboldi et al.’s analysis (2015) stands out among “business-like” narratives for its acknowledgment of the continued lack of consensus within public sector organizations on what defines best practices.

2.2 Systematic Social Critiques

In contrast to the “business-like” perspectives that emphasize the objectivity of quantification, systematic social critiques argue that such methods are subjective. Rather than adhering to rational cause-and-effect processes, these critiques suggest that actors develop programs which are then implemented by others who bring their own unique interpretations to policies. The subjectivity of performance metrics measures is central to systematic social narratives (Gore, 2023; Virtanen & Vakkuri, 2015). The literature argues that the predominance of performance metrics is driven by their perceived objectivity. However, this belief is rooted in the flawed assumption that public organizations function through purely rational and objective decision-making processes. For example, Virtanen & Vakkuri (2015) frame their argument through the engineering model, which outlines a rationalistic cause-and-effect process that leads to its desired policy effect. The model ignores social narratives like individual perceptions and interpretations which are central to the policy’s development (Virtanen & Vakkuri, 2015). Similarly, the cost-benefit analysis (CBA) provides a general method for calculating the benefits of policy interventions, but its results ultimately reflect what the specific audience deems reasonable (Gore, 2023)

As a result, performance metrics function less as rational tools and more as subjective practices shaped by social and political contexts. They are developed by policy analysts’ judgement of what seems reasonable (Gore, 2023). While numerical data remains a powerful tool for public organizations, quantitative methods of performance measurement fall short in addressing the complexity and interconnectedness of public service systems. Performance models should instead advocate for more socially informed and nuanced models to support informed public sectors (Virtanen & Vakkuri, 2015). For example, performance metrics should be conceptualized as “aesthetic entities” rather than as objective indicators of effectiveness (Gore, 2023). These shifts would allow for greater transparency about the constructed nature of policies and enable more engagement with how decisions are made.

2.3 Striking a Balance

Social critics do not universally accept the misconception of rationalism. For example, Garegnio & Sardi (2021) note there is now a consensus advocating for the transition of public

sectors from conventional public administration models to more modern approaches in public management. They argue that the current emphasis on quantitative measures arises from performance management being in the preliminary stages of development within the public sector, rather than from a widespread misconception of objectivity. Nevertheless, the literature review reveals a clear gap in studies that successfully integrate both quantitative and qualitative measures within theoretical frameworks and practical applications.

“Business-like” narratives define clear methods of performance measurement but lack the integration of qualitative data. For example, the value for money model integrates the three E’s of economy, efficiency, and effectiveness (Meričková et al., 2020). Here, while the authors caution that the model cannot be applied in isolation since it is not directly integrated with qualitative data, no complementary models are identified. Similarly, Coste and Tudor (2013) advocate for evaluation mechanisms that integrate economy, efficiency, and effectiveness to provide a more accurate representation of organizational performance. They emphasize that performance indicators should not focus on what is easiest to quantify, but rather on what holds the greatest value. In each case, the measures lack a clear integration of qualitative data.

In contrast, systematic social narratives strongly criticize the focus on measuring performance with numbers but do not offer defined qualitative mechanisms. For example, Gore (2023) suggests that quantitative performance frameworks are subjective and should therefore incorporate context-sensitive qualitative data instead of rigid accounting tools. Similarly, Garengo & Sardi (2021) recommend shifting from isolated quantitative indicators to performance measurement tools that are context-specific within an organization. In each case, the authors provide a foundation for developing more comprehensive indicators as opposed to a specific performance measurement model. This is not a criticism of either viewpoint, but an observation that social narratives tend to emphasize theory, whereas quantitative approaches emphasize practical models.

2.4 Climate Mitigation Performance Measurement

The narratives discussed in the previous sections supported either quantitative or qualitative approaches to performance measurement. However, none addressed how to assess performance on a global scale, a unique challenge in the context of climate mitigation. With the adoption of the Paris Agreement in 2015, 192 parties established the international goal of limiting global warming to below 2°C, and agreed to develop and maintain Nationally Determined Contributions (NDCs) (Kameyama & Kawamoto, 2018). Under the agreement, consistency in the measurement and verification of climate targets have become increasingly important (Henman, 2016; Kameyama & Kawamoto, 2018). The measurement and verification of climate mitigation is unique in its primary focus on a single indicator. Climate change is driven by the emissions of GHG’s, and thus, their reduction is “the ultimate goal of any climate mitigation policy” (Kameyama & Kawamoto, 2018, p. 211). That said, governments have not agreed on a universal performance measure to hold national parties accountable (Zia & Koliba, 2011).

Performance measurement in climate mitigation aligns with neither the “business-like” narratives nor the social critiques. These unique challenges are highlighted through a common application of performance measurement in climate mitigation, in which the performance measure is implemented as a policy instrument in itself (Henman, 2016; Kameyama & Kawamoto, 2018). As described by Henman (2016), defining climate measures as policy instruments reinforces the notion that such methods are not merely measures of performance but also means of reconfiguring the nature of how policies are developed and implemented. Rather

than using performance measures to evaluate policies, governments use them to drive behaviour. For example, Canada's first NDC set a target to reduce GHG emissions 30% below 2005 levels by 2030. This target informed subsequent federal climate mitigation measures, including the LCEF, to help advance progress toward meeting it (GOC, 2017). By tying the economic policies to the measured outcome, the act of measuring emissions becomes part of the policy intervention.

The narratives explored highlight a gap in the literature, pointing to the need for a more nuanced approach to performance measurement in climate mitigation. Climate measures are inherently quantitative as their end goal is carbon abatement (Kameyama & Kawamoto, 2018). Without well-defined numerical metrics, it becomes challenging to compare policies or hold parties accountable across and within orders of government. Kameyama & Kawamoto (2018) define four intermediate goals of decarbonizing energy, improving energy efficiency, minimizing energy demand, and enhancing carbon sinks. They suggest that future NDC's should include clear numerical estimates such as population, energy demand and GDP to allow for comparative evaluations between nations. Again, the critiques outlined in systematic social narratives remain relevant, particularly the use of performance measures as distinct policy instruments. As nations increasingly adopt performance measures to guide policy and enable cross-country comparisons, it becomes challenging to account for context-specific qualitative data across nations and levels of government. Therefore, comprehensive climate mitigation performance measurement frameworks should seek to better understand how to incorporate the social complexities of policy development and implementation alongside clearly defined quantitative metrics, such as GHG emissions reductions. This balance will ensure that performance measurement reflects both measurable outcomes and the broader qualitative context.

Chapter 3 – Methodology

3.1 Data Collection

58 portfolio components were approved under 12 funding agreements, one for each province and territory with the exception Saskatchewan, who did not participate in the Leadership Fund. Portfolio component data was collected across multiple phases within each stage of the implementation cycle.

1. **Review and Approvals:** Proposal reviews initiated with a formal submission outlining an initiative's scope, risks, outcomes, and requested Leadership contribution. Following an internal assessment, proposals deemed eligible and meritorious were submitted to the Directors Operations Committee for approval. Approval packages included a summary of the proposal, the targeted initiatives, the requested Leadership funding amount, expected outcomes and co-benefits, and risk to the GOC if selected for funding. Approved proposals were then submitted to the Minister for final approval. If the Minister concurred, an AIP letter was sent to the jurisdiction. The Programs Directorate then worked with the jurisdiction to define the portfolio component's terms, conditions, scope, and outcomes in a new or pre-existing funding agreement. The outcomes and financial allocations of portfolio components often shifted between initial approval and the execution of a funding agreement. Therefore, data was collected from AIP letters and funding agreements. In multiple cases, portfolio components launched in years following the execution of an initial funding agreement through a formal amendment. For the subsequent analysis, the funding agreement refers to the first instance of a portfolio component's inclusion in the original funding agreement or a subsequent amendment.
2. **Execution:** Following the execution of a funding agreement, recipients submitted annual progress reports each June, outlining the previous fiscal year's completed work, risk mitigation strategies, co-benefits, and updated outcomes. These reports were reviewed internally and summarized for director approval. Certain changes, such as financial reallocations, required a separate scope change subject to an additional review and approval process. If approved, the revised terms, conditions, and outcomes were formally incorporated into the portfolio component's funding agreement through an amendment. While progress report submissions began in 2018, not all portfolio components started reporting until 2020. To ensure a complete dataset, only progress reports from 2020 onward were included in the analysis. In addition, data was collected from each amending agreement.
3. **Closure:** In the last year of implementation, recipients submitted a final report confirming each portfolio component's outcomes and providing lessons learned and feedback to inform future programming. Following approval, the Programs Directorate completed a financial reconciliation confirming claim requests' alignment with the funding agreement. Once validated, final payment was issued, and the portfolio component was formally closed. Since ten portfolio components have not yet submitted their final reports, progress and final reports were treated equivalently based on their fiscal year of submission to ensure a complete dataset. For example, the 2023-24 reporting period comprises each component's approved progress or final report. In cases where a final report was submitted in an earlier year, its outcomes were carried forward and used as reported values in subsequent periods.

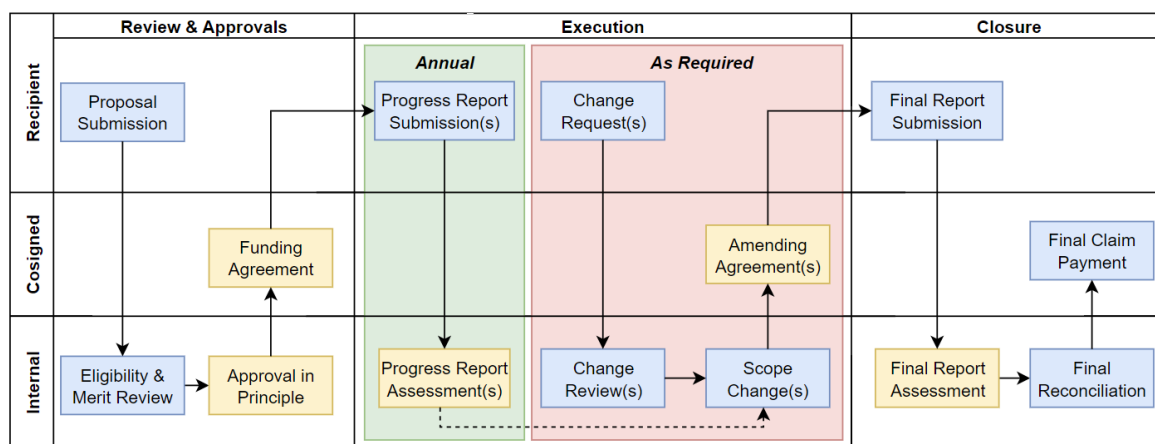


Figure 1: Portfolio Component Implementation Cycle

Note: the figure provides a visual summary of the component implementation cycle. Individual phases represent reports, assessments, or agreements. Row headers define the party responsible for submitting, reviewing, or approving the phase, while column headers represent the implementation stage. Component phases utilized for the gap analysis are highlighted in yellow. For each phase utilized, data was collected directly from reports or through existing trackers.

3.1.1 Data Organization and Validation

Multiple datapoints were collected for each portfolio component at each implementation phase, including their submission and approval dates, GHG reductions, start and end dates, implementation status, % completion, assessed risk, and Leadership contributions. Certain values were retrieved from existing databases. For example, GHG reduction data were collected from existing databases using a combination of VLOOKUPS and Pivot tables. However, much of the information required for analysis was outdated or untracked and required manual data collection. For example, contributions totals were required to calculate cost-per-tonne (CPT), the number of annual emissions reductions achieved per Leadership Fund dollar contributed. These values were documented at AIP, as well as in funding and amending agreements, but not in progress or final reports. To calculate CPT across each reporting period, amendment contribution totals were aligned with annual reports by matching each report's submission date to the nearest amendment execution date. In the complete database, portfolio components were organized by row, with individual phases and their respective data points referenced in column headers. Additionally, each indicator was assigned to a dedicated tab in the database.

3.1.2 Data Classification

Portfolio components were classified into four geographic regions (Atlantic, Central, Northern, and Western Canada), three portfolio component types (funding program, incentive or other financial instrument, and capital project), and seven IPCC economic sectors. The geographic regions of portfolio components were linked to their respective delivery jurisdictions, while delivery mechanisms were defined in each proposal's original submission. Economic sectors were manually assigned based on an analysis of each portfolio component's description, using IPCC sectors as a reference due to their focus on carbon abatement. A cross-sectoral category was added for portfolio components that met the criteria of multiple categories. Waste management, transportation, and agriculture sectors were combined into the 'other' sector. These sectors collectively accounted for ~10% of the portfolio components and less than 2% of Leadership contributions. Component classifications were useful for identifying key findings and

themes across each KPI. For example, they provided the level of detail needed to assess which sector contributed the most to emissions reductions during reporting. They also helped identify which funding mechanisms were most at risk of cancellation, which were more likely to succeed, and which regions were the most and least cost-effective. Sectors, regions, and funding mechanisms are defined in [Annex A](#).

