

2006



Report of the
**Commissioner of the
Environment and
Sustainable Development**
to the House of Commons

Chapter 1
Managing the Federal Approach to Climate Change



Office of the Auditor General of Canada

The 2006 Report of the Commissioner of the Environment and Sustainable Development comprises five chapters, The Commissioner's Perspective—2006, Climate Change—An Overview, and Main Points. The main table of contents is found at the end of this publication.

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For copies of this report or other Office of the Auditor General publications, contact

Office of the Auditor General of Canada
240 Sparks Street, Stop 10-1
Ottawa, Ontario
K1A 0G6

Telephone: 613-952-0213, ext. 5000, or 1-888-761-5953 (toll-free)
Fax: 613-943-5485
Hearing impaired only TTY: 1-613-954-8042
E-mail: distribution@oag-bvg.gc.ca

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Chapter

1

**Managing the Federal Approach
to Climate Change**

The audit work reported in this chapter was conducted in accordance with the legislative mandate, policies, and practices of the Office of the Auditor General of Canada. These policies and practices embrace the standards recommended by the Canadian Institute of Chartered Accountants.

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Managing the Federal Approach to Climate Change

Main Points

What we examined

Responsibility for Canadian action on climate change is shared among several federal organizations. They include a number of departments and agencies with widely differing mandates, and foundations such as Sustainable Development Technology Canada. The federal government also shares responsibilities with provincial and territorial governments; industry, municipal governments, and individual Canadians have significant roles to play as well.

We examined how the federal government is organized to manage its climate change activities, whether it is able to report the costs and the results of its efforts, and on what basis it developed key targets for reductions in greenhouse gas emissions.

We also reviewed two new tools the government has chosen to help achieve its climate change objectives. We looked at how ready the government is to implement an effective domestic system for the trading of greenhouse gas emissions. And we looked at Sustainable Development Technology Canada, a foundation the government established in 2001 to, among other things, help reduce greenhouse gas emissions through technological innovation.

Why it's important

Canada has international commitments to reduce its greenhouse gas emissions, and specifically to reduce its emissions to 6 percent below 1990 levels between 2008 and 2012. Although the federal government has announced billions of dollars in funding since 1992 toward meeting these commitments, as of 2004 Canada's greenhouse gas emissions were 26.6 percent above 1990 levels.

Responding to climate change is a horizontal issue—that is, one whose management cuts across multiple departments, mandates, and jurisdictions. No single department, agency, or government has all the levers, resources, and expertise to manage this issue adequately. Effective governance and accountability are required to ensure that key departments work together in a coherent manner, co-ordinating their efforts to avoid duplication; and that Parliament and the public are able to fully scrutinize the costs and the results of those efforts.

If Canada is to reduce its greenhouse gas emissions enough to meet its commitments, it will need a comprehensive plan that addresses the major sources of emissions. Such a plan is required to help initiate the transformation that Canada's economy must undergo if the way it affects the climate is to change. It is critical that the federal approach in key sectors include policy tools and targets that are based on sound data, analysis, and management.

Sustainable Development Technology Canada has received \$280 million in federal funding dedicated to supporting and financing the development and demonstration of climate change technologies. It is important that it fund projects that can contribute to achieving the government's objectives for its climate change efforts.

What we found

- The government has yet to create an effective governance structure for managing its climate change activities. This is despite various studies that have pointed to the need for governance mechanisms and despite internal commitments made since 2003 to put in place a renewed governance structure for climate change.
- There is no government-wide consolidated monitoring and reporting of spending and performance information on climate change activities. The Treasury Board Secretariat is developing a system for capturing this information, but it is not yet fully operational, and responsibility for its management has not been assigned. The Secretariat was unable to provide us with documentation to fully substantiate its response to a parliamentarian's question in 2005, when it said that federal spending on climate change totalled \$1.6 billion. Nor were we able to accurately replicate the reported total expenditures using the available data. Until the current system is improved, it is not sufficiently accurate for managing and reporting purposes.
- Measures to reduce greenhouse gas emissions in the transportation and industry sectors—which together account for about 78 percent of Canada's greenhouse gas emissions—are not expected to bring emissions below 1990 levels; they may only slow the rate at which greenhouse gas emissions in these sectors continue to grow. A voluntary agreement with the automotive industry contains no provision for independent verification of the model, data, and results used to determine progress.
- The proposed systems for reducing greenhouse gas emissions from large industrial emitters and for domestic emissions trading are highly complex. Progress to date has been slow, and many issues, such as public disclosure of key data, have yet to be resolved.

Distinctive features of the domestic emissions trading system, particularly the \$15 per tonne price cap promised to industry, present potentially serious financial risks to the Canadian taxpayer that could range from zero to over \$1 billion.

- Environment Canada and Natural Resources Canada, the departments sponsoring Sustainable Development Technology Canada, have taken reasonable steps to oversee the Foundation's climate change activities under its funding agreements. For its part, the Foundation has taken reasonable steps toward fulfilling its climate change mandate. In all significant respects, it has adhered to its funding agreements with the government in its strategic decisions and its selection of projects for investment. It has also put in place a satisfactory process for measuring and reporting the results of its climate change activities, although it is too early to report on actual reductions in greenhouse gas emissions. However, we have some concerns with respect to the Foundation's reporting of projected reductions by 2010.

The audited organizations have responded. The organizations have accepted all of our recommendations; their responses are included with the related recommendations throughout the chapter. However, apart from some of the measures Natural Resources Canada and Sustainable Development Technology Canada have agreed to take, the responses make no firm commitment to specific actions with the time frames for implementation.

Introduction

For a detailed description of the climate change issue, please consult **The Commissioner's Perspective**, which includes a section called **Climate Change—An Overview**.

1.1 Canada has made important commitments to address climate change. When Canada signed the Framework Convention on Climate Change in 1992, among other international legal obligations, it committed to adopting policies and measures to reduce its greenhouse gas emissions and promote adaptation to climatic changes. In 1997 the government adopted the Kyoto Protocol and subsequently pledged to reduce Canada's greenhouse gas emissions to six percent below 1990 levels during the commitment period of 2008 to 2012.

1.2 Addressing climate change requires the co-operation of many players. While the responsibility for signing international agreements rests with the federal government, all players must co-operate if Canada is to meet this challenge. Federal players include Environment Canada, Natural Resources Canada, Transport Canada, Foreign Affairs and International Trade Canada, the Canadian International Development Agency, Indian and Northern Affairs Canada, Industry Canada, Public Works and Government Services Canada, Infrastructure Canada, Agriculture and Agri-Food Canada, the Treasury Board Secretariat, the Privy Council Office, Finance Canada as well as federally funded foundations such as Sustainable Development Technology Canada. While the provincial and territorial governments, industry, municipal governments, and individual Canadians also have significant roles to play, this chapter reports on the actions of some of the key federal players.

1.3 The federal government's response to climate change has evolved. Since 1997, the Government of Canada has made incremental investments in climate change through successive budgets. These investments supported measures in the three federal climate change plans that Canada has unveiled since 1997:

- *Government of Canada Action Plan 2000 on Climate Change*
- *Climate Change Plan for Canada (2002)*
- *Project Green—Moving Forward on Climate Change: A Plan for Honouring Our Kyoto Commitment (2005)*

Each plan built on past actions and proposed new measures to achieve Canada's climate change objectives. Exhibit 1.1 summarizes the three different plans that the government has produced, within the context of major Kyoto events. Exhibit 1.2 summarizes the major related funding announcements that have occurred during this period.

Did you know?

Prior to 1997, the Government of Canada released two national climate change plans, which involved the participation of provincial governments and other stakeholders:

- the 1990 *National Action Strategy on Global Warming*, and
- the 1995 *National Action Program on Climate Change*.

Government expenditures to 31 March 2005 on climate change initiatives have been primarily in the areas of mitigation programs and transfers to foundations. Lesser amounts were spent on international programs, public education and outreach, climate change science, impacts and adaptation, technology and innovation, and policy development.

1.4 Climate change requires transformative change. According to the federal government, the 2005 plan was not designed just to reduce greenhouse gases but to transform the way Canada’s social and economic practices affect the climate. In past reports we have made several recommendations for government action to begin the needed change (Exhibit 1.3).

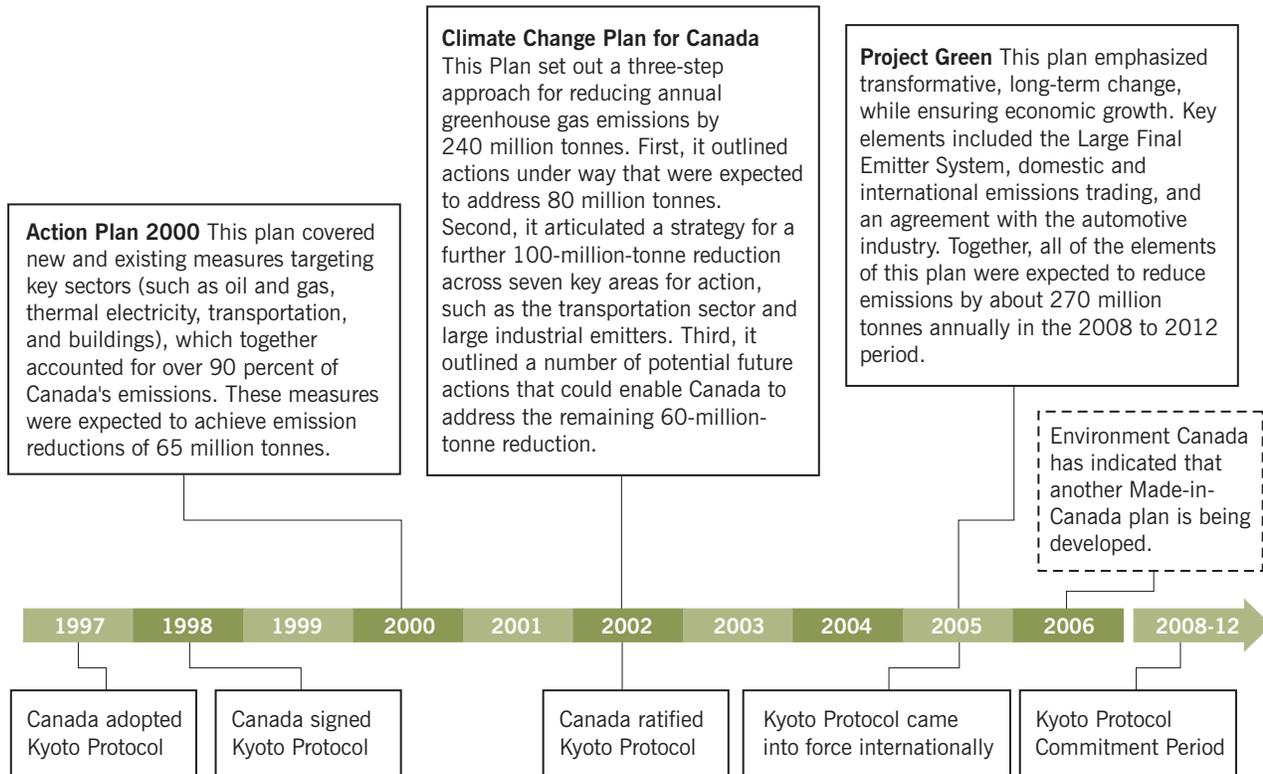
Focus of the audit

1.5 We examined major elements of how the federal government is managing its approach to climate change, including whether

- the government has in place a suitable management framework for the climate change initiative,
- the government is assessing major federal spending related to climate change in a way that enables it to report fairly and reliably on the costs involved in the climate change initiative, and

Exhibit 1.1 Summary of the three different federal plans to address greenhouse gas emissions since 1997

Summary of the different plans



Kyoto events

Exhibit 1.2 Summary of federal climate change funding announcements between 1997 and 2005

Year	Climate change funding announcements
1997	\$60 million
1998	\$150 million
2000	\$1.12 billion
2001	\$405 million
2003	\$2.00 billion
2004	\$800 million
2005	\$1.82 billion*
Total	\$6.36 billion

* Budget 2005 also allocated an additional \$1.51 billion for the period from 2010 to 2020 to develop alternative energy sources, such as wind power.

Exhibit 1.3 Past audit observations—key management issues raised

In the Commissioner's 1998 Report, Chapter 3, Responding to Climate Change—Time to Rethink Canada's Implementation Strategy, we concluded that the failure to meet Canada's climate change commitments was primarily the result of poor planning and ineffective management. We recommended that the federal government take the lead, in collaboration with other levels of government and major stakeholders, in a determined national effort designed to achieve Canada's climate change commitments. This effort would take the form of a formal, results-based implementation plan with

- performance expectations,
- interim targets, and
- a monitoring system.

In the Commissioner's 2001 follow-up report, Chapter 6, Climate Change and Energy Efficiency: A Progress Report, we noted that the federal government had made some progress in developing a management structure for climate change, but none in providing comprehensive information to Parliament. We noted that the federal government needed to continue to

- clarify federal roles and responsibilities,
- develop a broader portfolio of measures to meet Canada's climate change commitments, and
- provide fuller information to Parliament.

In the Auditor General's 2000 Report, Chapter 20, Managing Departments for Results and Managing Horizontal Issues for Results, we recommended that the Treasury Board Secretariat play a stronger leadership role in horizontal issues, including ensuring that resources are available for co-ordination and management.

In the Auditor General's 2005 Report, Chapter 4, Managing Horizontal Initiatives, we noted that the insufficient attention the Privy Council Office and the Treasury Board Secretariat have paid to horizontal initiatives has caused weaknesses in

- horizontal governance,
- accountability, and
- co-ordination.

- the government's targets and policy tools for reducing greenhouse gas emissions in the areas of transportation and large industrial emitters are based on sound data and analysis.

1.6 We also examined how the government is using two new mechanisms as tools to help reach its targets for reducing greenhouse gas emissions. We looked at its preparedness to implement an effective domestic greenhouse gas emissions trading system in Canada. We also examined the climate change activities of Sustainable Development Technology Canada, a foundation established by the government to invest in developing and demonstrating new sustainable technologies.

1.7 During the course of the audit, an election took place and the Government of Canada changed. Since taking power in February 2006, the new government has indicated that some policy changes with regards to climate change may occur and that another climate change plan is being developed. Given that many of these elements have not been finalized, they are not all reflected in the audit report.

1.8 More information on the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of the chapter.

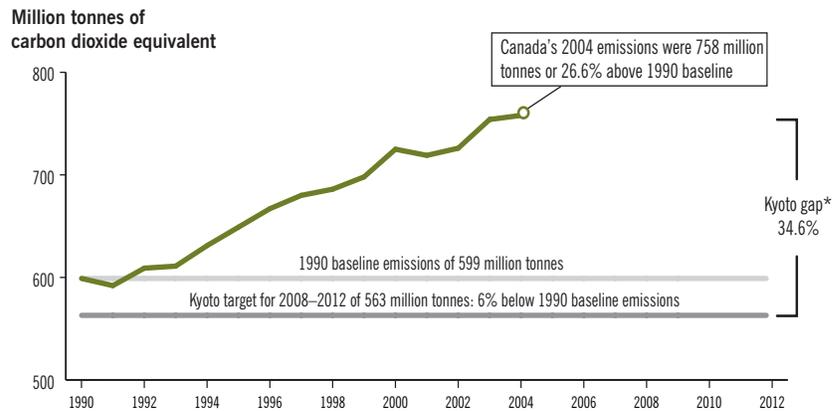
Observations and Recommendations

Managing the federal approach

Canada is not on track to reduce its total greenhouse gas emissions

1.9 **Canada's current greenhouse gas emissions are rising—the Kyoto gap is growing.** According to the 2004 greenhouse gas emissions inventory data from Environment Canada, Canada's emissions are 26.6 percent higher than they were in 1990, resulting in a gap of 34.6 percent from Canada's Kyoto target. As the gap continues to widen and more time passes, the Kyoto target is becoming more difficult to attain (Exhibit 1.4).

1.10 **Evolution of the approach to climate change.** Canada adopted the Kyoto Protocol in 1997. We expected that the federal government would have conducted economic, social, environmental, and risk analyses in support of its decision to sign the Kyoto Protocol in 1998, before taking on what the Government of Canada now considers to be the most challenging target among Kyoto signatories. With regards to the specific target, we found that little economic analysis was completed, and the government was unable to provide evidence of detailed social, environmental, or risk analyses. The federal government made a decision to set its target at minus six percent to be

Exhibit 1.4 The gap between Canada's greenhouse gas emissions and its Kyoto target is growing

* Mathematical procedures for calculating the gap do not involve adding the percentages. In addition, percentages have been calculated using the original unrounded numbers.

Source: Adapted from Environment Canada's *National Inventory Report 1990–2004: Greenhouse Gas Sources and Sinks in Canada* (April 2006)

in line with its major trading partners and, in particular, to be close to the minus seven percent target that the United States was expected to adopt at that time.

1.11 Regardless of that decision, the government recognized that new approaches, including a major economic tool, would be needed to meet the challenge. In 1998, federal, provincial, and territorial governments established a multilateral National Climate Change Process to engage them and other stakeholders in examining the impacts, costs, and benefits of addressing climate change. The federal government noted that some immediate measures were also required to gain momentum and engage the public. Action Plan 2000 introduced transitional actions in all sectors.

1.12 The National Climate Change Process ended in October 2002. However, the provinces and territories still need to be involved if Canada is to achieve its goals. The federal government has since worked bilaterally with the provinces and territories to negotiate memoranda of understanding as the basis for co-operating on climate change and sharing the costs of some programs and projects.

1.13 Following ratification of the Protocol in 2002, the federal government placed greater emphasis on meeting its Kyoto target. The 2002 plan therefore built on actions under way and introduced new measures to reduce emissions. The 2005 plan went one step further, linking economic prosperity and environmental progress through market-based mechanisms such as emissions trading.

1.14 While signatories to the Kyoto Protocol recognize that it is only the first phase of ongoing international action on climate change, Canada has not yet joined some other industrialized countries in establishing a long-term emission reduction objective or strategy.

Governance mechanisms for climate change are inadequate

1.15 In our 1998 Report, we noted that the federal government needed to apply the basics of good management—**governance** and **accountability**—to a subject as complex as climate change. At a minimum we expected that the government would clarify its leadership role and the roles and responsibilities of the various federal players in achieving Canada’s climate change commitments. Governance and accountability mechanisms apply to all elements of the federal government’s climate change approach from mitigation to impacts and adaptation. The federal government’s progress since then has been sporadic.

1.16 Several recent studies have commented on the need for governance mechanisms to manage federal climate change activities. In 2005, the House of Commons Standing Committee on the Environment and Sustainable Development found that actions to reduce greenhouse gas emissions were ad hoc, lacked an overall strategy, and did not have an accountability framework. Environment Canada, in a risk assessment it completed in April 2004, found there was no central ownership of the initiative, leading to non-integrated policies.

1.17 Addressing a complex, long-term challenge such as climate change, like any other horizontal initiative, requires well-designed mechanisms to

- co-ordinate federal activities across departments,
- hold departments accountable for their **performance** against agreed-upon objectives, and
- report to Parliament and Canadians about the overall performance of the initiative.

1.18 Chapter 4 of the November 2005 Report of the Auditor General said that the Privy Council Office and the Treasury Board Secretariat had not given enough sustained attention to how horizontal initiatives were set up and managed. The report noted that roles and responsibilities in the selected horizontal initiatives examined (not including climate change) were not defined clearly and that accountability frameworks were inadequate. While we recognized that

Governance—The processes and structures through which power and authority are exercised, including the decision-making processes. It answers the questions: Who participates? How do they participate?

Accountability—The obligation to demonstrate and take responsibility for performance in light of agreed-upon expectations. It answers the question: Who is responsible to whom and for what?

Performance—To demonstrate how well things are done with regard to expected results. It answers the questions: Are the expected results accomplished? Are they accomplished within budget and in the most efficient manner? Are there undue, unintended consequences?

federal departments and agencies should manage initiatives, we expected that the central agencies would ensure appropriate governance, accountability, and co-ordination.

1.19 Earlier co-ordination mechanisms have been phased out and not replaced. In 1998, the federal government created a Climate Change Secretariat, with a mandate to co-ordinate federal government actions and to work with provincial governments and industry on a national strategy. The Secretariat chaired a number of interdepartmental committees and reported jointly to the deputy ministers of Natural Resources Canada and Environment Canada.

1.20 The Climate Change Secretariat provided a forum for co-ordinating and integrating the efforts of departments and was responsible for preparing reports to Parliament on federal climate change activities and their results. The Climate Change Secretariat was phased out in 2004.

1.21 The roles of Natural Resources Canada and Environment Canada have changed over time. Following the 1997 adoption of the Kyoto Protocol, Natural Resources Canada led the development and co-ordination of Canada's domestic implementation strategy, while Environment Canada had primary responsibility for overall environmental policy. The two departments were co-leads for implementing Action Plan 2000 in collaboration with five other departments, and were jointly responsible for overseeing the implementation of the emissions reductions package approved in 2003. In 2002, Natural Resources Canada was given responsibility to negotiate with industry on an approach for reducing their greenhouse gas emissions; in May 2005, this responsibility was transferred to Environment Canada. Environment Canada currently has the lead responsibility for climate change including co-ordination with other federal departments to identify and develop specific priorities and activities to support the federal strategy.

1.22 Since 2003, documents prepared for ministers have indicated that, in light of the government's strengthened response to climate change, renewed governance mechanisms and institutions would soon be put in place. However, to date, many elements of an effective governance structure are still lacking. These include

- clear definitions of the roles and responsibilities of departments and central agencies,
- appropriate co-ordinating bodies and supporting management structures, and

- an oversight capacity to hold departments accountable for performance against agreed-upon objectives and to report to Parliament and Canadians about the overall performance of the climate change initiative.

1.23 Development of accountability tools has been delayed.

Involving a number of departments in an initiative increases the complexity and importance of effective performance measurement and reporting. Developing performance indicators and appropriate information management systems is essential. To this end, under the leadership of the Treasury Board Secretariat, in 2003, departments responsible for climate change programs undertook to develop a management and accountability framework for climate change.