3.1.3 Inclusion & Exclusion Criteria

Each KPI references a central dataset but has distinct inclusion and exclusion criteria based on their scope and objectives. Inclusion criteria determined the implementation phases included for each indicator, while exclusion criteria defined which statuses or report submissions were excluded. For example, the outcome and cost-effectiveness indicators encompassed all implementation phases in a component’s lifecycle, excluding only those components that had been cancelled. Individual inclusion and exclusion criteria are listed in [Annex B](#).

3.2 Data Analysis

This study applied a gap analysis framework as its primary methodology, guiding the revision of existing KPIs in the development of a performance measurement framework. Gap analysis involve four steps (1) identifying current practices; (2) determining the desired state; (3) highlighting gaps between those states; and (4) implementing a plan to address those gaps (Kim & Ji, 2018).

3.2.1 Current Practices

Identifying current practices involved summarizing existing health check KPIs in Microsoft Excel, including their scope, their area of measurement, and their relevance. Each summary outlined the data required for its corresponding indicator, including relevant sources and data types. Examples for each KPI are provided as reference.

| KPI | Description | Example |
|--|---|--|
| 1: How far have projects progressed? | Determines the progress of portfolio components. Components are categorized by the % completion listed in the current progress report period. If the progress report has not yet been approved, portfolio components are excluded from the analysis. An average % completion for the Fund is then calculated. | <ul style="list-style-type: none"> • 20 of 52 components are completed or paid out. • Of 32 active components, the average completion was 73% |
| 2: Are a considerable number of portfolio components making progress? | Calculates the % of portfolio components that reported progress over the previous reporting period. Completion %’s are identified in the previous and current progress report. Progress is defined as an increase in % completion across reporting periods (e.g., 01 - 25% to 26 - 50%). | <ul style="list-style-type: none"> • 33 components (79%) reported significant progress. • Of the remaining 9 components (21%), 1 remains in pre-implementation, 1 at 1-25% completion, 2 at 26-50%, 3 at 51-75%, and 2 at 76-99% |

| | | |
|---|---|--|
| 3: How many portfolio components are complete and how much funding has been disbursed? | Highlights whether completed portfolio components have remaining unused funds. A list of completed portfolio components is cross-referenced against claims data to obtain funding totals. Components with remaining fundings allocations are noted. | <ul style="list-style-type: none"> • 20 completed portfolio components have an approved federal contribution of \$577 M |
| 4: Is portfolio component progress aligning with spending? | Determines if claims submitted to date align with portfolio component progress. For example, if a portfolio component has claimed \$500K out of \$1M, and it is 26-50% complete, there is a strong alignment between progress and spending. Conversely, if a portfolio component has claimed \$75K out of \$1M, and it is 26-50% complete, there is a misalignment between progress and spending. | <ul style="list-style-type: none"> • Strong Alignment – 15 of 32 (47%) active portfolio components • Somewhat Aligned – 14 of 32 (44%) active portfolio components • Considerably Misaligned – 3 of 32 (9%) active portfolio components |
| 5: How many portfolio components are likely to require an extension? | Forecasts which portfolio components are at risk of requiring an extension to complete activities and/or spend remaining funding. Completion %'s for active portfolio components are collected from the current progress report and cross-referenced against completion dates from currently executed funding agreements. Portfolio components whose realized completion %' differ from their % through implementation are analyzed to determine which needs to be flagged for risk of extension. | <ul style="list-style-type: none"> • Of the 32 portfolio components active under Leadership, 10 have been extended through March 31st, 2025. • The remaining 22 components have completion dates of March 31st, 2024. |
| 6: What is the Current Estimate of GHG emissions reductions and Energy Savings? | Summarizes changes to emissions reductions and energy savings over the previous reporting period. Updated outcomes are taken from the most recently approved progress or final report. Portfolio components that reported substantial decreases between reporting periods are noted for further analysis. | <ul style="list-style-type: none"> • GHG reductions in 2030 decreased from 2.9 to 2.7 MT (-4%) • |

Table 1: Current Key Performance Indicators

3.2.2 Desired State & Gap Identification

While current indicators allowed year-over-year comparisons to assess program health and progress toward GHG reduction targets, they were not designed to highlight key findings or improvement opportunities for recapitalization. As such, bridging the gap between available and utilized data was essential to developing indicators that offer a more comprehensive assessment of the portfolio. The desired state was established by comparing the data currently used in existing KPIs with the data available across each stage of implementation. Unused data was identified by collecting available information across each stage of portfolio component implementation. This included each component's description, their ultimate recipient (i.e., the

province or territory), funding mechanism, delivery mechanism, Leadership Fund contribution, GHG reductions, energy savings, co-benefits, and status. Data was then organized by theme.

Gaps were identified within each data theme by comparing the information used in the current state with what is available in the desired state. For example, indicator timelines were expanded to cover data from the complete implementation cycle, delineated by sector, region and funding mechanism. Additional gaps were identified where data was not utilized at all in the current state. For example, the primary objective of Leadership was to support incremental GHG emissions reductions and advance Canada’s commitments under the Paris Agreement. While existing indicators measured total emissions reductions and tracked progress toward GHG targets, they did not assess changes in cost-effectiveness during implementation. Given that financial information was available across each implementation phase, cost-effectiveness data could be calculated in combination with GHG emissions reductions data. The client also identified several desired states, including the integration of data validation and enhanced visualizations. They also emphasized the need for sectoral and funding mechanism breakdowns to improve the findings specificity, elements missing from current indicators. Based on the assessment of each gap, a list of redefined and additional indicators was consolidated.

| Data Theme | Current State | Desired State | Gap |
|-----------------------------|--|---|--|
| Timeframes | Indicators compare data from two reporting periods. | Utilization of data across each stage of the portfolio component implementation cycle | Incorporation of portfolio component data from the approval in principle (AIP) through the final report. This would enable more in-depth findings across the Leadership Fund's lifecycle. For example, the analysis could identify which years saw the most substantial proportion of emission reduction decreases across the portfolio. |
| Program descriptions | Program level summary with no delineation between individual components. | Utilization of component proposals and descriptions to develop identifying factors. | Existing proposals and descriptions could be analyzed to identify key factors such as sector, region, and funding mechanism that increase the usefulness of current indicators. Incorporating these factors into individual KPI analysis would allow indicators to show the breakdown of incremental GHG reductions by region or highlight which sectors are most or least likely to complete projects on schedule. |
| Cost-per-tonne (CPT) | No competitiveness indicator | Utilization of the client’s standard cost-effectiveness formula (i.e., CPT= Leadership funding allocation / | Cost-effectiveness is assessed internally by the client by calculating each portfolio component’s Leadership contribution to its incremental in 2030 emissions reductions, expressed as a cost per tonne (\$/tCO ₂ e). This metric, organized by region, sector, and funding mechanism, would offer valuable insights for improving future program intakes. For example, identifying common patterns across sectors and funding |

| | | | |
|---------------------------|--|---|---|
| | | annual in 2030 GHG) | mechanisms could inform adjustments to eligibility criteria, helping to reduce cancellations and improve success rates. |
| Survivability | Indicators are limited to active or complete portfolio components | Utilization of data from all portfolio components, including cancelled, completed, and paid-out programs. | Expanding the analysis to include cancelled and paid-out components would allow for a comparison between components that were successfully implemented and those that were not. This could reveal variations across sectors and funding mechanisms, helping to identify factors that contribute to success or failure. For example, the analysis could determine whether certain sectors or regions experienced higher cancellation rates. |
| Data visualization | Findings are text-based and supplemented with tables. | Utilization of data visualizations. | Where applicable, indicators could visualize key findings in line graphs, bar charts, and tables. For example, Leadership cost-effectiveness could be plotted across each year of a portfolio components implementation and delineated by sector or funding mechanism |
| Data Validation | Data is referenced from various trackers maintained by other divisions | Development and utilization of a central data repository | A recurring issue discussed in the performance management literature is the failure of quantitative measurements to identify weaknesses or consider the longstanding assumptions of objectivity and accuracy. Previous health checks referenced data from various trackers maintained by other divisions. However, since these data sources were updated on different schedules, conflicting information sometimes emerged. To mitigate this problem, a performance management framework should consolidate data into a central repository. |
| Financials | Two financial indicators: the proportion of funds disbursed and the alignment of progress with spending. | Utilization of financial details into each indicator | Acknowledging scope limitations, financial data beyond the total allocation per portfolio component has been excluded from the current project. If well-received, future performance assessments should consider incorporating financial indicators into their scope. |

Table 2: Desired State & Gap Identification

3.2.3 Implementation Plan

The implementation plan included an assessment of data requirements and subsequent analysis. Data requirements for revised indicators were assessed, and the relevant information was compiled in a central tracker. The tracker contained individual tabs with pivot tables and charts that automatically reference the complete data set. This system enables analysts to revise the central database periodically and have instantly updated summary tables and visualizations, reducing the time required to complete future analyses. Data collection involved gathering information from multiple sources, including existing databases, proposals, funding agreements, and progress reports. This process ensured accurate collection and organization of all historical and current data. Following data collection, each indicator was analyzed.

Revised indicators were developed based on the identified gaps in data usage between the current and the desired states. For example, they extend the timeframe for performance assessments, introduce evaluations of competitiveness and project survivability, and consolidate data sources to improve validation. They also introduce disaggregated regional, sectoral, and funding mechanism analyses with accompanied tables and graphs to better visualize findings. By addressing the gaps between the current and desired states, the gap analysis developed a performance measurement framework using existing performance indicators and information already available for analysis. Individual KPI analyses are detailed in the results section.

| KPI | Description | Example: |
|------------------------------|---|--|
| 1: Current Status | To provide a current snapshot of the Leadership Fund, using the current implementation phase for each portfolio component. The indicator will break down total portfolio components, Leadership contributions, and annual in 2030 emissions reductions. For active components, the current 2023-24 reporting period will be referenced. For those completed or paid out, the analysis will refer to the final report. | <ul style="list-style-type: none"> Based on current data, 50 portfolio components will receive ~\$1.07 billion in Leadership contributions and reduce ~2.7 mtCO₂e, with a cost-effectiveness of 404 \$/tCO₂e. Capital projects make 4% of Leadership contributions, while contributing less than 0.1% of total emissions reductions. |
| 2: GHG Reductions | To assess how in 2030 GHG emissions reductions have shifted across Leadership Fund's implementation, outcomes will be analyzed at the portfolio component level, from the AIP to the current reporting period. The indicator will consider changes across the complete implementation of a portfolio component and analyze the distribution of outcomes by project sector, type, region, and funding mechanism. | <ul style="list-style-type: none"> 65 components totaling ~7.0 Mt received Ministerial approval; seven withdrew prior to funding agreement execution. Funding programs' share of emissions reductions decreased from 76% (~5.4 mtCO₂e) to 46% (~1.2 mtCO₂e), the largest reduction across Leadership. |
| 3: Cost-effectiveness | To assess the CPT distributions across the Leadership Fund's implementation, defined as the ratio of Leadership contributions to incremental in 2030 emissions reductions. Leadership contribution totals will be collected for each funding agreement. Leadership | <ul style="list-style-type: none"> Overall cost-effectiveness declined significantly over implementation, with CPT increasing 93% on average, from 209 to 304 \$/tCO₂e. |

| | | |
|-------------------------|---|---|
| | contributions are not listed in progress reports. Therefore, progress reports will be manually tied to amending agreement by cross-referencing report submission dates to the nearest amendment execution dates. | <ul style="list-style-type: none"> The forestry sector saw the largest reduction in cost-effectiveness during implementation, with CPT increasing more than 300% (from 261 to 1,159 \$/tCO₂e). |
| 4: Timelines | This indicator calculates the proportion of programs that requested extensions through March 31st, 2025. The revised indicator will assess which sectors, regions, and program types were most likely to require extensions. | <ul style="list-style-type: none"> Of the 58 portfolio components with executed funding agreements, 42 (72%) opted for the extension. The cross-sectoral components had a high extension rate, with 3 of 7 (43%) receiving extensions |
| 5: Survivability | To determine the proportion of components successful in their implementation. This analysis will compile the number of active, completed, cancelled, and paid out portfolio components. Findings will be analyzed across sectors, regions, and funding mechanisms. Previously, completions, withdrawals, and cancellations were not considered when comparing differences in survivability. | <ul style="list-style-type: none"> Overall, 17% of portfolio components are active (10), 14% cancelled (8), 14% paid out (8), and 55% completed (32). Survivability was high for cross-sectoral portfolio components, with 3 of 7 (43%) active, 4 (57%) completed and none cancelled or paid out. |
| 6: Uncertainty | To evaluate the accuracy of the original GHG uncertainty scores assessed during proposal merit assessments. This analysis will take an average of the two risk scores to assess the accuracy of the GHG uncertainty ratings by comparing each component's CPT at the time of AIP with the current reporting period. | <ul style="list-style-type: none"> Of the 58 portfolio components with executed funding agreements, 50 were included in the uncertainty analysis. In Atlantic Canada, 8 of 13 (62%) were in the GHG limit set during merit review. |
| 7: Risk | To compare portfolio component risk levels across the Leadership Fund's implementation. The Programs Directorate developed the Risk Assessment Tool during the 2021-22 reporting period to better assess portfolio component specific risk factor and suggest mitigation strategies during implementations. This analysis will focus on how risk has shifted across the two most recent reporting periods, offering valuable insights on primary risk factors to consider for future intakes. | <ul style="list-style-type: none"> Risk remained unchanged for 58% of program, increased for 35% and decreased for 1%. Risk levels were stable in the cross-sectoral sector, with 4 of 6 (67%) of portfolio components maintaining the same risk level across reporting periods |

Table 3: Revised Key Performance Indicators

Chapter 4 – Results

The results chapter summarizes the findings from each KPI: current status, GHG reductions, cost-effectiveness, timelines, survivability, uncertainty, and risk. Each indicator is delineated by sector, region, and funding mechanism using data available as of February 2025. The section presents a narrative of primary findings supported by key statistics. Tables and figures accompany each KPI to support the analysis.

4.1 Current Status

During the Leadership Fund 's development, provincial and territorial allocations were calculated using a base funding amount, with additional per-capita weighted funding. At funding agreement execution, 58 portfolio components were expected to receive ~\$1.3 billion and reduce ~4.5 mtCO₂e, with a cost-effectiveness of 291 \$/tCO₂e. Based on current data, 50 portfolio components will receive ~\$1.1 billion and reduce ~2.7 mtCO₂e, with a cost-effectiveness of 404 \$/tCO₂e. Comparably, the program is 39% less cost-effective, with 19% fewer funds spent and 40% fewer emissions achieved. The status breakdowns below reference the most recent data available: the 2023-24 reporting period for active components and final reports for completed or paid-out components. Eight portfolio components were cancelled before progress report 2023–24 and were excluded.

Sectors: The buildings sector represents half of all portfolio components and 40% of the total Leadership allocation yet contributes only 24% of the projected emissions reductions. In contrast, cross-sectoral and industrial portfolio components make up 30% of portfolio components and 40% of Leadership contributions but are responsible for 65% of total emissions reductions. Forest resources received 19% of Leadership contributions while accounting for only 10% of portfolio components and 7% of emissions reductions. The "other" sector, comprising waste management, transportation, and agriculture, represents 10% of components but accounts for less than 2% of Leadership contributions and 4% of GHG reductions.

| Sector | Components (#) | % | Leadership Contributions (\$) | % | in 2030 GHG (tCO ₂ e) | % |
|------------------|----------------|------|-------------------------------|------|----------------------------------|------|
| Buildings | 25 | 50% | 424,118,855 | 40% | 629,936 | 24% |
| Cross-Sectoral | 7 | 14% | 297,727,326 | 28% | 985,827 | 37% |
| Forest Resources | 5 | 10% | 202,249,250 | 19% | 173,664 | 7% |
| Industry | 8 | 16% | 125,046,047 | 12% | 749,916 | 28% |
| Other | 5 | 10% | 22,642,120 | 2% | 110,877 | 4% |
| Total | 50 | 100% | 1,071,783,598 | 100% | 2,650,220 | 100% |

Table 3: Current Status by Sector

Region: Western Canada accounts for the largest number of portfolio components (38%) and projected emissions reductions (45%). Central Canada accounts for the largest portion of Leadership contributions at 40% and the lowest number of portfolio components, at just 12%. Despite receiving a higher % of Leadership contributions, Central Canada's total share of emissions reductions is lower than the West, accounting for 40% versus 45% of total emissions reductions. Atlantic and Northern Canada each account for ~25% of active portfolio components,

though Atlantic Canada’s share of Leadership contributions is double that of North. Northern Canada experienced the largest gap between federal funding and emissions reductions, receiving 9% of contributions while contributing less than 1% to overall emissions reductions.

| Region | Components (#) | % | Leadership Contributions (\$) | % | in 2030 GHG (tCO2e) | % |
|----------|----------------|------|-------------------------------|------|---------------------|------|
| Atlantic | 13 | 26% | 184,260,169 | 17% | 395,306 | 15% |
| Central | 6 | 12% | 430,028,060 | 40% | 1,048,508 | 40% |
| Northern | 12 | 24% | 93,299,001 | 9% | 20,727 | <1% |
| Western | 19 | 38% | 364,196,368 | 34% | 1,185,679 | 45% |
| Total | 50 | 100% | 1,071,783,598 | 100% | 2,650,220 | 100% |

Table 4: Current Status by Region

Funding Mechanism: Funding programs represent the largest share of portfolio components and Leadership contributions, respectively accounting for 54% and 59%. Incentives are the second most common funding mechanism, comprising 32% of portfolio components and 37% of Leadership contributions. Despite accounting for a smaller portion of Leadership contributions, funding components account for 54% of total emissions reductions, compared to 46% for funding programs. In contrast, capital projects are the minority funding mechanism across all metrics, making up just 16% of portfolio components and 4% of Leadership contributions, while contributing less than 0.1% of total emissions reductions.

| Mechanism | Components (#) | % | Leadership Contributions (\$) | % | in 2030 GHG (tCO2e) | % |
|---------------------|----------------|------|-------------------------------|------|---------------------|------|
| Capital Project | 7 | 14% | 43,824,683 | 4% | 9,404 | <0% |
| Funding Programs | 27 | 54% | 630,452,934 | 59% | 1,219,525 | 46% |
| Financial Incentive | 16 | 32% | 397,505,981 | 37% | 1,421,291 | 54% |
| Total | 50 | 100% | 1,071,783,598 | 100% | 2,650,220 | 100% |

Table 5: Current Status by Funding Mechanism

4.2 GHG reductions

Total emissions reductions across the Leadership Fund decreased 62% from what was approved by the Minister, and 40% from the original funding agreements. 65 components totaling ~7.0 MtCO2e received Ministerial approval; seven withdrew prior to funding agreement execution. 58 components totaling ~4.5 MtCO2e were included in executed funding agreements: eight canceled following funding agreement execution. 50 components totaling ~2.7 MtCO2e were reported as of the 2023-24 reporting period. This analysis focuses on the magnitude of the reductions across implementation and the corresponding changes in the % share of emissions reductions across different component classifications.

Sector: Emissions reductions in the industrial sector fell 77%, from ~3.3 mtCO2e at AIP to ~0.7 mtCO2e by PR2023-24. Over that same period, its share of total GHG reductions decreased from 47% to 28%. The forest resources sector experiences a similar 80% decrease in total emissions

reductions, from ~0.9 to ~0.2 mtCO₂e, while its share of emissions reductions decreased from 12% to 7%. In contrast, the buildings sector progressively increased its share of emissions reductions, from 13% at AIP to 24% by PR2023-24. While the sector’s total emissions reductions decreased 32%, from ~0.9 to ~0.6 mtCO₂e, the decline was smaller than the reductions seen across other sectors, effectively increasing its proportion of total GHG emissions reductions. A similar trend was observed in the cross-sectoral sector, where emissions reductions dropped by 28%, from ~1.4 to ~1.0 mtCO₂e, while its share of emissions reductions increased from 20% to 37%.

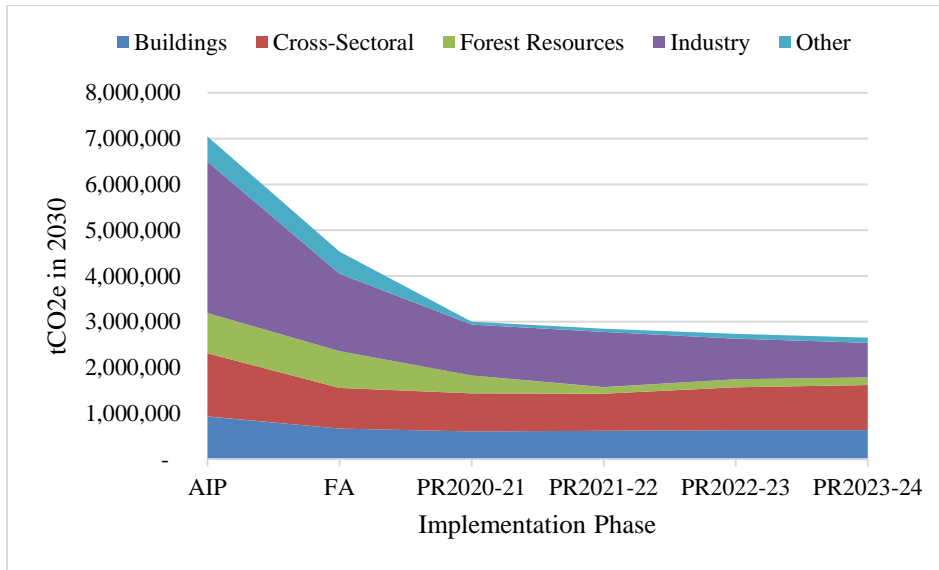


Figure 2: Annual in 2030 Emissions Reductions by Sector

Region: Western Canada accounted for 63% (~4.5 MtCO₂e) of total GHG emissions reductions across Leadership at AIP. While total emissions reductions in the region decreased by 73% during implementation to ~1.2 MtCO₂e, it still represents the largest share of any single region, contributing 45% of total reductions as of the 2023–24 reporting period. Decreases in emissions reductions in Central Canada were also significant, dropping 53%, from ~2.2 mtCO₂e at AIP to ~1.0 mtCO₂e by the 2023-24 reporting period. That said, the region’s share of total emissions reductions increased from 31% to 40%, due to the more substantial reductions in Western Canada. Similarly, Northern Canada’s share of emissions reductions increased marginally (<1%), while total emissions reductions decreased 39% (from ~0.03 to ~0.02 mtCO₂e). Atlantic Canada was the only region to experience an increase total and share of emissions reductions. Its share rose from 5% to 15%, while total reductions grew 20% (from ~0.3 to ~0.4 mtCO₂e).

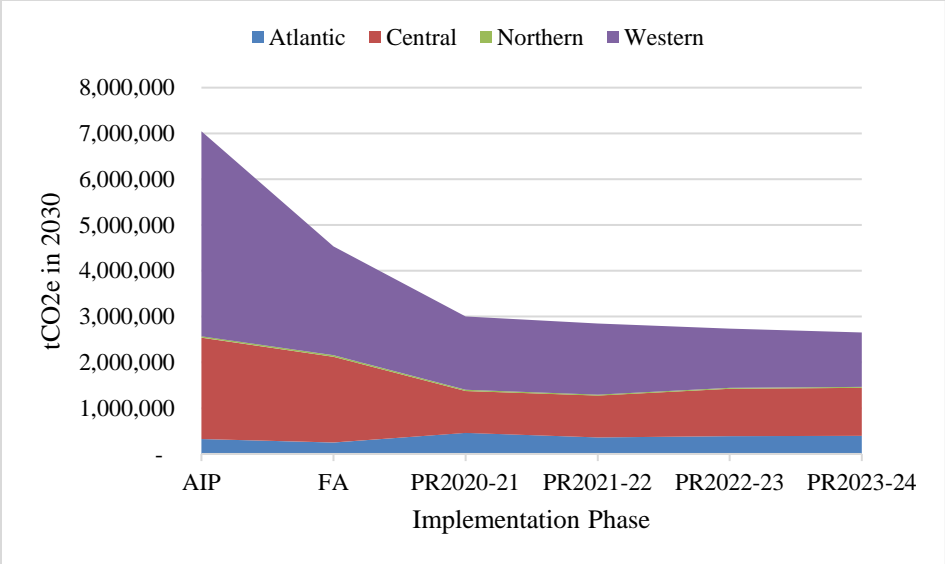


Figure 3: Annual in 2030 Emissions Reductions by Region

Funding Mechanism: Funding programs’ share of total emissions reductions decreased from 76% (~5.4 mtCO2e) to 46% (~1.2 mtCO2e). This represented a 77% decrease in total emissions reductions, the largest reduction in projected emissions reductions across Leadership. In contrast, incentives experienced a marginal 13% (~0.2 mtCO2) decrease in total emissions reductions. However, their share of total emissions reductions rose from 23% (~1.6 mtCO2e) at AIP to 54% (~1.4 mtCO2e) by PR2023-24. Capital projects consistently played a minor role, contributing less than 1% of total emissions reductions initially, and maintaining a limited presence throughout implementation.