1.24 According to guidance provided by the Treasury Board Secretariat, the management and accountability framework for any horizontal issue should

- describe the roles and responsibilities of the main partners,
- describe the logical sequence of activities and results,
- determine appropriate performance measures,
- set out the evaluation framework, and
- ensure adequate reporting on results.

1.25 The management and accountability framework for climate change is a prototype—the first of its kind for a major horizontal initiative. While the Treasury Board Secretariat has not usually played an active role in managing horizontal initiatives, it became involved in the climate change issue to develop management tools and processes that it could apply to similar initiatives. The Secretariat has indicated that progress on developing the framework has been slow because of the need to develop new approaches and to collaborate extensively with departments.

1.26 Work on completing the management and accountability framework was set aside to carry out a review of climate change programs announced in the 2005 Budget and in the 2005 climate change plan. Two essential parts of the framework remain outstanding: the development of governance mechanisms and the implementation of the performance management framework. The status of work on the governance mechanisms is unknown. The Treasury Board Secretariat has indicated that it intends to update the performance management framework in the 2006–07 fiscal year.

Reporting to Parliament and the public is deficient

1.27 Spending information still not integrated. Gathering and summarizing data on spending by horizontal initiatives is difficult, as existing government systems are not designed to collect and report spending across departments. Work to date on the management and accountability framework has included developing an electronic system to capture financial information on climate change programs for management purposes. In 2004, departmental program managers were requested to provide information on the funds authorized, committed, and spent on climate change programs, which the Treasury Board Secretariat entered in its electronic system. However, the Secretariat has not yet fully verified the departmental data reported to ensure that it is accurate and complete, nor has it been updated. The system does not include funds transferred to foundations and details of their spending. An update of the financial data is planned for the summer of 2006, including relevant departmental sign-offs from chief financial officers.

1.28 Exhibit 1.5 illustrates one use of such information and the problems that can occur when the information is not current and verified. Until the current system is improved, it is not sufficiently accurate for management and reporting purposes.

Exhibit 1.5 Federal government's response to a parliamentarian's question on climate change expenditures

Between 1997 and 2003, the federal government announced \$3.7 billion in climate change funding. In March 2005, a parliamentarian asked how much of this money had been spent on Canada's preparations to meet its Kyoto Protocol commitments. The Treasury Board Secretariat prepared summary and contextual information for the interdepartmental response to the question, and individual departments provided details of the departmental expenditures.

According to the reported response, by the end of fiscal year 2003–04, federal departments had disbursed \$1.6 billion of the \$3.7 billion allocated (including \$710 million transferred to foundations such as Sustainable Development Technology Canada).

We reviewed the detailed expenditures reported by departments and recorded by the Secretariat in its database and were unable to reconcile them to the total that was reported. The Secretariat informed us that it had used a combination of financial information from its database, updated financial information reported by departments, and funds allocated to foundations to prepare the summary of climate change expenditures. However, it was unable to provide us with documentation to fully substantiate the total it had reported. The detailed departmental figures included in the response were about \$250 million less than the \$1.6 billion reported. The Secretariat explained that these differences were the result of a double-counting error made during the preparation of the summary.

1.29 Performance information systems still being developed.

Since 1995, the federal government has been committed to managing for results; this means that ministers, senior officials, and managers make decisions based on what results programs have been achieving and at what cost. Developing meaningful performance measures and performance expectations can be one of the most difficult aspects of managing for results, and it can take time. In the case of climate change, for many programs it is difficult to measure and link program activities to results that can take years to appear.

1.30 In 2005, the federal government announced a comprehensive review of climate change programs to determine whether programs should be maintained, expanded, or terminated, based on such criteria as the programs' impact on competitiveness, partnership with other stakeholders, innovation, and cost-effectiveness. By October 2005, the Treasury Board Secretariat had completed its review against these criteria.

1.31 Considerable work remains to complete, update, and maintain the system for monitoring and reporting on climate change spending and performance. While the Treasury Board Secretariat has undertaken initiatives in these areas, central agencies have not assigned final responsibility for these processes.

Did you know?

The environmental petitions process that the Commissioner of the Environment and Sustainable Development administers allows Canadians to present their concerns about environmental issues formally to federal ministers and to obtain a response. See Chapter 5, Environmental Petitions, for additional details about the process.

1.32 Promised public reports not issued. In the *Climate Change Plan for Canada* (2002), the federal government committed to publishing reports every two years outlining the plan's successes and describing its evolution as it is adjusted to meet new challenges. The government's response to environmental petition 63 reiterated this commitment.

1.33 There has been, however, no comprehensive report since June 2003 about the overall results of the government's climate change efforts. The federal government's climate change Web site has been a source of general information. Natural Resources Canada prepares regular reports about energy use, and a number of departments refer to climate change activities in their annual performance reports to Parliament. The 2005 plan states, "We will report annually to Canadians on our progress, beginning in 2008." The federal government has not yet assigned responsibility for preparing this report. At present, there is no overall reporting of expenditures or results.

1.34 Recommendation. Environment Canada, in collaboration with the Privy Council Office and the Treasury Board Secretariat, should ensure the development and implementation of effective governance and accountability for the climate change issue within the federal

government. Key roles and responsibilities should be defined, assigned, and publicly reported; and which departments participate and how they do so should be specified. Appropriate funding, development, and implementation of mechanisms need to be established for

- overall decision making,
- ongoing interdepartmental co-ordination,
- monitoring and reporting to Parliament and to Canadians about past and future financial and non-financial performance related to climate change activities, and
- evaluation and adjustment of policies and programs for climate change.

The government's response. It is correctly pointed out in this chapter that a complex issue that implicates a number of federal organizations such as climate change requires effective horizontal management, including appropriate governance and accountability mechanisms. The government agrees that roles and responsibilities should be clearly defined, processes to support decision-making and co-ordination established, results reported to Parliament and Canadians in a transparent manner, and policies and programs subjected to regular evaluation and adjustment.

In its response to Chapter 4 of the November 2005 Report of the Auditor General of Canada, the government made specific note of the central agency function in respect of horizontal initiatives. That function is to play a facilitating role in the launch of such initiatives in order to ensure that they are positioned effectively within government priorities and are established in such a way as to ensure that an integrated approach is developed. The Privy Council Office ensures that appropriate departments are involved in the Cabinet processes, that departmental leadership roles are identified, and that, where necessary, horizontal governance structures are put in place.

At the same time, the Privy Council Office and other central agencies, such as the Treasury Board Secretariat, must respect the leadership and accountability of departments to implement initiatives, such as climate change, in a manner that is consistent with their areas of responsibility and respects Treasury Board management practices. As is acknowledged in this chapter, it is the responsibility of departments and agencies to manage such initiatives.

The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective

measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development on governance and accountability will be considered in developing the agenda.

The federal approach in the transportation sector

Key measures examined do not adequately address emissions in the transportation sector

1.35 The transportation sector alone accounts for about 25 percent of greenhouse gas emissions in Canada (Exhibit 1.6). It plays a vital role in the lives of Canadians and the economy, by enabling the movement of people and goods and the provision of services.

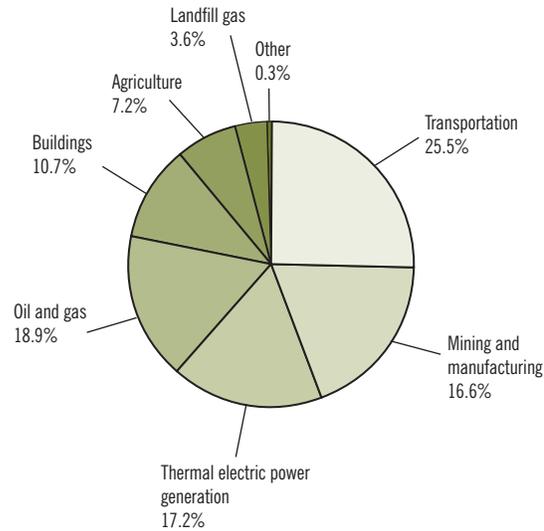
1.36 Reducing emissions in the transportation sector is a complex challenge that needs to address not only emissions from the ever-increasing number of cars and trucks on the road but also from air, sea, and rail transportation (Exhibit 1.7). Doing so will require long-term, transformative changes in vehicle technology, fuel mix, and infrastructure, as well as in individual Canadians' behaviours and transportation choices.

1.37 In its 2000 plan, the federal government proposed several measures to reduce emissions from transportation by an initial target of 9 million tonnes. The 2002 plan built on this foundation, with additional measures and a revised sectoral target of 21 million tonnes. By contrast, the 2005 plan contained only one well-defined measure for transportation—a memorandum of understanding with the automotive industry.

1.38 We are concerned about the lack of a federal strategy for reducing emissions from transportation, given the current level of emissions and regulatory framework available to the federal government in this sector. Responsibility for transportation is shared among three federal departments (Transport Canada, Environment Canada, and Natural Resources Canada). Thus, a federal strategy is critical to ensuring a co-ordinated effort.

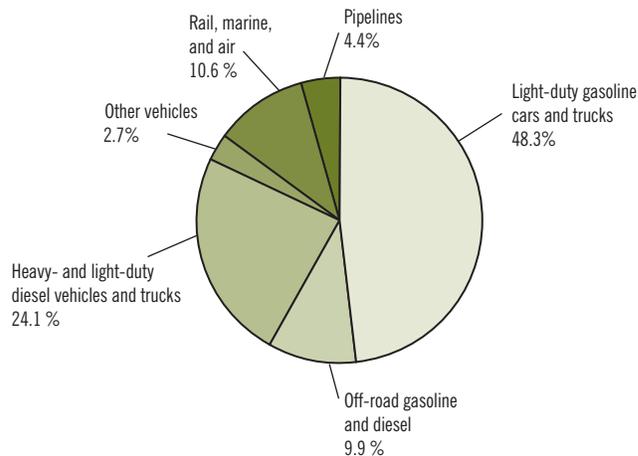
1.39 Policy decisions also need to be based upon sound analysis. Under the National Climate Change Process, one expert group was assigned to look at achieving emission reductions from transportation. The group's work culminated in *Transportation and Climate Change: Options for Action* (1999). This environmental, social, and economic analysis formed the basis for the targets and measures in Action Plan 2000, the 2002 plan, and supported the 2005 automotive industry agreement.

Exhibit 1.6 Canada's greenhouse gas emission sources in 2004



Source: Adapted from Environment Canada's *National Inventory Report 1990–2004: Greenhouse Gas Sources and Sinks in Canada* (April 2006)

Exhibit 1.7 Light-duty gasoline cars and trucks made up almost half of the emissions from the transportation sector in 2004



Source: Adapted from Environment Canada's *National Inventory Report 1990–2004: Greenhouse Gas Sources and Sinks in Canada* (April 2006)

1.40 2005 automotive industry agreement falls short in a few key areas. In April 2005, the Canadian Vehicle Manufacturers' Association and the Association of International Automobile Manufacturers of Canada signed a memorandum of understanding with Natural Resources Canada, on behalf of the Government of Canada, committing to reduce greenhouse gas emissions from



Light-duty vehicles are a key source of greenhouse gas emissions in Canada.

Photo: Bastiaan Kalt

light-duty vehicles by 5.3 million tonnes by 2010. This objective is to be achieved largely by improving fuel efficiency and introducing advanced emission technologies, advanced diesel technology, alternative fuel vehicles, hybrids, and other technologies to reduce greenhouse gas emissions.

1.41 In the Commissioner's 1999 Report, Chapter 4, *Managing the Risks of Toxic Substances: Obstacles to Progress*, we outlined the key criteria for a successful voluntary agreement signed with a third party. Given that the government has used voluntary agreements with industry to address major environmental and health concerns, it is important that these agreements include, among other elements, effective objectives and measures and that they work transparently. This list of criteria was subsequently incorporated into Environment Canada's 2001 *Policy Framework for Environmental Performance Agreements*.

1.42 The agreement between Natural Resources Canada and the automotive industry does meet many of the criteria for voluntary agreements, for example, in clearly identifying an environmental objective and clear targets. However, one key area of concern is the lack of credible independent verification of the model, data, and results that will be used to determine progress (see Exhibit 1.8).

1.43 Although the agreement is only in effect until 2010, the Department has indicated that any new technologies that are placed on the market as a result of the agreement are expected to lead to growing reductions in greenhouse gas emissions after 2010 as new vehicles replace older ones. The Department claims that reductions will grow to 11.2 million tonnes by 2015. However, as Exhibit 1.9 shows, the agreement may only reduce the rate at which emissions from light-duty vehicles continue to increase. In addition, the exhibit highlights a discrepancy between the data used by Natural Resources Canada and Environment Canada's national inventory report, which Natural Resources Canada has not yet resolved.

1.44 Recommendation. Natural Resources Canada should ensure that the model, data, and results from the 2005 memorandum of understanding with the automotive industry are independently verified and that the results of the verification are reported publicly.

Natural Resources Canada's response. Natural Resources Canada agrees with the recommendation. The Department has initiated discussions with the vehicle industry on independent verification of the data, model, and results from the accounting model used to

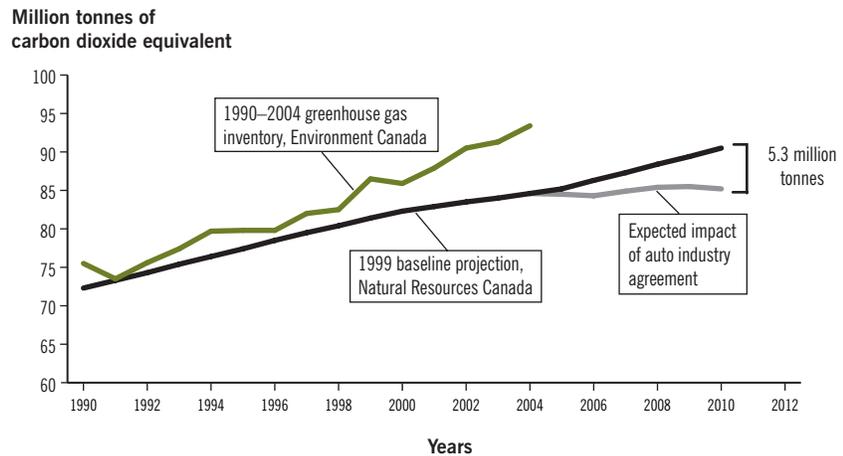
monitor the memorandum of understanding with the auto industry before the first report on interim goals for the 2007 model year. The intention would be to ensure that the results of that verification would be available to the public. In addition, the department and industry have already released a progress report that is supplemental to the requirements of the memorandum of understanding.

Exhibit 1.8 Assessment of the 2005 automotive industry agreement against criteria for voluntary agreements

Criteria for voluntary agreements (as outlined in Chapter 4 of the Commissioner's 1999 Report)	Assessment of the 2005 agreement
Clearly identified environmental objective(s)	There is a clear environmental objective—the reduction of greenhouse gas emissions by light-duty vehicles.
Baseline levels that exist at the beginning of the agreement	The 2010 business-as-usual emissions* baseline projection upon which the agreement was negotiated with industry did not take into account all of the updated information available at the time of negotiations in 2004–05. Using Canada's <i>Emissions Outlook Update: 1999</i> , Natural Resources Canada had estimated that projected greenhouse gas emissions from light-duty gasoline vehicles would be 90.5 million tonnes in 2010. However, Environment Canada's <i>National Inventory Report 1990–2002</i> noted that 2002 emissions from that sub-sector were already over 90 million tonnes.
Clear targets with timelines	There is a clear overall target for 2010, along with intermediate targets for 2007, 2008, and 2009.
Meaningful performance measures	A complex model has been developed for measuring progress against the targets.
Clearly defined roles and responsibilities	Roles and responsibilities of Natural Resources Canada and the automotive industry are defined by the agreement.
Consequences for failing to meet targets and rewards and recognition for achieving them	The agreement precludes penalties for companies, or for the industry as a whole; there is only a general statement that “the Government of Canada has the right to regulate . . . and will do so if it deems necessary.” However, Natural Resources Canada has stated that fewer reductions would be possible under a regulated approach than through a voluntary agreement.
Periodic public reporting requirements	There is a commitment to annual performance reporting. The Department has indicated that periodic progress reports and updates will be made public.
Provision for regular credible verification	The model, data, and results used to determine progress will not be independently verified prior to the release of any reports.
Regular evaluation of initiative to determine progress and consider whether corrective action is necessary	Natural Resources Canada has indicated that an interdepartmental Director General Committee is in place to guide government evaluation of progress and to identify any necessary corrective action.

* The bolded text is defined in the section on large industrial emitters (see page 21).

Exhibit 1.9 The automotive industry agreement may only slow the rate of growth in greenhouse gas emissions from light-duty gasoline vehicles



The auto industry agreement may only slow the rate of emissions growth for light-duty gasoline vehicles (cars and trucks). In addition, there is a discrepancy between Natural Resources Canada’s projections used for the agreement and Environment Canada’s national inventory report.

Sources: Adapted from Environment Canada’s *National Inventory Report 1990–2004: Greenhouse Gas Sources and Sinks in Canada* (April 2006) and *Canada’s Emissions Outlook Update: 1999* by Natural Resources Canada

1.45 Recommendation. In any future voluntary agreements, Natural Resources Canada should establish requirements similar to those found in Environment Canada’s 2001 *Policy Framework for Environmental Performance Agreements*. While the automotive industry agreement addresses many of these requirements, at a minimum, such future agreements should include

- senior-level commitment by involved parties,
- clearly identified environmental objectives,
- baseline levels measured at the beginning of the agreement,
- clear targets with timelines,
- meaningful performance measures,
- clearly defined roles and responsibilities for all parties,
- consequences for failing to meet targets and incentives for achieving them,
- periodic public reporting requirements,
- provision for regular credible verification, and
- regular evaluation of the agreement to determine progress and options for implementing corrective action, where necessary.

Natural Resources Canada's response. Natural Resources Canada recognizes the requirements listed in Exhibit 1.8 of the present report and identified in Environment Canada's 2001 *Policy Framework for Environmental Performance Agreements*. The Department will immediately investigate options for adopting a similar policy framework for future voluntary agreements in the auto sector and for other sectors.

Addressing greenhouse gas emissions from large industrial emitters



Large industrial emitters, like thermal power generation, are a key source of greenhouse gas emissions in Canada.

Photo: Bastiaan Kalt

Fixed-process emissions—Greenhouse gas emissions that are driven purely by chemical reactions, not by fuel combustion, for example, the electrolytic processes used by smelters to produce aluminium emit carbon dioxide.

Business-as-usual emissions—Greenhouse gas emissions that would occur in the absence of any specific requirements to reduce emissions.

Approach to address emissions from large industry promises only limited results

1.46 Industry makes an important contribution to Canada's economic base. The oil and gas, thermal electricity, and mining and manufacturing sectors together account for around 53 percent of Canada's greenhouse gas emissions (Exhibit 1.6). Action Plan 2000 contained measures to target these major industrial sectors and others. The 2002 plan then grouped the three main industrial sectors into an approach for large industrial emitters. The development of an approach to reduce emissions from these sectors, which came to be called the Large Final Emitter System, was continued, with some revisions, in the 2005 plan. The approximately 700 companies that constitute the largest industrial emitters from these three sectors produce a significant portion of the emissions.

1.47 Emission reduction targets for large industry have decreased. Together, measures targeting large industry in the 2000 and 2002 federal plans were expected to achieve a greenhouse gas emissions reduction of about 95 million tonnes. Of this, 25 million tonnes were associated with measures in the 2000 plan. The remainder, 70 million tonnes, were associated with measures in the 2002 plan—of which 55 million tonnes was associated with what is now called the Large Final Emitter System. However, the plans did not specify how the target of 25 million tonnes was calculated. Nor was the government able to provide us with any analysis to support its selection of 55 million tonnes as a target.

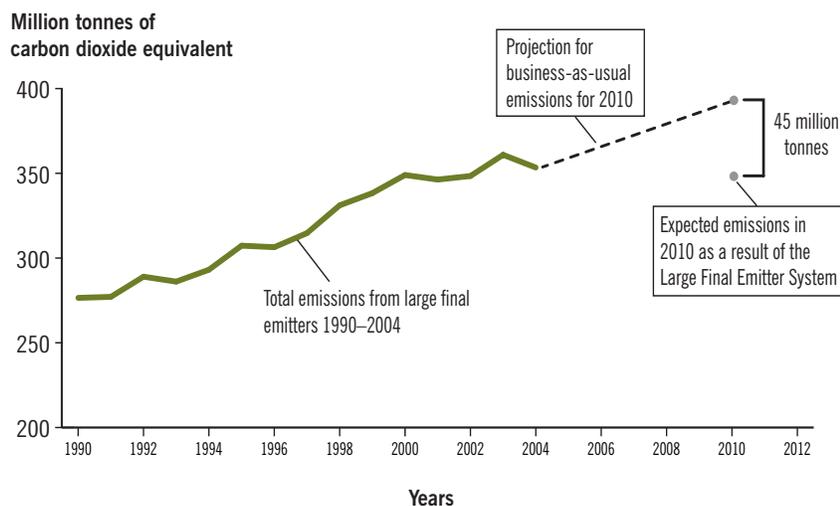
1.48 Since 2002, the design of the Large Final Emitter System has been adjusted to reflect consultations with industry. The government stated that, as a result of those discussions, the target was reduced in response to concerns such as issues of competitiveness for companies with **fixed-process emissions**. Consequently, the 2005 plan lowered the overall greenhouse gas reductions expected of industry from 55 million tonnes to 45 million tonnes. However, the **business-as-usual emissions** baseline from which the reductions are calculated has been revised up by 6 million tonnes since 2002.

In addition, companies that are part of the Large Final Emitter System will be able to receive credit for reductions of up to 9 million tonnes by investing in the Greenhouse Gas Technology Investment Fund. These changes mean that the actual annual reductions by large final emitters in the 2008–12 period could be 30 million tonnes, about 65 million tonnes less than was expected through the 2002 plan, when the scope of initiatives targeting industry was broader.

Emissions intensity—Amount of greenhouse gas emissions (in carbon dioxide equivalency) per unit of output.