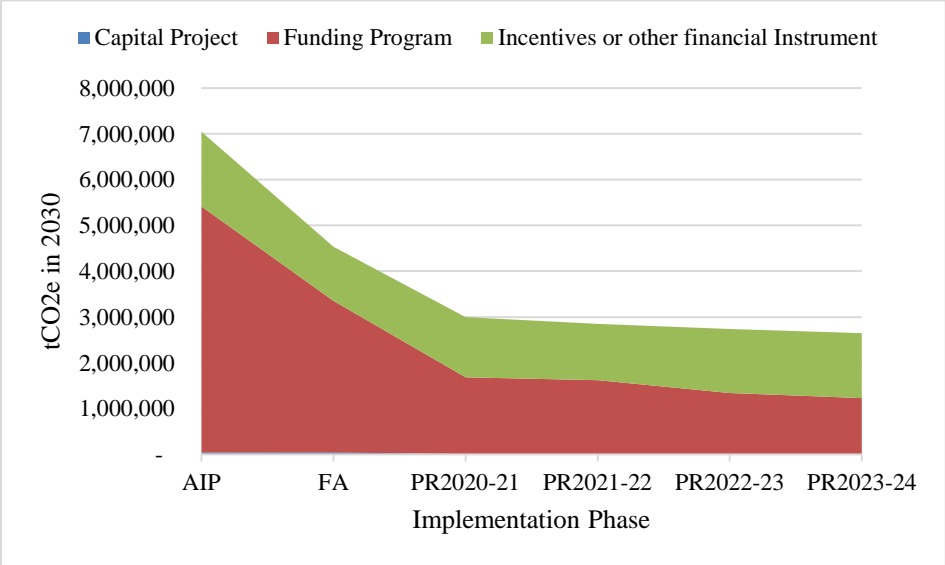


Figure 4: Annual in 2030 Emissions Reductions by Funding Mechanism

4.3 Cost-effectiveness

Cost-effectiveness is assessed internally by the client using a CPT ratio, which reflects a component’s funding allocation per tonne of in 2030 GHG emissions reductions. CPT is used by

ECCC to compare the program cost-effectiveness under the LCEF and other climate mitigation programs (ECCC, 2022b, 2022c). An increase in CPT signals a decrease in cost-effectiveness, while a decrease indicates improvement. For example, if Project A has a CPT of \$500/tCO₂e and Project B has a CPT of \$1,000/tCO₂e, Project A is twice as effective in reducing emissions per Leadership Fund dollar spent.

Importantly, CPT does not consider the Leadership allocations total cost-share % relative to funds provided by the province, other departments, or recipients. For example, Project A and B both result in 10,000 tCO₂e in 2030 with total cost of \$20 million. However, Project A has a \$5 million Leadership allocation, while Project B has a \$10 million allocation. Utilizing the CPT formula, Project A reduces twice as many emissions per Leadership dollar spent compared to Project B, even though both have the same total cost. While CPT is useful in comparing the absolute cost-effectiveness of individual projects, it is not intended to assess the marginal difference between options. To evaluate the additional cost to reduce a tonne of CO₂ when comparing an intervention and a baseline scenario, an Incremental Cost-Effectiveness Ratio (ICER) would be required. An ICER was not applied in this research.

Sector: Cost-effectiveness decreased across all sectors between Ministerial approval (AIP) and the 2023-24 reporting period, though the extent of this decline varied significantly by sector. Forest resources saw the largest reduction in cost-effectiveness during implementation, with CPT increasing more than 300% (from 261 at AIP to 1,159 \$/tCO₂e in PR2023-24). The cross-sectoral and industrial sectors also saw substantial reductions in cost-effectiveness, with CPT increasing 59% and 57% respectively. Cost-effectiveness in the buildings sector remained comparatively stable, with CPT increasing a modest 10% during implementation. That said, the buildings sector’s 612 \$/tCO₂e was the highest at AIP, the only sector to significantly exceed the 209 \$/tCO₂e portfolio component average at that time. Cost-effectiveness decreases were also significant in the other sector, with CPT increasing 85%.

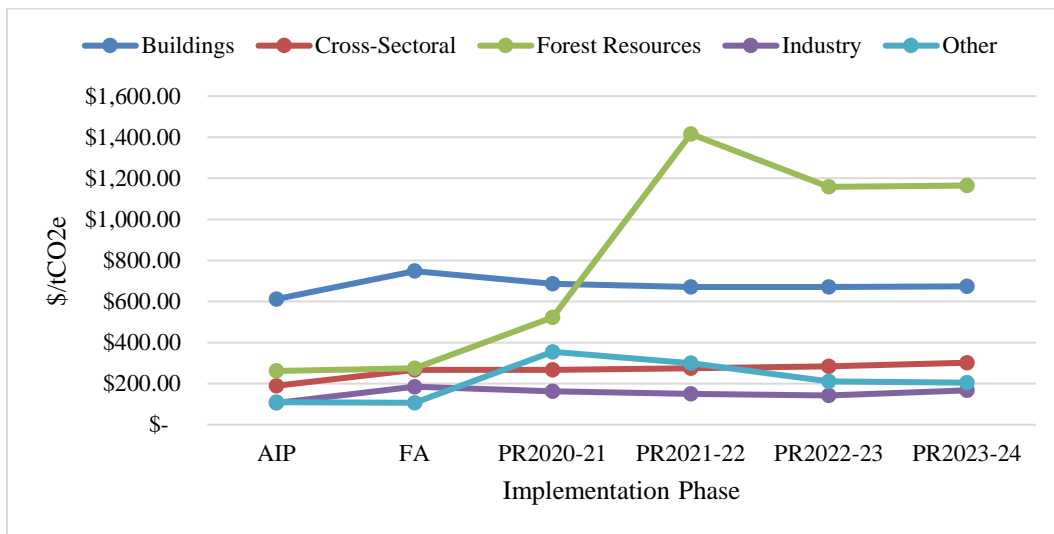


Figure 5: CPT by Sector

Region: Cost-effectiveness was consistent across regions, with one significant outlier. At AIP, CPT in the North was 2,762 \$/tCO₂e, five times greater than the next highest region, Atlantic Canada, which had CPT of \$455.90/tCO₂e. Central Canada fell within the mid-range, with a

CPT of 309 \$/tCO₂e. Western Canada was the most cost-effective region at AIP, with a CPT of \$121/tCO₂e. Given that the overall portfolio component average at AIP was \$209/tCO₂e, this underscores the substantial impact Western Canada had in delivering cost-effective portfolio components. For instance, excluding Western portfolio components at AIP increases the average portfolio components CPT over 70% to \$360/tCO₂e. In comparison, removing Northern Canada's portfolio components decreases the average CPT 6% to \$197/tCO₂e.

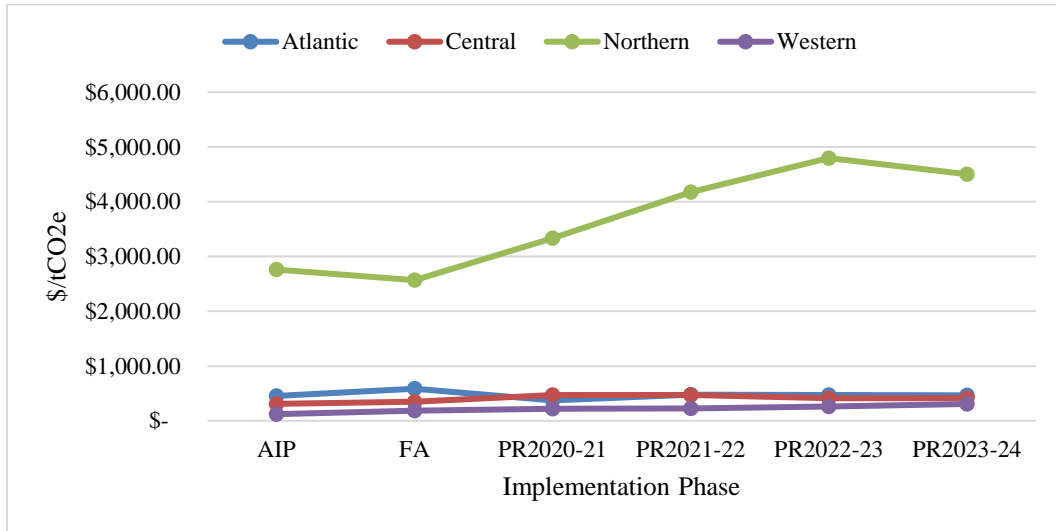


Figure 6: CPT by Region

Funding Mechanism: Cost-effectiveness was consistent across funding mechanisms, with one significant outlier. At AIP, capital projects' average CPT was \$1,946 \$/tCO₂e, nearly ten times greater than the funds average of 209 \$/tCO₂e. Funding Program and incentives were comparatively more cost-effective. Funding programs were the most cost-effective mechanism at AIP but were surpassed by incentives as the most cost-effective mechanism by PR2023-24. The CPT for funding portfolio components increased nearly 300%, from 180 to 517 \$/tCO₂e. In contrast, the CPT for incentives saw a modest increase of 7%, from 261 to 280 per \$/tCO₂e.

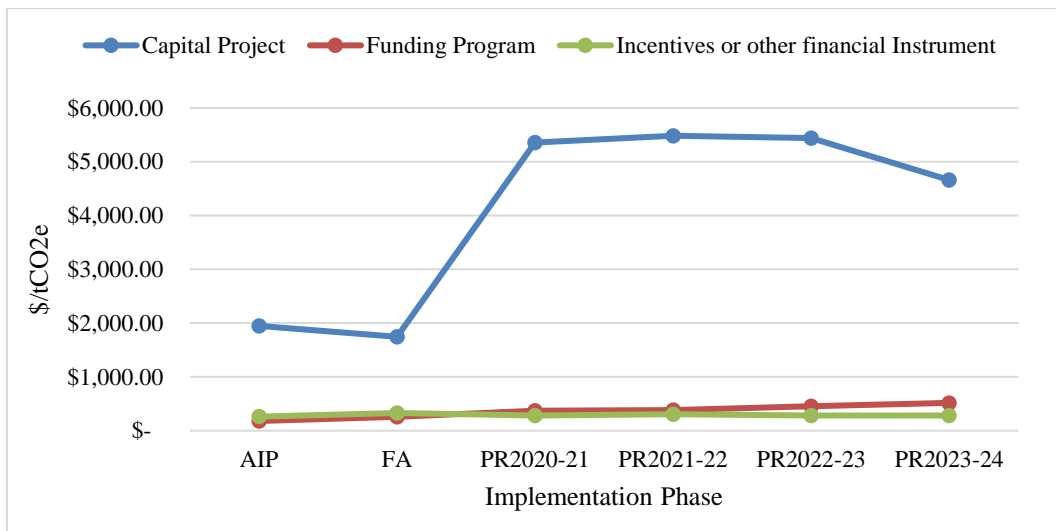


Figure 7: CPT by Funding Mechanism

4.4 Timelines

During summer 2023, in response to delays caused by the COVID-19 pandemic, the Programs Directorate offered provinces and territories the option to extend portfolio components to March 31, 2024. Of the 58 portfolio components with executed funding agreements, 42 (72%) opted for the extension. Of the remaining 16 components, 7 had been fully cancelled, and 8 paid out. Only one component fully completed without requiring an extension to March 31, 2024. Subsequently, recipients were offered an additional extension to March 31, 2025. Given that nearly all active portfolio components received extensions to March 31, 2024, the analysis focuses on those which requested the additional one-year extension. The aim is to evaluate which sectors, regions, and portfolio component types were most likely to require extensions.