1.49 Federal approach for large industrial emitters may only reduce the rate of emissions growth. Projections for large industrial emitters show that the proposed Large Final Emitter System, which aims to reduce the **emissions intensity** of industrial activities, would not lower absolute emissions below 1990 levels (Exhibit 1.10). A projected growth in production by industry, particularly in the oil and gas sector, will mean that this approach may only slow the rate at which emissions from many large industrial emitters continue to grow.

Exhibit 1.10 The Large Final Emitter System may only slow the rate of growth in greenhouse gas emissions by 2010



Source: Adapted from Environment Canada’s *National Inventory Report 1990-2004: Greenhouse Gas Sources and Sinks in Canada* (April 2006) and data provided by Environment Canada’s Greenhouse Gas Directorate

1.50 The stated objectives of the Large Final Emitter System are to reduce greenhouse gas emissions through a regulated, market-based approach, and to maintain industrial competitiveness by ensuring that no region or sector is unreasonably burdened. Companies covered by the system would be able to choose from the following options to comply with large final emitter regulation:

- Reduce their emissions by, for example, adopting more energy efficient technology
- Invest in the Greenhouse Gas Technology Investment Fund
- Buy emission reductions credits from other large industrial emitters or from projects that offset emissions, as part of a domestic emissions trading scheme
- Purchase foreign emission reduction credits through mechanisms under the Kyoto Protocol

The federal government is also developing a mechanism that will ensure that companies can achieve compliance at a cost of no more than \$15 per tonne.

1.51 Further analysis needed. Action Plan 2000 contained emission reduction measures for industry based on economic, social, and environmental analyses undertaken through the National Climate Change Process in 1998 and 1999. Supplemental economic analyses led the federal government to incorporate emissions trading in the 2002 plan, as a tool to help large industrial emitters reduce their greenhouse gas emissions. This continues in the 2005 plan as a key feature of the Large Final Emitter System. However, analysis of the approach remains incomplete because some of the components of the approach, such as sector specific regulation, or the manner by which the \$15 price assurance mechanism will be implemented, have not yet been finalized by Environment Canada.

1.52 Environment Canada faces the challenge of completing the necessary elements of the Large Final Emitter System before it begins operation on 1 January 2008. Environment Canada, with the assistance of other stakeholders, has shown progress in developing and phasing in mechanisms for the mandatory reporting of facility-based greenhouse gas emissions. This is critical to the success of the Large Final Emitter System. However, public reporting was delayed by about one year. Critical infrastructure such as the regulation that will enforce the Large Final Emitter System and a registry to track emission credits has not yet been completed. Furthermore, the costs for administering the Large Final Emitter System are currently unknown.

1.53 Need to address potential risks in the Large Final Emitter System. The Large Final Emitter System's multiple objectives and its various options for compliance have resulted in a very complex design. Key risks of the proposed approach still need to be addressed by Environment Canada (see Exhibit 1.11).

Exhibit 1.11 Key risks of the proposed Large Final Emitter System

Key risks	Explanation
<p>Uncertainties with the 2010 projection for business-as-usual emissions</p>	<p>The 2010 projection for business-as-usual emissions is not only the basis for reduction targets, but is also a key starting point for assumptions behind the policy choices made in the 2002 and 2005 plans. The 2010 business-as-usual projection has, however, come to be seen by many as outdated and problematic. Also, no public document has been made available that has separated out the 2010 business-as-usual figures for each of the large industrial emitter sectors. Without a reliable baseline showing what the business-as-usual emissions would be, there is a risk that the level of expected reductions may not be realized or may be inaccurate, and that the cost and effort to achieve the expected reductions may be greater than anticipated.</p>
<p>Uncertain reductions from the Greenhouse Gas Technology Investment Fund</p>	<p>Up to 9 million tonnes of the total target of 45 million tonnes can be addressed through companies' investments in the Greenhouse Gas Technology Investment Fund. Financial contributions are expected to support the development and deployment of innovative domestic technologies that could reduce greenhouse gas emissions. However, investments in the Fund are not expected to generate emission reductions within the system's 2008–12 time frame. Thus, industry is essentially borrowing credit from the future for its compliance in the 2008–12 period. There is also a risk that companies may receive credit for research and development they already have planned, making it difficult for the government to verify what is new, additional research and development for greenhouse gas reductions.</p>
<p>Potential legal challenges to the current approach</p>	<p>The System proposes that new industrial facilities require emission intensity targets equivalent to the emission standard that can be achieved by applying the best available technology in a manner that is economically achievable. However, it is uncertain whether giving different targets for new facilities, compared to other targets for existing facilities, is allowed under legislation. Additionally, for the Large Final Emitter System to work, it was necessary for the federal government to add greenhouse gases to the toxic substances listed under Schedule I of the <i>Canadian Environmental Protection Act, 1999</i>. Industry has expressed opposition to declaring greenhouse gases “toxic” because of concern that putting those emissions in the same category as other substances like lead, mercury, and PCBs may have implications outside the system, such as how investors may perceive these industries. Legal challenges could undermine the Large Final Emitter System altogether.</p>
<p>Questions about transparency in reporting</p>	<p>Regulation will establish the requirements for reporting by large industrial emitters, with legal penalties for non-compliance. Considering the need to ensure industry's progress against emission intensity targets and the need for accountability for achieving results, transparent reporting and verification are integral to the system. However, issues of confidentiality and the public reporting of industry data remain unresolved. In the absence of detailed and transparent information, it will be difficult for the public to verify whether real emission reductions have occurred and what progress large industrial emitters have made against their targets.</p>
<p>Potential federal/provincial/territorial harmonization issues</p>	<p>The Large Final Emitter System will allow interested provinces and territories to sign equivalency agreements with the federal government to enforce industry compliance under provincial regulation. In such cases, harmonization between the federal and provincial legislation will require agreement on key definitions, reporting obligations, approaches to verification of data, and penalty structures for non-compliance. If these regulatory elements are not harmonized, then there is a risk that the burden on the federal government of implementing the large final emitter regulation will be greater than anticipated, and that industry will face multiple compliance obligations and greater administrative costs.</p>

Real emission reductions—Reducing or avoiding actual emissions that would have occurred, resulting from a specific and identifiable action.

Measurable emission reductions—Ensuring that the actual level of greenhouse gas emissions associated with an action can be quantified.

Verifiable emission reductions—Ensuring that the methodology used to calculate emission reductions is transparent and replicable, and the appropriate data required to verify or audit the calculations is available and can be confirmed.

Transparency—The open conduct of government activities, so that parliamentarians and the public can monitor and challenge the government's performance to ensure it is consistent with policy intentions, fairness, propriety, and good stewardship. Knowing that their actions and decisions are visible encourages ministers and managers of public programs to behave in ways that can withstand public scrutiny.

Conclusion

1.54 Recommendation. Environment Canada should ensure that emissions reductions achieved by the Large Final Emitter System are **real, measurable, and verifiable**, and that the method used to calculate them is **transparent** to parliamentarians and the public. Environment Canada should also assess on an ongoing basis, and in a transparent and timely manner, the uncertainties and risks associated with the system and implement actions to address them.

Environment Canada's response. The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development will be considered in developing the agenda.

1.55 It is essential that the federal government apply the basics of good management—governance and accountability—in its leadership of climate change. This means, as a minimum, that the following are done:

- Those involved clearly understand and agree to their roles and responsibilities
- There is an overall implementation plan, which sets out concrete, results-based targets and timetables for both the short and long term
- There is a results-based monitoring system in place to assess progress
- Adjustments are made as required to achieve the targets
- Overall performance information is tabled in Parliament to assist it in its oversight role

1.56 These essentials were previously raised in the Commissioner's 1998 Report, Chapter 3, Responding to Climate Change—Time to Rethink Canada's Implementation Strategy. Departments responsible for climate change activities have made a considerable effort to develop a management and accountability framework. However, in summary, the government has yet to create an effective governance structure for managing its climate change activities. In addition, there has been no consolidated reporting of performance results since 2003, and no additional reports are expected until 2008.

1.57 Despite billions of dollars in announced funding, there is no government-wide consolidated monitoring and reporting of climate change expenditures. The Treasury Board Secretariat is currently developing a system for capturing spending and performance information, but it is not yet fully operational; responsibility for maintaining it has not been assigned. The Secretariat was unable to provide documentation to fully substantiate the amounts reported in its 2005 response to a parliamentarian's question relating to federal climate change expenditures. Given the system available, we were also unable to accurately replicate the expenditure information. Until the current system is improved, it is not sufficiently accurate for management and reporting purposes.

1.58 Canada's three federal climate change plans in 2000, 2002, and 2005 addressed various aspects of the Canadian economy. The emissions reduction approach in two areas, light-duty gasoline vehicles and large industry, may only slow the rate of increase of greenhouse gas emissions. This is disconcerting since the transportation and industry sectors account for approximately 78 percent of Canada's greenhouse gas emissions. Additionally, in some cases, analysis necessary to support some targets and policy tools was insufficient.

1.59 In 2005, the federal government signed an agreement with the automotive sector to reduce greenhouse gas emissions from light-duty vehicles by 5.3 million tonnes. This agreement meets many of the key criteria for a successful voluntary agreement signed with a third party, such as providing measurable targets with timelines. However, we are concerned about the lack of credible independent verification of the model, data, and results used to determine progress.

1.60 The government's proposed approach to addressing Canada's large industrial emitters is complex. While the government has made progress in mandatory facility reporting, key risks, including the assurance of actual reductions in greenhouse gas emissions and transparency in reporting, remain unresolved.

Emissions trading as a tool

Government use of emissions trading to reduce greenhouse gas emissions is a new tool with challenges to overcome

1.61 Emissions trading is among the compliance options available to companies covered by Canada's proposed Large Final Emitter System. Under this system, companies would have to reduce their greenhouse gas emissions to a level specified by regulation. Companies would receive one credit for every tonne of reduction they achieve below the

required level. They could sell these credits to other companies, who could apply the credits to their own required reductions.

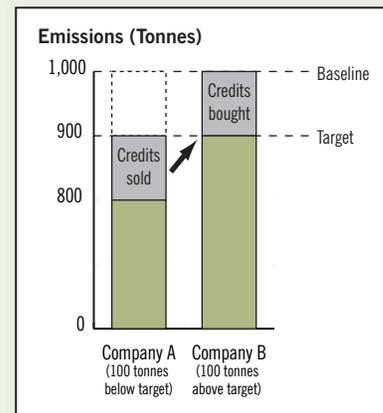
1.62 While emissions trading does not itself reduce emissions, it can make achieving emission reductions more cost effective, by giving companies the flexibility to choose the lowest cost option to meet their reduction requirements—for example, by investing in improvements to their own facilities to reduce emissions, or by buying credits from other companies. The example of an emissions trade in Exhibit 1.12 shows that this flexibility provides a financial incentive for some companies to develop and adopt new sustainable technology.

1.63 The potential benefits of emissions trading have been demonstrated by its application in other jurisdictions for a variety of air pollutants. For example, in 1990 the United States introduced a trading system to control the emission of sulphur dioxide, which causes

Exhibit 1.12 How does emissions trading work?