Sector: Collectively, the other sectors (i.e., waste management, transportation, and agriculture) had 3 out of 5 portfolio components receive extensions, the highest proportion of requests across all sectors. The cross-sectoral and industry sectors also had notably high extension rates, with 3 of 7 (43%) and 2 of 7 (29%) components receiving extensions. In contrast, the buildings sector had only two extension requests despite representing the highest proportion of components, with 16 out of 18 (89%) not seeking an additional year. Lastly, the Forest Resources sector had no extension requests.

| Sector | Not Extended | Extended |
|-------------------------|--------------|----------|
| Buildings | 89% (16) | 11% (2) |
| Cross-Sectoral | 57% (4) | 43% (3) |
| Forest Resources | 100% (5) | 0% (0) |
| Industry | 71% (5) | 29% (2) |
| Other | 40% (2) | 60% (3) |
| Total | 76% (32) | 24% (10) |

Table 6: Extensions by Sector

Region: Western Canada experienced the highest rate of portfolio component extensions, with 4 out of 13 portfolio components (31%) requesting an additional year for completion. Atlantic and Northern demonstrated similar rates, with 3 of 12 (25%) and 3 of 13 (23%) applying for extensions. In contrast, none of the portfolio components in Central Canada sought extensions.

| Region | Not Extended | Extended |
|-----------------|--------------|----------|
| Atlantic | 75% (9) | 25% (3) |
| Central | 100% (4) | 0% (0) |
| Northern | 77% (10) | 23% (3) |
| Western | 69% (9) | 31% (4) |
| Total | 76% (32) | 24% (10) |

Table 7: Extensions by Region

Funding Mechanism: None of the 13 incentive programs and only 1 of 7 (14%) capital projects requested extensions. In contrast, funding portfolio components accounted for 90% of extension requests across Leadership, with 9 of 22 components (41%) granted extensions. This distinction highlights a clear disparity in funding program, where capital projects and incentive portfolio

components maintained more efficient completion schedules, funding programs faced greater challenges in meeting their deadlines.

| Funding Mechanism | Not Extended | Extended |
|---|---------------------|-----------------|
| Capital Project | 84% (6) | 14% (1) |
| Funding Program | 59% (13) | 41% (9) |
| Incentives or another financial Instrument | 100% (13) | 0% (0) |
| Total | 76% (32) | 24% (10) |

Table 8: Extensions by Funding Mechanism

4.5 Survivability

Survivability assesses the proportion of portfolio components successful in their implementation. To assess survivability, 58 components with executed funding agreements were analyzed to determine the factors contributed to their survival, cancellation, or early pay outs. Overall, 17% of portfolio components are active (10), 14% cancelled (8), 14% paid out (8), and 55% completed (32). Paid-out portfolio components reference those partially completed but closed out prior to completion. These portfolio components received Leadership Fund contributions and have associated emission reductions. In contrast, cancelled portfolio components are those that fully closed prior to implementation. These portfolio components received no Leadership contributions and have no associated emissions reductions.

Sector: There was significant variation in portfolio component survivability across economic sectors. For instance, survivability was high for cross-sectoral portfolio components, with 3 of 7 (43%) active, 4 (57%) completed and none cancelled or paid out. The Forest Resources sector had the highest completion %, with 5 of 6 (83%) portfolio components completed, compared to 1 cancelled (17%). The buildings sector was also relatively successful, with 16 of 26 (62%) portfolio components complete, compared to 2 active (8%), 7 (27%) paid out, and 1 (4%) cancelled. The industrial sector experienced challenges, with 2 of 11 (18%) portfolio components active, compared to 3 (27%) cancelled, 1 (9%) paid out, and 5 (45%) completed. Other portfolio components had the lowest survivability rate, with 3 of 8 (38%) portfolio components cancelled, 3 (38%) active, and 2 (25%) completed.

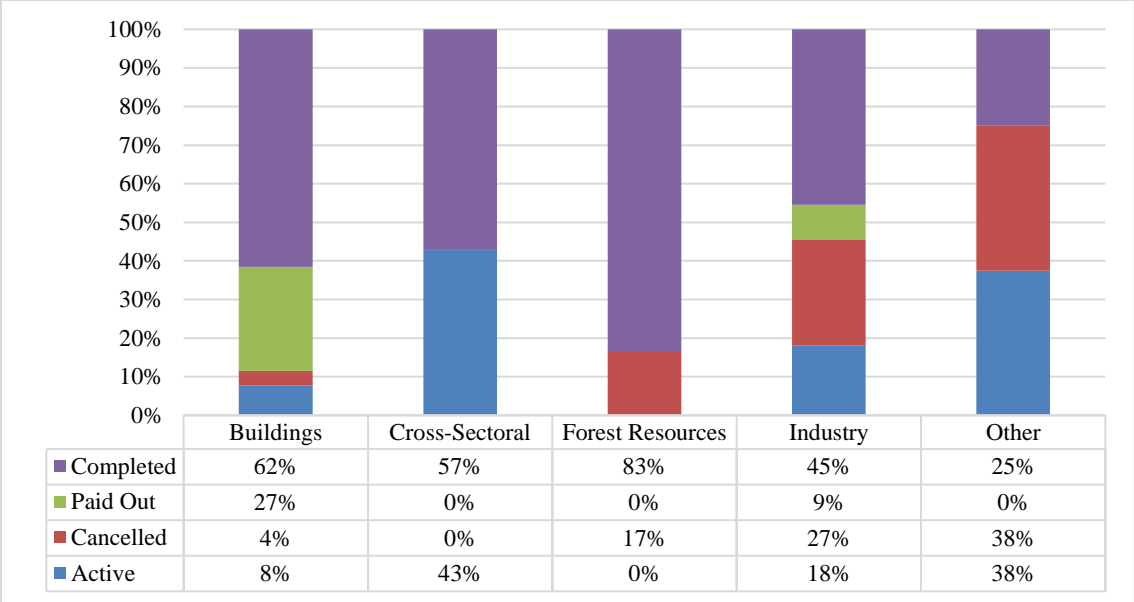


Figure 8: Survivability by Sector

Region: Central Canada had the lowest survivability, with 6 of 12 (50%) portfolio components cancelled, 2 (17%) paid out, and 4 (33%) complete. Western Canada had a balanced distribution, with 10 of 20 (50%) portfolio components completed, 4 (20%) active, 5 (25%) paid out, and 1 (5%) cancelled. Comparably, survivability was highest in Northern and Atlantic Canada. In Northern Canada, 9 of 13 portfolio components (69%) completed, 3 (23%) remain active, and 1 (8%) was cancelled. In Atlantic Canada, 9 of 13 components (69%) are completed, 3 (23%) remain active, and one (8%) was paid out.

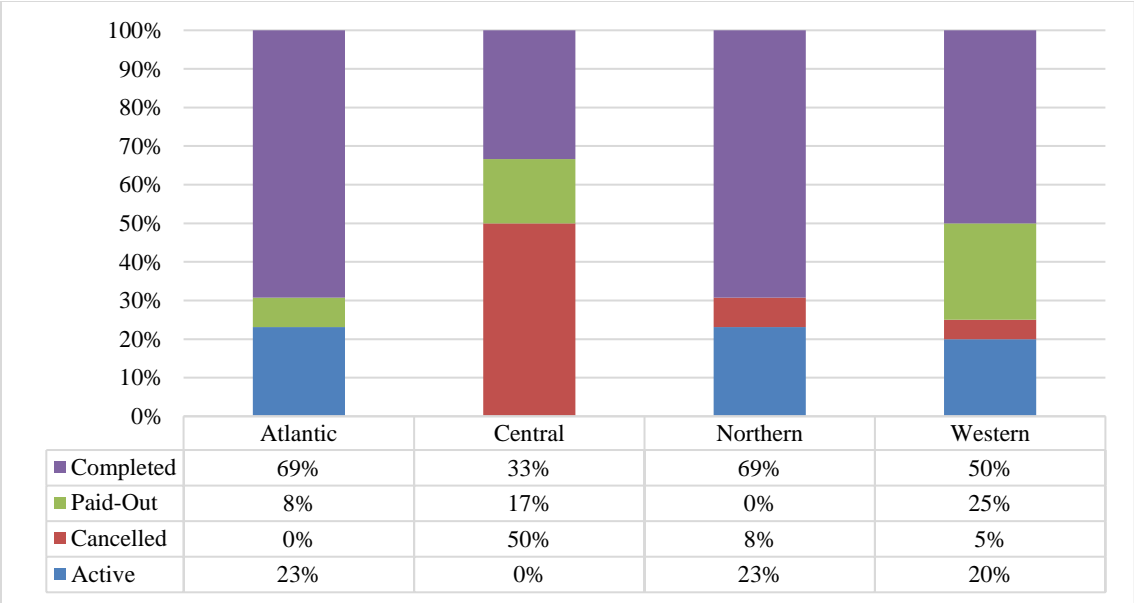


Figure 9: Survivability by Region

Funding Mechanism: Incentive programs had the highest survivability rate, with 13 of 17 completed (76%), 3 (18%) paid out, and 1 (6%) cancelled. Capital Projects had comparably low survivability, with 2 of 9 portfolio components cancelled (22%) and 1 paid out (11%), compared to 5 (56%) complete and 1 (11%) active. Funding portfolio components were balanced, with 14 of 32 (44%) portfolio components completed, 9 (28%) active, 5 (16%) cancelled, and 4 (13%) paid out.

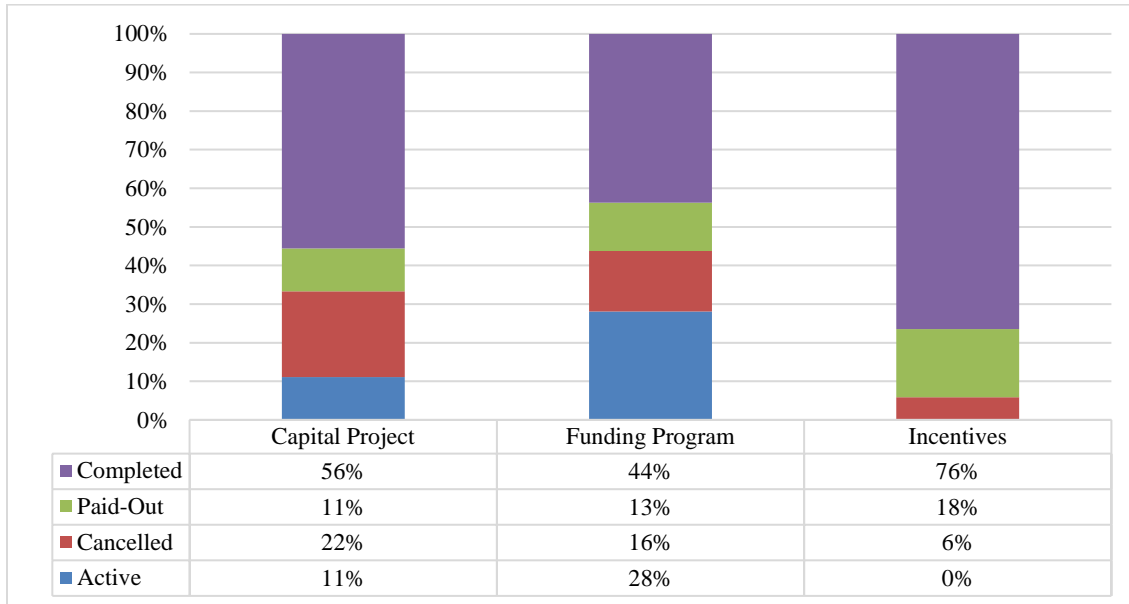


Figure 10: Survivability by Funding Mechanism

4.6 Uncertainty

Prior to the execution of funding agreements, portfolio components underwent a formal merit review. During the evaluation process, reviewers were asked to consider two questions related to the GHG uncertainty of each proposal: (1) Are the GHG reductions realistic and appropriately optimized for the component type and size? and (2) Does the applicant identify risks that could affect the component’s GHG reductions and if so, have adequate mitigation measures been proposed? Based on a consensus among reviewers, each question was assigned a low, moderate, or high score. A high score indicated greater uncertainty or the presence of project risk factors, while a low score indicated lower uncertainty or fewer risks. Components rated with high uncertainty were assigned an uncertainty range of 50%, those with moderate uncertainty a range of 20%, and those with low uncertainty a range of 10%. This analysis averages the two risk scores to assess the accuracy of the GHG uncertainty ratings by comparing each component’s CPT at the time of AIP with the current 2023-24 reporting period. If the current CPT remains within the uncertainty range, the rating is considered accurate; if not, it is considered inaccurate.