Two companies, A and B, each produce 1,000 tonnes of emissions per year. A new government regulation reduces the allowable emissions for a company to 900 tonnes per year. Each company is given 900 credits, one per tonne of emissions allowed by regulation. Compliance options include investing in improvements to their own facilities to reduce emissions or buying credits from other companies.

The cost of compliance is different for every company. Company A has old equipment scheduled for replacement. To meet the regulation, it invests \$1,600 in new equipment and reduces its emissions to 800 tonnes per year.



Company B has new equipment that would cost \$5,000 to replace. It continues to use its existing equipment and its emissions remain at 1,000 tonnes per year. As Company B holds only 900 credits, it is not in compliance with the new regulation. To balance its emissions with the credits it holds, Company B purchases the 100 excess credits of Company A at a cost of \$10 per tonne. In total, Company B only pays \$1,000 for compliance. Company A receives money from Company B that helps it to pay for the cost of its new equipment.

Without emissions trading, the net compliance cost for both companies would have been \$6,600. With emissions trading, the net compliance cost was only \$1,600. Thus emissions trading reduced the overall compliance cost and achieved the environmental target.

Real world costs, and thus potential real world savings, would likely be in the millions of dollars.

Source: Adapted from United Nations Environment Programme's *A Guide to Emissions Trading* (2002), Pollution Probe's *Primer on Emissions Trading* (2003), and other sources

acid rain. By helping companies reduce their emissions, this system has contributed to the recovery of lakes and streams affected by acid rain. This emission trading system has several features that make it work effectively:

- an absolute target, which restricts total emissions;
- tradeable credits, which create an economic incentive for companies to exceed their target;
- strict rules for monitoring and reporting emissions;
- public access on the Internet to data on emissions and compliance; and
- financial penalties, which are large enough to encourage compliance.

1.64 Several other countries, and even some private companies, are experimenting with emissions trading to lower the cost of reducing their greenhouse gas emissions. In 2002, the United Kingdom launched an economy-wide domestic trading system for greenhouse gas emissions. In 2005, the European Union launched a trading system involving 25 countries.

1.65 In spite of its advantages, emissions trading represents a significant learning challenge. It is a relatively new policy tool, and Canadian expertise in this area is limited. Further, many emissions trading systems are still experimental and use structures, rules, and terminology that can vary from system to system.

1.66 Governments have yet to resolve a number of difficulties in using emissions trading as a policy tool. For example, emissions trading requires an initial baseline against which to measure subsequent reductions. This requires detailed information about participating entities' recent and projected emissions—information that is not always readily available. Other difficulties include how to

- prevent companies from claiming credits for greenhouse gas emissions for reductions that were already planned;
- ensure that each tonne of emissions reduced is counted only once;
- ensure that credits issued for carbon storage are not reversed, for example, by the release of carbon stored in forests through harvesting or forest fires;
- prevent companies from shifting emissions from one geographic location to another;

- give credit for early action to companies that have voluntarily reduced their emissions; and
- estimate and minimize transaction fees and administrative costs.

These difficulties do not apply to all emission trading systems. While they have not prevented governments from developing trading systems, they are the subject of ongoing discussion and negotiation.

Canada faces challenges to the success of its proposed emissions trading system

1.67 Canada is developing a domestic system for trading greenhouse gas emissions. The 2005 plan expected to use emissions trading to meet close to half of Canada's Kyoto gap. The proposed approach had three complimentary components:

- Large Final Emitter System—Emissions trading is among the options that companies would have to comply with regulation.
- Offset System—A voluntary system in which projects that reduce or remove greenhouse gases would receive one offset credit for every tonne of verified reduction in emissions. This system would be open to any individual or organization in Canada. For example, a landfill operator that installs a methane collection system could apply to Environment Canada to have credits issued for the methane reduced. The credits could be sold to companies to help them meet their targets, and revenue from their sale would be an incentive to undertake such projects. Other eligible areas for offset projects may include forestry, agriculture, renewable energy, and energy efficiency.
- Climate Fund—A tool the federal government could use to purchase both domestic and international emission reduction credits. While designed to help Canada close its Kyoto gap, the Fund would also provide a financial incentive that encourages Canadians to undertake projects that produce offset credits.



Agriculture is a potential source of offset credits.

1.68 Environment Canada is currently responsible for developing and implementing all three components. In 2005, the federal government established a new agency under Environment Canada, the Canada Emission Reduction Incentives Agency, to manage the Climate Fund.

1.69 Price cap may create a financial liability. In 2002, the federal government promised industry that its cost of compliance with the Large Final Emitter System would not exceed \$15 per tonne from 2008 to 2012. While this price cap would reduce the risk to large industrial emitters if credits should trade on the international market

at higher than \$15 per tonne, it leaves the federal government to make up the price difference. For example, assuming the Government of Canada pays the difference and if credits were to trade for \$20 per tonne, the federal government would pay \$5 for every credit purchased. In this example, the Government of Canada would incur a potential liability of as much as \$900 million over a period of five years.

1.70 The federal government's analysis of the price cap is insufficient to give Parliament any assurance about the size of the total potential liability; it could range from zero to more than \$1 billion. Environment Canada recognizes this risk and is developing options for implementing the price cap that would minimize the potential liability. However, it is not yet certain what the actual liability will be, as it will depend on several variables, including the option selected to implement the price cap and the compliance behaviour of large final emitters. Future prices of international emission credits are also difficult to predict, as emission trading systems frequently experience large price fluctuations during start-up. For example, since it began in January 2005, credit prices in the European Union's greenhouse gas emission trading system have ranged from less than 10 Euros to more than 30 Euros.

Canada's system is complex, and its progress is slow

1.71 Distinctive features of Canada's proposed emissions trading system, such as the emission intensity target applied to the Large Final Emitter System and its numerous options for compliance, may not only add complexity but may also limit its effectiveness. Unlike the United States' sulphur dioxide trading system, where companies are completely liable for achieving absolute reductions, liability for not achieving the Large Final Emitter System's emission intensity target would rest mainly with the federal government. Environment Canada will need to verify that the emission reductions claimed by industry and developers of offset projects have been achieved.

1.72 Canada's emissions trading system would likely have a limited number of credits available for trading, which may limit its effectiveness. Canada could expand its trading market by linking to the greenhouse gas emission trading systems of other countries, which would increase opportunities for Canadian companies to find cost-effective reductions. A linked system could also allow Canadian companies with installations in other countries to maximize their business opportunities by taking advantage of several trading systems. However, the distinctive features of Canada's system—for example, its emission intensity target, price cap, and permitted use of offset

credits—may limit its ability to link to other major trading systems that do not share these features, such as that of the European Union.

1.73 Progress has been slow in implementing the domestic emissions trading system. The 2002 plan anticipated that the system would be developed in 2003–04 and be implemented as soon as possible thereafter. However, the Large Final Emitter System is not expected to be in place until 1 January 2008. Complex negotiations with industry and provinces on the design of the Large Final Emitter System and a lack of timely decision making by the federal government have delayed progress. Many critical elements of the system are still being developed, and many risks remain unaddressed. While some companies have undertaken voluntary reductions, there will be no federal requirements for industry to reduce emissions until the system begins.

1.74 The Offset System was expected to be introduced in early 2006, yet many critical elements are still being developed, most notably a sound communications strategy. To date, no guidance has been published to help interested Canadians prepare to use the Offset System effectively. Other infrastructure still being developed includes the electronic registry that will track offset projects. Given that new projects can take a number of years to realize emission reductions, under the current proposal, it is critical to the success of Canada's emissions trading system that the Offset System begin to operate as soon as possible.



Windpower is a potential source of offset credits.

Photo: Natural Resources Canada

1.75 The Climate Fund was declared “open for business” in November 2005. However, it has not yet had funding approved for any activity other than initial operations. By the end of this audit, Environment Canada had not yet completed public consultations on the Canada Emission Reduction Incentives Agency, and the Agency had not yet tabled its corporate business plan and proposed credit purchase strategy or purchased its first credit.

Other risks need to be managed

1.76 **Canada could use international credits to meet its obligations.** Emissions trading is also among the options that countries have for meeting their Kyoto targets. Countries that cannot meet their targets through domestic measures alone can purchase credits internationally from mechanisms established under the Kyoto Protocol. (Please consult **The Commissioner's Perspective**, which includes a section called **Climate Change—An Overview**, for additional details.)

1.77 In 2005, the federal government estimated that the gap between Canada's Kyoto target and its emissions during the commitment period could exceed 270 million tonnes. To help close this gap, the 2005 plan expected the Climate Fund to purchase between 75 and 115 million tonnes of domestic offset credits and international Kyoto credits per year from 2008 to 2012, at a total cost of \$4 to \$5 billion. While the Fund would give priority to domestic credits, Environment Canada estimates the potential reductions from the Offset System to be around 58 million tonnes per year (around 21 percent of the estimated Kyoto gap). Thus, if Canada wants to meet its Kyoto target, it may need to become an important participant in the international market.

1.78 Investing in Kyoto credits from international projects can have economic and environmental benefits. These mechanisms operate on the principle that reductions in greenhouse gas emissions will have the same impact on the atmosphere regardless of where in the world they are achieved. Project-based Kyoto mechanisms, such as the Clean Development Mechanism and Joint Implementation, can result in real emission reductions and provide opportunities for sustainable development in developed and developing countries. However, the supply of such credits may be limited relative to demand.

1.79 By contrast, there may be a large quantity of "surplus" emission credits for sale because of economic decline in Eastern Europe since 1990. While these credits can be applied against targets under the Kyoto Protocol, the use of these credits has been criticized as they do not represent sustainable emission reductions. In the 2005 plan, the federal government acknowledged this and specified that it would recognize only "green" credits, requiring that all proceeds from the sale of surplus credits be reinvested in emission reduction activities.

1.80 At present, Canada is not in a position to ensure that this requirement is met. The Canada Emission Reduction Incentives Agency has yet to develop an effective strategy for international credit purchases. Nor has the federal government developed the capacity it requires to identify eligible reduction activities, supervise their implementation, or ensure proper transparency and accountability in the use of funds. In addition, the price at which countries, such as Russia and the Ukraine, would be willing to sell surplus credits is unknown.

1.81 In 2006, the federal government stated that it would give priority to domestic measures rather than investments in international credits.

Did you know?

In spring 2006, Chile became host to the first three certified Clean Development Mechanism projects to involve a Canadian company. The projects supported by this company were designed to reduce greenhouse gas emissions through the capture and combustion of methane from swine manure treatment. To date, these projects have been issued more than 980,000 credits for certified emission reductions.

Time to pilot emissions trading is running out

1.82 “Piloting” emissions trading systems—an international best practice. Experience in other jurisdictions has shown that early piloting can benefit the effectiveness of emission trading systems by

- testing critical mechanisms, such as protocols for monitoring, reporting, and verification to identify and adjust potential problems;
- allowing government and industry to gain experience using this policy tool before the government starts to assess compliance; and
- providing an opportunity for market services, such as emission brokers, verifiers, and other consultants, to develop in support of the system.

1.83 Piloting is valuable because emissions trading systems are unlike other kinds of policy tools. Implementing an emissions trading system establishes a market for emission credits. Companies may invest billions of dollars in this market, based on the system’s rules. Any major alterations to the system could cause companies to lose confidence in the market and stop investing. Thus, if an emissions trading system is to be effective, once implemented, it is only possible to make minor adjustments to the system, not major alterations.

1.84 Little time left for Canada to test its system. According to Environment Canada’s timelines, there is now less than two years before the full start of the proposed emissions trading system. Although analysis of the trading system has been extensive, it cannot replace on-the-ground testing. While we do not discourage innovation in developing and implementing new policy tools, we are concerned that the short time remaining will not permit Canada to test its complex emission trading system before implementation.

1.85 Environment Canada needs to better understand the significance of the known risks and potential liabilities associated with the proposed emissions trading system. These risks and liabilities, and any new concerns that may arise, will not be known with certainty until the final system is in place.

1.86 Recommendation. Environment Canada will need to put mechanisms in place to ensure that the first phase of Canada’s emissions trading system, including the Large Final Emitter System, works effectively. To ensure that emissions reductions are real, measurable, and verifiable, Environment Canada should

- commit sufficient resources to develop, implement, and evaluate the system;
- test and adjust monitoring, reporting, and verification systems to ensure that information reported is complete, accurate, and useful;
- ensure transparency by publishing key data, including the business-as-usual projections, that parliamentarians and the public require to assess progress against targets;
- develop a good communication strategy to fully inform all players about plans to introduce trading and to guide the players on how to participate effectively; and
- engage an independent, expert advisory panel to monitor progress on system design and implementation—the panel should report annually and publicly.

At the end of the first phase, Environment Canada should

- evaluate the systems to identify issues of concern in areas such as cost, results, and effectiveness;
- report its findings publicly;
- consult relevant players and experts about potential system adjustments; and
- adjust the emissions trading system and its components to address serious issues of concern.

Environment Canada's response. The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development will be considered in developing the agenda.

Conclusion

1.87 Progress to date on putting in place a domestic greenhouse gas emissions trading system is slow. While we do not discourage innovation in the development and implementation of new policy tools, there are significant uncertainties that remain in the design of the proposed system. As a result, we are unable to conclude whether the system as proposed will be effective. Distinctive features, such as the \$15 price cap promised to industry, present potentially serious financial risks to the Canadian government that could range from zero to more than \$1 billion. These risks need to be carefully managed.

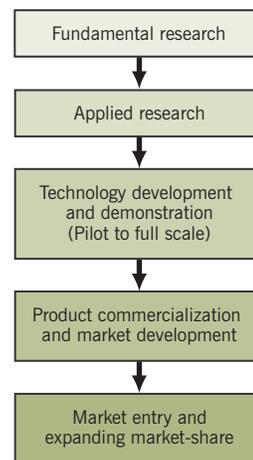
Sustainable Development Technology Canada

A significant tool in the government's efforts to reduce greenhouse gas emissions

1.88 In the innovation chain that brings new technologies from research to commercialization, two of the most critical stages are development and demonstration—where technologies leave the laboratory and are tested in practical applications (Exhibit 1.13). The federal government and others have identified that a lack of funding for development and demonstration has been a significant impediment to bringing new technologies onto the market—particularly sustainable development technologies, for which the market is still emerging.

Exhibit 1.13 Innovation chain

The innovation chain associated with technology development consists of the following stages:



Source: Adapted from SDTC documents

1.89 In 2001, the Government of Canada established Sustainable Development Technology Canada (SDTC) as a foundation to help fill the funding gap and foster the creation of sustainable development technologies in Canada. This mandate is set out in the legislation that established SDTC and in the agreements by which the government funds its operations. These funding agreements are signed by SDTC and the ministers of both Natural Resources Canada and Environment Canada—the sponsoring departments for this foundation.

1.90 SDTC's mission is to act as the primary catalyst in building a sustainable development infrastructure in Canada. To achieve this mission, it does the following:

- Awards funds to develop and demonstrate new sustainable development technologies
- Fosters and encourages collaboration and partnering among different organizations to strengthen Canadian capacity to develop and demonstrate sustainable development technologies
- Ensures timely diffusion of these technologies in relevant market sectors

SDTC is a not-for-profit corporation originally registered under the *Canada Corporations Act*, and now governed by the *Canada Foundation for Sustainable Development Technology Act*. SDTC management is responsible to a board of directors whose 15 members are from the public, private, and academic sectors in Canada. The Foundation is not an agent of Her Majesty and, therefore, cannot create obligations that the Crown may have to satisfy.

1.91 The federal government has awarded SDTC three grants worth a total of \$550 million to finance its activities, of which \$280 million is primarily directed at climate change technologies (Exhibit 1.14). As such, SDTC is a significant tool in the government’s strategy for reducing greenhouse gas emissions through technological innovation.

1.92 We did not audit all aspects of SDTC, but focussed on decision making and management processes relevant to its climate change mandate. The audit of Sustainable Development Technology Canada focussed both on the federal government’s relationship with SDTC, including its oversight of the funding agreements, and on how well SDTC was fulfilling its climate change mandate.

Exhibit 1.14 Federal funding received by Sustainable Development Technology Canada

Federal budget	Funding amount	Purpose	Date funding agreement signed
28 February 2000	\$100 million	climate change technologies (\$80 million) and clean air technologies (\$20 million)	26 March 2001
18 February 2003	\$250 million	climate change technologies (\$200 million) and clean air technologies (\$50 million)	31 March 2004
23 March 2004	\$200 million	primarily clean soil and clean water technologies	31 March 2005
Total	\$550 million		

Source: Adapted from federal budgets and funding agreements

Government took reasonable steps to ensure alignment of Sustainable Development Technology Canada's climate change activities with federal efforts

1.93 We found that the steps taken by the federal government through its funding arrangements with SDTC resulted in the alignment of the Foundation's climate change activities with federal climate change programs. The Foundation is filling a specific niche or role within the innovation chain for new technologies.

1.94 In 1999, as part of the National Climate Change Process established by the federal Climate Change Action Fund, a stakeholder group identified a lack of funding for the early development stages of new technologies. Following the Budget 2000 announcement to fund this Foundation, an interdepartmental working group, consisting primarily of representatives from departments operating science and technology programs, mapped existing programs. The exercise confirmed the difficulty companies had in securing funding in the early stages of developing new technologies, including the period from prototype development to the full-scale demonstration stage. This became SDTC's niche area.

1.95 The interdepartmental working group was also involved in developing SDTC's first funding agreement. This helped minimize any duplication or overlap of mandates between the departments and SDTC. The existing funding agreement had to be re-opened for negotiation when additional funding was allocated, and a similar interdepartmental working group was re-established each time. This has enabled departments to voice any further concerns about potential areas of duplication or overlap.

1.96 We interviewed several senior government officials involved with SDTC at various stages of its existence. They said that SDTC's mandate has filled a need. During an independent third-party evaluation that SDTC commissioned, which was completed in 2005, many of the key stakeholders, government officials, representatives of the venture capital community, and successful and unsuccessful applicants interviewed also said that the Foundation was truly filling a funding gap. In the view of these groups, the gap reflected the venture capital community's unwillingness to assume the risks associated with development and demonstration projects.

The government has taken reasonable steps to oversee Sustainable Development Technology Canada

1.97 Because the government is funding SDTC and relying on it for a significant contribution to the federal climate change effort, the federal

government has a duty to ensure that Parliament is informed about SDTC's activities under its funding agreements and their results and to monitor SDTC's climate change activities. That responsibility falls to Natural Resources Canada and Environment Canada as SDTC's sponsoring departments.

1.98 Reporting to Parliament. Each year, the Foundation is required to provide the Minister of Natural Resources with an annual report, accompanied by a corporate plan summary and an annual report supplement that provides descriptions and performance information on each funded project. The Minister tables these documents in Parliament.

1.99 We noted that the annual reports and corporate plans provide information about the number of projects SDTC approved. The annual report supplement also includes information on funding it has committed to each project. Both sponsoring departments provide information to Parliament about SDTC in their report on plans and priorities and in their departmental performance report. They use information from SDTC and, except in one early case, have given Parliament timely information about SDTC. We note that once SDTC-funded projects start entering the marketplace (see paragraph 1.116), SDTC will need to provide more information, as specified in its current funding agreement, on the performance of these projects through its annual reports. In addition, the sponsoring departments will need to reflect this project performance information in their reports to Parliament.

1.100 Monitoring. We found that Natural Resources Canada and Environment Canada have worked co-operatively to monitor SDTC. Since 2003, SDTC has met periodically with departments that operate science and technology programs. The meetings are a further opportunity to discuss issues of common concern.

1.101 In accordance with a provision of the 2004 funding agreement, in February 2005, Natural Resources Canada, in consultation with Environment Canada, commissioned a compliance audit of selected terms and conditions of the first two funding agreements. That audit confirmed that SDTC had complied with those terms and conditions, with one minor exception that was subsequently corrected. In addition, the current funding agreement, which expires in June 2015, provides for two interim evaluations and a final evaluation (see paragraph 1.114). While each government oversight mechanism has an important role, care needs to be taken to ensure that these

mechanisms do not create an undue burden or negatively impact SDTC's operations.

Sustainable Development Technology Canada's strategic decisions have been consistent with its mandate

1.102 While it is important for the federal government to maintain appropriate oversight of SDTC's climate change activities, it is also important that SDTC take appropriate actions toward fulfilling its climate change mandate.

1.103 In its first 7 rounds of funding, SDTC received almost 1,000 statements of interest. From this, it approved 79 projects although 5 were subsequently cancelled or terminated, leaving 74 active projects. By the end of our audit, 7 SDTC-funded projects had completed their development and demonstration activities, and some have begun to enter the market. Exhibit 1.15 highlights two of SDTC's approved projects.

Exhibit 1.15 Examples of Sustainable Development Technology Canada's approved projects

The Foundation's portfolio of approved climate change projects covers a wide range of Canada's primary economic sectors, including agriculture, oil and gas, forestry, transportation, and waste management.

For example, one project will demonstrate an "on-demand" reusable liquid foam insulation system that fills a cavity between two layers of clear plastic film in transparent structures such as greenhouses to reduce the amount of fossil fuels used for heating.

Another project involves technology that processes and transforms organic waste such as cattle manure into energy, fertilizer, and reusable water for irrigation, while reducing greenhouse gas emissions and other environmental impacts.



Manure from cattle



Manure is transformed into energy, fertilizer, and reusable water at this manure processing facility.

1.104 Given the timing of the third federal grant received by SDTC (Exhibit 1.14), all of the approved projects have been for either climate change or clean air technologies, with over three-quarters of the projects having both climate change and clean air benefits.

1.105 We looked at the extent to which SDTC's strategic decisions reflect its mandate, as set out in the *Canada Foundation for Sustainable Development Technology Act* and funding agreements. We found that decisions recorded in minutes of meetings of the board of directors and other committees were consistent with SDTC's mandate, as were the corporate plans and other documents we reviewed. They also complied in all significant respects with the terms of SDTC's legislation and its funding agreements with the government.