Of the 58 portfolio components with executed funding agreements, 50 were included in the uncertainty analysis. Eight portfolio components were cancelled and therefore excluded. GHG uncertainty ratings were collected from portfolio component proposals. CPT was calculated for each portfolio component at AIP and the 2023-2024 reporting period. CPT was utilized to assess uncertainty instead of total emissions reductions to prevent skewed results from the redistribution of Leadership contributions across portfolio components. Overall, 29 of 50

portfolio components (58%) included in the analysis exceeded their GHG uncertainty rating. Of the 21 portfolio components (42%) whose CPT did not exceed the GHG uncertainty rating, 15 (30%) had improved outcomes over implementation, whereas 5 (10%) decreased within their uncertainty ranges.

Sector: Uncertainty was balanced in the industrial sector, with 4 of 8 (50%) portfolio components assessed within their GHG uncertainty and 4 (50%) falling outside. The buildings and cross-sectoral sectors were relatively balanced, with 12 of 26 (48%) and 3 of 7 (43%) portfolio assessed within their GHG uncertainty. Uncertainty was highest in the Forest Resources and Other sectors, with each having 80% of portfolio components falling outside their GHG uncertainty ranges.

| Sector | No | Yes |
|------------------|----------|----------|
| Buildings | 52% (13) | 48% (12) |
| Cross-Sectoral | 57% (4) | 43% (3) |
| Forest Resources | 80% (4) | 20% (1) |
| Industry | 50% (4) | 50% (4) |
| Other | 80% (4) | 20% (1) |
| Total | 58% (29) | 42% (21) |

Table 9: Uncertainty by Sector

Note: Tables 9 to 11 define the number and % of portfolio components falling within or outside of their assessed uncertainty range. The yes column indicates components which fell within their uncertainty range; the no column indicates component which fell outside their range.

Region: Atlantic Canada was the only geographic region where a greater share of portfolio components fell within their assessed uncertainty range, with 8 of 13 (62%) meeting the GHG limit set during merit review. Uncertainty was highest in Central Canada, with 5 of 6 (83%) portfolio components falling outside the assessed GHG uncertainty. Northern and Western Canada also experienced high uncertainty, with 8 of 12 portfolio components (67%) and 11 out of 19 portfolio components (58%) falling outside their assessed GHG uncertainty.

| Region | No | Yes |
|----------|----------|----------|
| Atlantic | 38% (5) | 62% (8) |
| Central | 83% (5) | 17% (1) |
| Northern | 67% (8) | 33% (4) |
| Western | 58% (11) | 42% (8) |
| Total | 58% (29) | 42% (21) |

Table 10: Uncertainty Range by Region

Funding Mechanism: Incentives and other financial instruments were evenly divided, with 8 portfolio components (50%) falling within their assessed GHG uncertainty and 8 (50%) falling outside. Funding programs had a higher proportion falling outside, with 16 of 27 (59%) exceeding their certainty. The highest level of uncertainty was observed in capital projects, where 5 of 7 (75%) exceeded their assessed GHG uncertainty.

| Funding Mechanism | No | Yes |
|--|----------|----------|
| Capital Project | 71% (5) | 29% (2) |
| Funding Portfolio component | 59% (16) | 41% (11) |
| Incentives or other financial Instrument | 50% (8) | 50% (8) |
| Total | 58% (29) | 42% (21) |

Table 11: Uncertainty Range by Funding Mechanism

4.7 Risk

The Risk Assessment Tool (RAT) was developed during the 2021-22 reporting period to better assess portfolio component specific risk factors and suggest mitigation strategies during implementation. The risk assessment assesses a project’s risk annually. The RAT is an excel based tool that requires analysts to assess portfolio components each reporting period against individual risk factors known to hinder successful project implementation. These include recipient specific risks (i.e., recipient management capacity, recipient financial viability, etc.) program risks (i.e., project complexity, project timeline, etc.) and material risks (i.e., level of funding, GHG magnitude, etc.). Each risk receives an individual score which collectively informs an overall risk level.

This analysis evaluates how risk has evolved over the first three years of the RAT’s utilization. The analysis includes 40 portfolio components. Of the 58 components with executed funding agreements, eight were fully canceled and another eight were paid out before the 2023-24 reporting period. Additionally, one began implementation in 2023 and does not have multiple risk assessments.

Sector: Risk levels were most stable in the cross-sectoral sector, with 4 of 6 (67%) of portfolio components maintaining the same risk level across reporting periods, compared to 1 increasing and 1 decreasing. The buildings and other sectors had similar distributions, with 11 of 17 (65%) and 3 of 5 (60%) of portfolio components maintaining their risk levels respectively. Risk was most volatile in the remaining sectors. For Forest Resources, risk increased for 2 (40%) portfolio components, remained unchanged for 2 (40%), and decreased for 1 (20%). Similarly, in the industrial sector, risk increased for 3 (43%) portfolio components, stayed the same for 3 (43%), and decreased for 1 (14%).

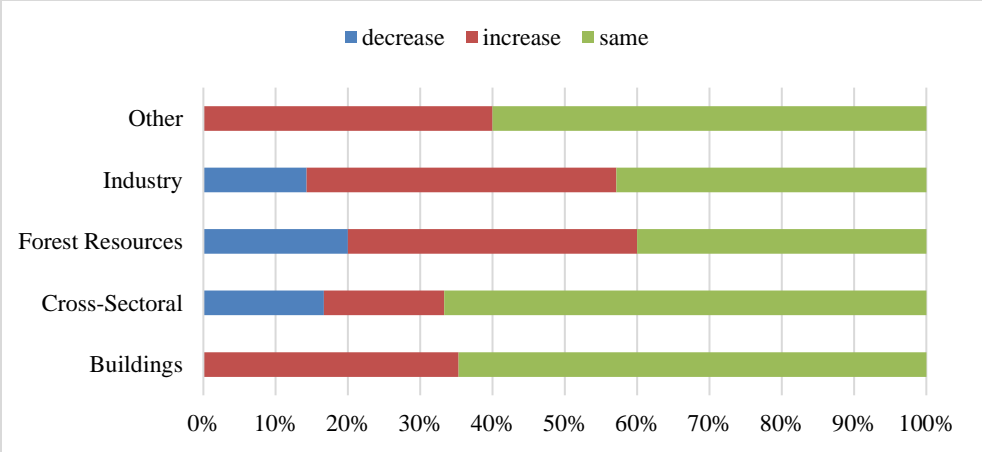


Figure 11: Risk by Sector

Region: Risk levels were most stable in Central Canada, with 3 (75%) portfolio components reporting a decrease between the 2021-22 and 2023-24 reporting periods, 1 (25%) maintaining the same risk level, and none increasing. Central Canada was the only region, sector, or funding mechanism where no portfolio components experienced an increase in risk. Risk levels were consistent in all other regions. In Western Canada, 8 of 12 portfolio components (67%) maintained their risk level, while 4 (33%) reported an increase. Similarly, in Atlantic Canada, 7 of 12 portfolio components (58%) remained stable, and 5 (42%) experienced higher risk. In Northern Canada, 7 portfolio components (58%) maintained their risk level and 5 (42%) reported an increase. None of these regions saw component risk levels decrease.

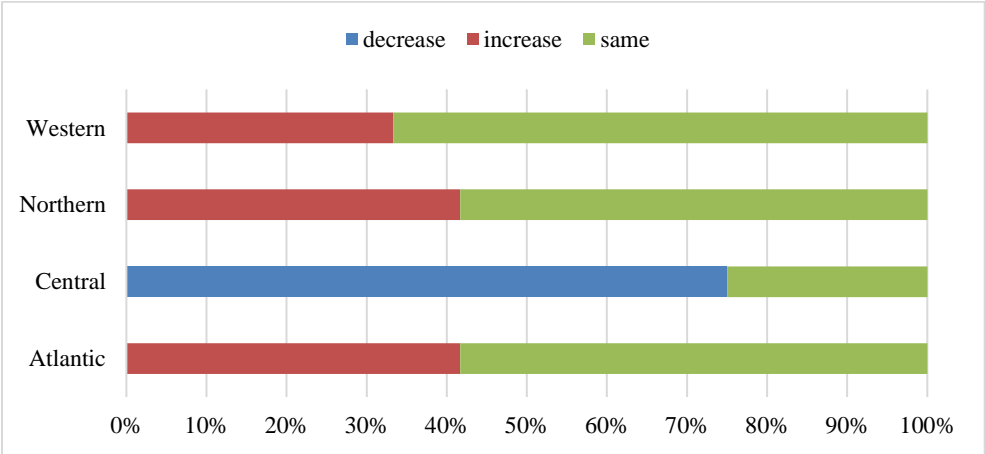


Figure 12: Risk by Region

Funding Mechanism: Risk levels were most stable for capital projects, where 5 of 6 portfolio components (83%) maintained their rating, 1 (17%) decreased, and none increased. Funding programs demonstrated moderate stability, with 12 of 21 portfolio components (57%) maintaining their risk level, 8 (38%) seeing an increase, and 1 (5%) reporting a decrease. Incentives and other funding mechanisms showed a similar trend, although with a higher proportion of risk decreases. Here, 2 portfolio components (15%) reported a decrease, 6 (46%) remained stable, and 5 (38%) experienced an increase.

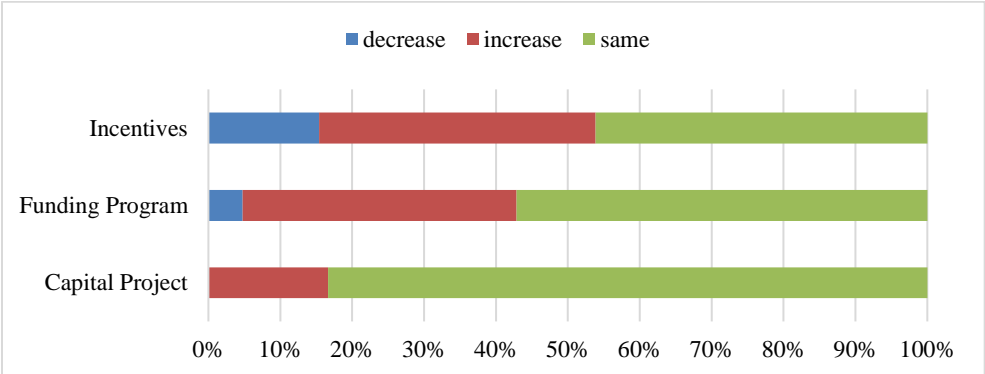


Figure 13: Risk by Funding Mechanism

Chapter 5 – Discussion and Conclusions

5.1 Key Findings and Interpretation

This project aimed to develop and implement a performance measurement framework that assesses the active Leadership portfolio and provides opportunities for improvement in its recapitalization. Insights from a supporting literature review guided the refinement of existing KPIs, improving their ability to capture the portfolio component's performance. A gap analysis of existing performance mechanisms highlighted gaps for a revised set of indicators capable of accurately assessing the portfolio.

The summary of findings provides a thematic narrative of key findings to support the Fund's recapitalization. Results from KPI analyses reveal several key portfolio component insights. These findings are discussed in the thematic subsections that follow, organized by sector, region, and funding mechanism, with subsections for each category. Given the limited number of programs in the complete dataset, as well as the variability among portfolio component recipients and objectives, the study does not conduct statistical correlation analyses or formal economic evaluations such as cost-benefit assessments. Nevertheless, these insights provide valuable context for ECCC as it advances the early stages of the Recapitalized Leadership Fund.

5.1.1 Overarching Themes

Overall Leadership Fund cost-effectiveness declined significantly during implementation, with CPT increasing by 81%, from 210 to 494 \$/CO₂e. The KPI analysis suggests that decreases in emissions reductions were driven by two main factors, a reduction in emissions per project and a decrease in the total number of funded projects. Between Ministerial approval and the execution of funding agreements, seven portfolio components, accounting for ~1mtCO₂e, withdrew from funding. Additionally, the average emissions reduction per portfolio component fell by 28%, from 108,000 to 78,000 tCO₂e. Following the execution of funding agreements, eight additional portfolio components were cancelled, resulting in a further 0.65 mtCO₂e loss, while another eight, totalling ~0.6 mtCO₂e were paid out. This suggests that many of the most cost-effective portfolio components were most at risk of cancellation.

Additionally, a large portion of the reduction in portfolio component performance can be attributed to the COVID-19 pandemic. The pandemic led to documented procurement delays, supply chain issues, and project slowdowns, while inflation further escalated material and labour costs, compounding the financial impact on portfolio components. For example, the three-year period spanning from the AIP through 2021 accounted for 92% of the total reductions. Likewise, nearly all portfolio component cancellations and early payouts were in this period, with only one cancellation and one payout occurring afterward. This suggests that portfolio components which successfully navigated the initial years of implementation and the COVID pandemic provided a strong foundation for completion.

Among portfolio components with executed funding agreements, 58% exceeded their assessed GHG uncertainty, while 42% stayed within their set thresholds. However, the average increase for portfolio components that exceeded their uncertainty threshold was significantly higher than the decreases seen in those which did not. For portfolio components that remain within their assessed GHG uncertainty, outcomes improved 33% on average. In contrast, for those that exceeded their assessed GHG uncertainty, outcomes declined 247% on average.

5.1.2 Sectoral Themes

Industry: Across implementation, total industrial emissions reductions decreased 77%, from ~3.3 to ~0.75mtCO₂e. This accounted for over half (58%) of the total losses across Leadership. This is partially attributed to the sector's low survivability. Of the 12 industrial portfolio components approved by the Minister, 1 withdrew prior to funding agreement execution, 3 cancelled during implementation, and 1 was paid out. The substantial impact these cancellations had on total emissions is due to their scale. At AIP, industrial portfolio components projected emissions were nearly three times greater than the funds average per component, at 275,000 tCO₂e versus 108,000 tCO₂e. To put this in perspective, these 12 industrial portfolio components accounted for nearly half of all emissions reductions (47%) across the Fund. Despite these cancellations, industrial portfolio components maintained the highest cost-effectiveness across all sectors. Moreover, the portfolio components which did not cancel maintained consistent level of GHG certainty compared to other sectors. This indicates that although industrial components were more susceptible to cancellation or delays during the preliminary stages of implementation, those that completed tended to be among the most cost-effective portfolio components.

Buildings: The sector demonstrated one of the highest survivability rates and required the fewest extensions. Despite representing nearly half of all portfolio components (26 out of 58), the sector saw only one cancellation and one extension. Cost-effectiveness in the buildings sector was also relatively stable, increasing by just 10% over implementation. This consistency is likely attributed to the lower complexity and shorter timelines of building projects, which focused heavily on residential energy efficiency initiatives. In contrast, other sectors required significant capital investment and longer procurement timelines, likely contributing to greater variability in outcomes. While building components were the most stable, they were not comparatively cost-effective. At AIP, the average CPT in the buildings sector was 612 \$/tCO₂e, significantly greater than the 209 \$/tCO₂e fund average. This suggests that while building components offered low risk GHG stability, it was at the expense of lower cost-effectiveness.

Cross-Sectoral: CPT in the cross-sectoral sector increased 59% (from 190 to 302 \$/tCO₂e) during the Leadership Fund 's implementation but remained the third most cost-effective, trailing only the other and industry sectors. GHG emissions reductions dropped by 29%, from ~1.4 to ~1.0 mtCO₂e, with 57% of portfolio components exceeding their GHG uncertainty. Despite these challenges, the sector had the highest survivability, with no cancellations or payouts during implementation. The diverse nature of cross-sectoral portfolio components presents challenges in identifying reasons for their overall performance. However, their presence across five provinces and territories, spanning all four geographic regions, suggests they will remain a priority for the portfolio component's recapitalization.

Forestry: Forest resource portfolio components experienced the greatest decline in cost-effectiveness during implementation, with CPT increasing over 300%, from 262 to 1,164 \$/tCO₂e. Despite no required extensions, 80% of portfolio components exceeded their GHG uncertainty, highlighting challenges in the sector's emissions forecasting. The substantial decline in cost-effectiveness is mainly attributed to shifts in the sectors GHG modelling. In updated models developed after the proposal submissions, most emissions reductions were projected to occur several years after implementation. This contrasts with the original models, which anticipated significant short-term reductions. Since cost-effectiveness is calculated using annual emissions reductions in 2030 as a benchmark, this shift greatly decreased the sector's overall cost-effectiveness. As a result, forestry has become the least cost-effective sector, with costs

nearly three times greater than the Leadership Fund average. Since forestry components no longer align with the 2030 benchmark utilized for Leadership, they were made ineligible under the Fund's recapitalization.

Other: The waste management, transportation, and agriculture sectors experienced an 85% increase in CPT during implementation. They also had the lowest survivability, with 38% (3 of 8) portfolio components cancelling. Despite making up just 14% of total portfolio components (8 out of 58), the sector accounted for nearly half of all cancellations across Leadership. However, these sectors were the second most cost-effective and represented less than 2% of Leadership contributions, minimizing their overall impact on the Fund's performance. Given their small impact, further detailed evaluation is not warranted. Nonetheless, their high cancellation rates and cost-effectiveness challenges highlight the difficulties faced in funding these sectors.

5.1.3 Regional Themes

Western: 45% of the current projected emissions reductions under Leadership are attributed to Western Canada, representing the largest share among all regions. Despite this, the region experienced the greatest decrease in emissions projections during implementation, with projected reductions dropping 73%, from 4.5 to 1.2 mtCO_{2e}. This decline accounts for 75% of the overall decrease in emissions reductions across the entire Leadership Fund. The scope of active portfolio components in the West also significantly decreased during implementation. Four of the largest portfolio components, initially projected to contribute ~2.2 mtCO_{2e}, decreased to less than ~0.4 mtCO_{2e} by the 2023-24 reporting period. This is likely attributed to several factors. For one, Western Canada accounted for over half of industrial portfolio components (6 of 11), which as previously noted, is the most cost-effective but volatile sector. Secondly, the West had the highest number of portfolio components. Of the 58 portfolio components approved for funding, 20 were in Western Canada. The distribution of funds across smaller portfolio components likely contributed to the number of withdrawals and early cancellations, as jurisdictions opted to focus their efforts on higher performing portfolio components. For example, seven regional portfolio components totalling ~1mtCO_{2e} withdrew from Leadership prior to funding agreement execution. Despite the cancellations and decreases in emissions reductions, the West remained the most cost-effective of all regions. In fact, it was the only region with a CPT (307 \$/tCO_{2e}) lower than the Fund's average (404 \$/tCO_{2e}). Leadership's recapitalization should continue to prioritize the Western Canada for its high cost-effectiveness. Additionally, the Programs Directorate should assess whether the flexibility offered by smaller portfolio components outweighs the advantages of consistency provided by larger ones.

Northern: The main trend in the North was its clear distinction as an outlier in terms of cost-effectiveness. Over the Leadership Fund's implementation, its CPT increased from 2,762 to 4,501 \$/tCO_{2e}. By the 2023-24 reporting period, portfolio components in the North were ten times less cost-effective than those in all other regions. The North was also an outlier in terms of GHG uncertainty. While its GHG uncertainty rates were like the portfolio component's average, with 67% of portfolio components exceeding their uncertainty compared to the 58% in other regions, Northern portfolio components that exceeded their uncertainty experienced some of the largest cost increases across the Fund. Of the five portfolio components that saw CPT increases of over 500% during implementation, three were in Northern Canada. This cost disparity between the North and other regions was to some extent anticipated, given Northern communities are often remote and sparsely populated. These factors lead to significantly higher material and labour costs, decreasing the ability to manage overall expenses effectively. In response, the Recapitalized Leadership Fund introduced higher cost-effectiveness thresholds

specifically for Northern portfolio components. Although costs in the North were significantly higher than other regions, it had the highest portfolio component survivability and no required extensions. This suggests that Northern jurisdictions placed greater emphasis on completing portfolio components, even when cost increases far exceed initial estimates. In the Leadership Fund's recapitalization, Northern portfolio components should be closely monitored to prevent similar cost overruns.

Central: The main trend in Central Canada was its low survivability, with 50% of portfolio components cancelling during implementation. However, most of these cancellations (5 of 6) were in a single province, whose 7 portfolio components were terminated shortly after execution. 2 portfolio components were designated as paid out, as program allocations had already been spent by the time of cancellation. As a result, emissions reductions tied to these portfolio components were collected. These cancellations were responsible for ~80% of the decrease in the region's emissions reductions, where total GHG reductions decreased from 2.2 to 1 mtCO_{2e}. That said, of the portfolio components which remained active within Central Canada, CPT increases were moderate, increasing just 8% (from 265 to 286 \$/CO_{2e}). By the 2023-24 reporting period, Central Canada was the second most cost-effective region, only behind the West. Without these cancellations during implementation, Central Canada would likely have attributed the majority of emissions reductions across Leadership. Given that Central Canada represents the largest share of Canada's population and industry, future portfolio components should prioritize strengthening relationships within the region.

Atlantic: Throughout implementation, Atlantic Canada proved to be the most consistent geographic region. Its share of emissions reductions was the only region to increase, from 5% to 15%. Additionally, it experienced the smallest decline in cost-effectiveness, with CPT increasing just 2%, from 456 to 466 \$/tCO_{2e}. This consistency was also evident in the region's portfolio component survivability, with no cancellations occurring throughout implementation. This consistency is likely attributed to several factors. For one, Atlantic Canada had a high concentration of portfolio components in the building sector (54%) and the second lowest concentration in the industrial sector (8%). Building portfolio components were considered the most consistent in terms of emissions reductions across implementation, whereas industrial portfolio components proved to be the most volatile. A portion of this accuracy should also be attributed to the recipients themselves. When comparing the Atlantic with Central and Western Canada, final CPT values were on average very similar across each region. However, at the proposal stage, Atlantic Canada estimated significantly lower CPT values on average, indicating that their proposal estimates were more accurate than those from other regions.

5.1.4 Funding Mechanism Themes

Funding Portfolio components: The main trend observed in funding portfolio components was a substantial decrease in total emissions reductions during implementation, dropping by approximately 78% (from ~5.4 MT to 1.2 MT). This decline represented 95% of emissions reductions across the entire Leadership Fund. This trend aligns with the uncertainty levels of the funding portfolio components, where 59% exceeded their assessed uncertainty ranges, the highest proportion of uncertainty across all categories. Additionally, funding portfolio components were the least likely to finish on schedule, with 33% (9 out of 27) requesting extensions to March 31, 2025. The volatility of funding portfolio components is likely attributed in part to their inherent uncertainty at the proposal stage. Unlike incentive portfolio components, which have fixed dollar values tied to each incentive, and capital projects, which can be broken down by expenditure, funding portfolio components rely on limited data when estimating GHG

emissions reductions during proposal development. Estimates are typically based on limited sectoral or data activity categories. As a result, funding portfolio components are likely more susceptible to cost increases during implementations. The portfolio components recapitalization should factor these inherent uncertainties when assessing funding portfolio components for risk and merit.

Incentive Portfolio components: The primary trend for incentive portfolio components was their stability. From AIP to the 2023-24 reporting period, their average cost-effectiveness decreased just 7%. Comparably, funding programs costs increased 187% and capital projects increased 140%. Incentive portfolio components also showed the strongest survivability, with just 6% of portfolio components cancelling during implementation. Lastly, no incentive portfolio components requested extensions to March 31st, 2025. Unlike funding portfolio components, incentive portfolio components likely benefited from clearly defined costs and project targets at the proposal stage. Incentive rebate values and categories are typically established during proposal development, reducing cost fluctuations, and increasing stability in costs and outcomes throughout implementation. While they may exhibit lower cost-effectiveness during the proposal stage, they have the potential to deliver greater value over the course of implementation. The Leadership Fund's recapitalization should consider prioritizing a greater portion of incentive portfolio components.

Capital Projects: Capital projects consistently exhibited higher costs compared to other funding mechanisms. By the 2023-24 reporting period, their CPT was ten times greater than incentive and funding portfolio components on average. This is likely attributed to several factors. For one, nearly 80% (7 out of 9) of capital projects were funded in Northern Canada, where costs were significantly higher than in other regions. Of the two capital projects funded in other regions, one was cancelled, and the other was paid out. This supports findings pertaining to cost increases in Northern Canada, where portfolio components were more likely to receive support through to completion, despite cost increases. The high costs of capital projects were also likely influenced by their focus on buildings, with 78% (7 out of 9) of these projects classified within the sector. Given the concentration of capital projects in a lower-performing region and sector, it is unsurprising that they incurred the highest overall costs. When assessing the completeness and merit of capital projects proposals under Leadership, the Programs Directorate should aim to develop a better understanding of their scope and emissions projections to ensure that risks and costs are accurately considered prior to making a funding recommendation.

5.2 Study Limitations and Directions for Future Work

The project's management gap analysis was advantageous for the purpose of the study, but it had several limitations. For example, the study lacked the integration of any primary data, which could have provided insights for the client. No interviews were conducted with analysts or recipients to assess their opinions on the implementation of the program. If interviews had been conducted, they could have revealed specific eligibility criteria, reporting requirements or other factors that resulted in certain components being more or less successful than others. Additionally, they could have revealed opportunities to make external reporting and internal assessment requirements more efficient. Introducing primary data collection and qualitative data in future iterations of the analysis would enable a more comprehensive examination of the program's key findings.

The scope of the research also limits the application of findings to other climate mitigation programs outside of ECCC. As the study focused on the Leadership Fund, findings are specific to the Fund's eligibility criteria, targeted sectors, and the components selected for

funding. Key findings and themes in relation to geographic regions and sectors may be useful when developing climate mitigation initiatives but cannot be applied specifically to programs. Lastly, the limited data set resulted in a lack of economic analyses. For example, the research utilized a CPT metric to compare individual component cost-effectiveness. While CPT is useful in comparing the cost-effectiveness of individual components relative to the Leadership funding allocation, it cannot assess the marginal difference between initiatives. Future iterations of this study could seek to integrate statistical analysis such as an ICER by estimating the cost of each intervention compared to its baseline scenario.

5.3 Strengths and Contributions

Despite its limitations, this research helps address knowledge gaps in the performance measurement of Canadian climate mitigation programming. Notably, the scope of secondary data collection through pre-existing documentation was advantageous for the study because it allowed for the development of a measurement framework that could be replicated by the client for the program's recapitalization, which relies on the same reporting structures. By outlining how the data was collected and developing a central repository, it also enables the client to complete a final analysis of the program following its formal close out on March 31st, 2025. Notably, the study highlighted several key findings and themes across sectors, regions, and funding mechanisms which the client can use to help inform the strategy of the Leadership Fund's implementation. For example, the results identified cost-effectiveness outliers in the Northern region and capital project funding mechanisms, indicating the need for further consideration of these risks in the recapitalization process. Another trend showed that % decreases in emissions reductions during implementation was not associated with lower cost-effectiveness. Instead, the opposite was observed: regions, sectors, and funding mechanisms with the largest % decreases remained among the most cost-effective.

With the recent election of a new government and the anticipated shift in policy priorities, this research outlines the contributions of a funding program central to Canada's economic action plan, representing more than one billion dollars in allocated funding. The study establishes a comprehensive performance measurement framework for the Leadership Fund, potentially offering a foundation for future evaluations of climate mitigation initiatives. As the Recapitalized Fund advances through its implementation cycle, the framework will assist MED in more effectively assessing program performance and informing the design of new departmental initiatives that support Canada's transition to a low-carbon economy. Looking forward, the framework is designed to evolve alongside changing government priorities and can be adapted to broaden the scope of programs reviewed or incorporate additional data sources, thereby enhancing the federal government's ability to respond to emerging climate policy objectives.

References

- Arnaboldi, M., Lapsley, I., & Steccolini, I. (2015). Performance Management in the Public Sector: The Ultimate Challenge. *Financial Accountability & Management*, 31(1), 1–22. <https://doi.org/10.1111/faam.12049>
- Chowdhury, A., & Shil, N. C. (2021). Performance Management Systems in Public Sector Under New Public Management Regime: An Australian Case. *Journal of Public Administration, Finance & Law*, 20, 40–60. <https://doi.org/10.47743/jopafl-2021-20-03>
- Coste, A.-I., & Tudor, A. T. (2013). Service Performance—Between Measurement and Information in the Public Sector. *Procedia - Social and Behavioral Sciences*, 92, 215–219. <https://doi.org/10.1016/j.sbspro.2013.08.662>
- ECCC. (2016). *Pan-Canadian Framework on Clean Growth and Climate Change: Canada's plan to address climate change and grow the economy*. <https://publications.gc.ca/site/eng/9.828774/publication.html>
- ECCC. (2022a). *United Nations Framework Convention on Climate Change*. <https://www.canada.ca/en/environment-climate-change/corporate/international-affairs/partnerships-organizations/united-nations-framework-climate-change.html>
- ECCC. (2022b, February 14). *Output-Based Pricing System Proceeds Fund: Decarbonization Incentive Program* [Grants and funding opportunities;guidance]. <https://www.canada.ca/en/environment-climate-change/services/climate-change/carbon-pollution-pricing-proceeds-programming/output-based-pricing-system-proceeds-fund/decarbonization-incentive-program.html>
- ECCC. (2022c, October 17). *What is the Low Carbon Economy Fund?* <https://www.canada.ca/en/environment-climate-change/services/climate-change/low-carbon-economy-fund/what-is-lcef.html>
- Garengo, P., & Sardi, A. (2020). Performance measurement and management in the public sector: State of the art and research opportunities. *International Journal of Productivity and Performance Management*, 70(7), 1629–1654. <https://doi.org/10.1108/IJPPM-03-2020-0102>
- GOC. (2017). *Canada's 2017 Nationally Determined Contribution Submission to the UNFCCC*.
- GOC. (2023). *Guidance for Drafters of Treasury Board Submissions*. <https://www.canada.ca/en/treasury-board-secretariat/services/treasury-board-submissions/guidance-for-drafters-of-treasury-board-submissions.html>
- GOC. (2024). *About the Treasury Board of Canada* [Navigation page - institutional profile;organizational descriptions]. <https://www.canada.ca/en/treasury-board-secretariat/corporate/about-treasury-board.html>

- GOC. (2025). *Canada's 2035 Nationally Determined Contribution*.
https://unfccc.int/sites/default/files/2025-02/Canada%27s%202035%20Nationally%20Determined%20Contribution_ENc.pdf
- Gore, O. (2023). Modernising government, aestheticising decision information: How 'business-like' quantification turns performance numbers into aesthetic enumerated entities. *Culture & Organization*, 29(4), 315–335.
<https://doi.org/10.1080/14759551.2023.2176502>
- Government of Canada. (2024). *National Inventory Report 1990–2022: Greenhouse gas sources and sinks in Canada*. https://publications.gc.ca/collections/collection_2024/eccc/En81-4-2022-1-eng.pdf
- Henman, P. (2016). Performing the state: The socio-political dimensions of performance measurement in policy and public services. *Policy Studies*, 37(6), 499–507.
<https://doi.org/10.1080/01442872.2016.1144739>
- IPCC. (2018). *Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. <https://www.ipcc.ch/sr15/chapter/spm/>
- IPCC. (2022). *Sixth Assessment Report*.
- Kameyama, Y., & Kawamoto, A. (2018). Four intermediate goals: A methodology for evaluation of climate mitigation policy packages. *Climate Policy*, 18(2), 210–220.
<https://doi.org/10.1080/14693062.2016.1258632>
- Kim, S., & Ji, Y. (2018). Gap Analysis. In R. L. Heath & W. Johansen, *The International Encyclopedia of Strategic Communication* (1st ed., pp. 1–6). Wiley.
<https://doi.org/10.1002/9781119010722.iesc0079>
- Lemmen, D. S., & Bush, E. (2019). *Canada's Changing Climate Report*.
<https://changingclimate.ca/CCCR2019/>
- Levin, K., Cashore, B., Bernstein, S., & Auld, G. (2012). Overcoming the tragedy of super wicked problems: Constraining our future selves to ameliorate global climate change. *Policy Sciences*, 45(2), 123–152. <https://doi.org/10.1007/s11077-012-9151-0>
- Meričková, B. M., Štrangfeldová, J., Muthová, N. J., & Štefanišinová, N. (2020). Performance Measurement in Education Public Services Based on the Value for Money Concept. *Scientific Papers of the University of Pardubice. Series D, Faculty of Economics & Administration*, 28(3), 1–11. <https://doi.org/10.46585/sp28031099>
- Tran, Y. T., & Nguyen, N. P. (2020). The impact of the performance measurement system on the organizational performance of the public sector in a transition economy: Is public

accountability a missing link? *Cogent Business & Management*, 7(1), 1792669.
<https://doi.org/10.1080/23311975.2020.1792669>

Treasury Board of Canada Secretariat. (2010). *Supporting Effective Evaluations: A Guide to Developing Performance Measurement Strategies* [Guidance].
<https://www.canada.ca/en/treasury-board-secretariat/services/audit-evaluation/centre-excellence-evaluation/guide-developing-performance-measurement-strategies.html>

UNFCCC. (2016). *The Paris Agreement—UNFCCC*. <https://unfccc.int/documents/184656>

Virtanen, P., & Vakkuri, J. (2015). Searching for Organizational Intelligence in the Evolution of Public-Sector Performance Management. *NISPAcee Journal of Public Administration and Policy*, 8(2), 89–99. <https://doi.org/10.1515/nispa-2015-0010>

Zia, A., & Koliba, C. (2011). Accountable Climate Governance: Dilemmas of Performance Management across Complex Governance Networks. *Journal of Comparative Policy Analysis: Research and Practice*, 13(5), 479–497.
<https://doi.org/10.1080/13876988.2011.605939>

Appendices

Appendix A – Sector, Region, and Funding Mechanism Definitions

Economic Sectors

| Economic Sector | Description |
|-------------------------|--|
| Buildings | Residential, commercial, and institutional building projects related to energy efficiency, low-carbon materials, and renewable energy integration. |
| Forest Resources | Forest management and conservation activities to enhance carbon sinks, including afforestation, reforestation, and sustainable forest management practices. |
| Industry | Project in energy-intensive industries such as steel, cement, or chemicals, targeting energy efficiency, fuel switching, and CCS deployment. |
| Cross-Sectoral | Activities that span multiple sectors |
| Agriculture | Crop production, livestock management, and land use that contribute to greenhouse gas emissions. |
| Transportation | Modes of transportation for people and goods, including road, rail, shipping, and aviation. |
| Waste Management | Treatment and disposal of waste materials, including reducing waste generation, enhancing recycling, composting, and capturing methane emissions from landfills. |

Note: The economic sectors are aligned with Canada's National Inventory Report and defined according to the IPCC's Sixth Assessment Report (AR6) (Government of Canada, 2024; IPCC, 2022).

Geographic Regions

| Economic Sector | Description |
|-----------------|--|
| Atlantic | New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland and Labrador. |
| Central | Ontario and Quebec. |
| Northern | Yukon, Northwest Territory, and Nunavut. |
| Western | British Columbia, Alberta, Saskatchewan, and Manitoba. |

Funding Mechanisms

| Funding Mechanism | Description |
|---|---|
| Incentives and other financial instruments | Economic tools or rewards designed to motivate individuals and organizations to undertake activities that reduce greenhouse gas |

| | |
|-------------------------------------|---|
| | (GHG) emissions and promote clean growth, such as providing a set dollar amount to retrofit buildings for energy efficiency. |
| Funding portfolio components | Financial support mechanisms aimed at reducing GHG emissions and promoting sustainable development by providing funds for specific projects, such as a portfolio component targeting ultimate recipients in a specific economic sector. |
| Capital projects | Capital investment in infrastructure, equipment, or technology aimed at significantly reducing GHG emissions and supporting clean growth, such as upgrading industrial processes and switching to lower carbon energy sources |

Appendix B – Inclusion & Exclusion Criteria

| KPI | Inclusion Criteria | Exclusion Criteria |
|------------------------------|---|--|
| 1: Current Status | Phase(s): most recent reporting period (progress or final report) | Components: cancelled |
| 2: Outcomes | Phase(s): AIP, FA, PR (2020-21, 2021-22, 2022-23, 2023-24) | Components: cancelled |
| 3: Cost-Effectiveness | Phase(s): AIP, FA, PR (2020-21, 2021-22, 2022-23, 2023-24) | Components: cancelled |
| 4: Timelines | Phase(s): Current FA or AA. | Components: those that did not request an extension to March 31, 2024 |
| 5: Survivability | Phase(s): most recent reporting period (progress or final report) | none. |
| 6: Uncertainty | Phase(s): AIP, most recent reporting period (progress or final report) | Components: cancelled |
| 7: Risk | Phase(s): AIP, most recent reporting period (progress or final report) | Components: those which did not submit a PR in 2021-22 and 2022-23 |