Sustainable Development Technology Canada's processes for selecting and managing projects are satisfactory overall

1.106 We found that SDTC has in place a reasonable process for selecting projects that it believes have the potential to both succeed in the market and help achieve Canada's climate change goals. SDTC can commit funding to new projects up to at least 31 December 2010. SDTC can, where eligible projects warrant, disburse funds in each year up to 31 December 2012. The process provides for due diligence at four distinct decision points.

1.107 Applications for project funding are subjected to external expert review and challenge at each stage of the process that leads to selection and board approval of a project. Applicants are screened for capabilities in technology, marketing, and business, as well as for the project's potential environmental benefits.

1.108 Successful project proponents are required to contribute at least 25 percent of the eligible costs of their projects. SDTC cannot finance more than 50 percent of eligible project costs. Because SDTC's mission is to act as a catalyst in building a sustainable development technology infrastructure in Canada, every funded project must involve a consortium of partners who can invest in the project or provide expertise in such areas as research, product development, manufacturing, and distribution. While governments at the federal, provincial, or municipal level, or their entities can also be consortium members, with few exceptions, they cannot receive SDTC funding.

1.109 Of the 74 active projects from the first seven rounds of funding, we reviewed 30 of those with climate change benefits. We found that SDTC's approval and funding processes for these projects had generally complied with the requirements of the applicable funding

Did you know?

For every \$1 that SDTC commits to a project, consortia members commit almost \$3. About 60 percent of the total project funding comes from the private sector.

agreements between SDTC and the government. We also noted that the extent and quality of documentation in the climate change project files was better in projects from recent funding rounds than in earlier rounds, when SDTC had fewer staff. Beginning around mid-2004, the Foundation's staff began to grow from about 10 to about 20 full-time employees, due to the increase in funding levels. The Foundation supplements its staff, whenever necessary, by hiring contractors for specialized services, including expert reviewers to help assess technologies and business plans.

1.110 Challenges of moving from an approved project to a signed contract. Once the Board approves projects, SDTC must complete its contractual due diligence process and negotiate a contract. During this time the project recipient, with the help or guidance of SDTC, needs to resolve issues such as developing a consortium, finalizing other financing, arranging ownership of intellectual property, budgeting, confirming work plans, and establishing milestones for the project.

1.111 In the first five funding rounds, 44 active projects were approved by October 2004, and 30 had signed contracts by January 2006 (Exhibit 1.16). No contracts had yet been signed for the 30 approved projects from funding rounds 6 and 7, which had been approved in June and October 2005 respectively. Exhibit 1.17 shows the committed, contracted, and disbursed funding for SDTC-approved projects.

1.112 SDTC officials regularly report to the board of directors on the status of approved projects, including the reasons for delays in getting a contract signed. The two main reasons are that the applicant has yet to formalize its consortium or obtain financing from its members. In a few cases, projects have been cancelled due to significant delays, releasing the non-disbursed committed funds for new projects.

1.113 We found that SDTC has taken several steps to reduce project delays that are within its control, including hiring additional staff and assigning a team of managers to bring the non-contracted projects to closure.

Sustainable Development Technology Canada has put in place a satisfactory process for measuring and reporting the results of its climate change activities

1.114 SDTC commissioned an independent evaluation that was completed in 2005, to lay the groundwork for the two interim evaluations and a final evaluation required by the current funding agreement with the government. These evaluations will assess whether the Foundation is meeting its purposes and objectives and, to the

Exhibit 1.16 Some contracts are signed more quickly than others

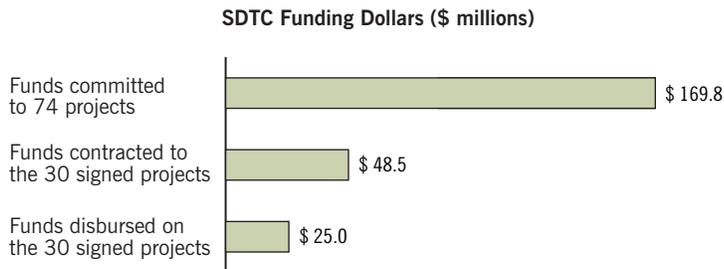
Of the thirty contracts as of January 2006, twenty-four were signed within one year of being approved by SDTC's Board.

Of the fourteen remaining active projects without a contract from the first five funding rounds,

- two were from round three (approved in October 2003),
- six were from round four (approved in May 2004), and
- six were from round five (approved in October 2004).

Source: Adapted from SDTC documentation

Exhibit 1.17 Sustainable Development Technology Canada has disbursed \$25 million in project funding as of January 2006



Source: Adapted from SDTC documentation

extent possible, whether adjustments to the program are necessary. The results of the interim and final evaluations are to be made public. As the basis for its performance and evaluation plan, SDTC has developed an evaluation logic model, which is integrated into its corporate plan and executive summary. The summary is available on its Web site.

1.115 We found that SDTC has collected data on both project and corporate performance to establish benchmarks for evaluating the performance of the funding allocation process, recipients of the funding, and the organization itself. Statistical data are available on funding by applicant, project size and technology, industry sector, and region. SDTC also has data showing the funding it supplied, as well as the funding supplied by industry, private financiers, and government agencies. In addition, it plans to compile data on each of its funded projects for three years after project completion. This will help it determine how accurately applicants have forecasted their technologies' share of the market.

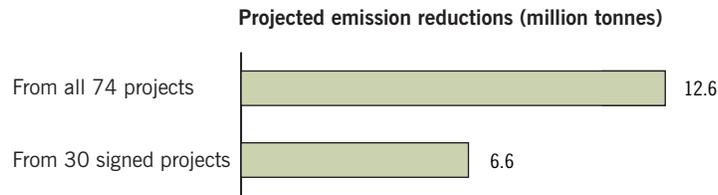
1.116 Because only seven SDTC-funded projects have recently completed their development and demonstration activities, it is too early to report on actual reductions in greenhouse gas emissions. Hence, the Foundation has so far reported results in terms of activities undertaken and outputs. Once the projects start entering the marketplace, SDTC will be better placed to assess and report more fully on the extent to which it has reached its goals.

1.117 Greater care is required in reporting projected reductions in greenhouse gas emissions. Although not required to report on projected reductions in greenhouse gas emissions, SDTC's 2002 Annual Report included an estimate of the projected reductions claimed by successful applicants for their projects. We noted in each subsequent annual report that SDTC has adjusted its reporting of these projections. The projections are based on applicants' calculations using a methodology prescribed by the Foundation, which is derived from emerging international standards. SDTC includes similar information in its corporate plans.

1.118 Beginning with its 2003 Annual Report, SDTC discounted each project's projected reductions by 90 percent to take into account market dynamics or uncertainty and the probability that some technologies or businesses may fail. However, as SDTC was unable to provide sufficient documentation to justify the discount rate, we were unable to confirm its appropriateness. Also, in communicating these projections, SDTC has not included a sufficiently explicit disclaimer so that parliamentarians and the public do not place undue reliance on them, given that the actual results may vary significantly from those projected.

1.119 These reported projections cover a short period of time (up to 2010, the mid-point of the Kyoto Protocol commitment period). They can, therefore, be significantly distorted by project delays or cancellations that can occur for a variety of reasons. These include difficulties in forming a consortium, or securing other funding that may have been contingent on SDTC approval. The 12.6 million tonnes of projected reductions in greenhouse gas emissions calculated by SDTC reflect all 74 active projects that have been approved, as depicted in Exhibit 1.18, including the 30 projects with signed contracts. These projections do not take adequate account of delays that can occur after project approval. Such delays can shift the point at which reductions are projected to start. For example, in one large active project, approved in May 2004, but without a signed contract, the delay could reduce the projected reduction in greenhouse gas emissions by about 0.6 million tonnes in 2010.

Exhibit 1.18 As of January 2006, Sustainable Development Technology Canada expected the projects to achieve significant greenhouse gas emission reductions by 2010



Source: Adapted from SDTC documentation

1.120 As a result, SDTC’s projections for reductions in greenhouse gas emissions in 2010, which are reported to Parliament and the public, may be overly optimistic, although the projected reductions might be realized or exceeded in the longer term.

1.121 SDTC reports that the average amount of time taken from a project start date to the completion of the development and demonstration activities is 3.7 years. Therefore, projects approved in 2007 or later are unlikely to make a significant contribution to greenhouse gas emission reductions by 2010. However, they could do so over a longer time.

1.122 Recommendation. For its funded projects, Sustainable Development Technology Canada should adopt alternative approaches to reporting projected reductions in greenhouse gas emissions, using a conservative approach. In particular, SDTC should re-examine the appropriateness of its discount rate and adjust its projection to account for significant project delays. Reported projections should be accompanied by a more explicit disclaimer, and they could reflect the status of the project (approved, contracted) and/or different time horizons for projected emission reductions. Once projects have been successfully completed, and the technologies have entered the market, the Foundation should begin reporting actual reductions.

The Foundation’s response. Sustainable Development Technology Canada (SDTC) accepts the recommendation and plans to re-examine its reporting methodology for projected reductions in greenhouse gas emissions in 2007.

There is little precedent for reporting on projected reductions in greenhouse gas emissions, particularly for new technologies. In the absence of established methodologies, SDTC has drawn on findings in other markets to establish and apply a discount factor to applicant projections of 90 percent across the portfolio of investments to

account for potential technological and market failures. SDTC is of the opinion that the 90 percent discount rate results in conservative projections. With SDTC's first seven projects starting their three-year reporting period, and other projects nearing completion, SDTC will be able to revisit its projections and discount rate in the coming years. In addition, SDTC fully intends to report on actual reductions reported by the applicants, once projects have been successfully completed and have entered the market.

SDTC will enhance its projections with a more explicit disclaimer in its next corporate plan, to be published in October 2006. SDTC currently reviews the contract status of approved projects on a regular basis. Based on operational experience gained over the first four years of funding, SDTC is now in a better position to anticipate project delays and determine their potential impacts. As SDTC reviews its publicly reported projections, in October 2006, it will adjust them to more explicitly account for delays, which could cause significant changes in the anticipated timing of greenhouse gas emission reductions.

Conclusion

1.123 We found that the federal government's relationship with SDTC is reasonable given the distinctive nature of this relationship. In our view, the federal government has taken reasonable steps to ensure that SDTC's climate change activities are effectively aligned with other federal climate change programs and that SDTC is operating in a specific niche area.

1.124 We determined that SDTC's strategic decisions related to its climate change activities are consistent with its mandate and its applicable funding agreements. We found that SDTC has taken reasonable steps toward fulfilling its climate change mandate. We concluded that SDTC's processes for selecting and managing climate change projects are satisfactory.

1.125 We also found that the Foundation has put in place a satisfactory process for measuring and reporting the results of its climate change activities, although it is too early to report on actual reductions in greenhouse gas emissions. However, SDTC's reporting of projected reductions in greenhouse gas emissions by 2010 does not include a sufficiently explicit disclaimer so that the public does not place undue reliance on the projections. It also does not adequately take into account project delays that can occur after project approval.

1.126 Since only seven SDTC-funded projects have completed their development and demonstration activities, and since some of these technologies have just begun to enter the market, SDTC has

insufficient information to assess and report fully on the degree to which it has achieved its goals. Once such information becomes available, SDTC will be better placed to assess and report more fully on its outcomes or impacts, such as reducing greenhouse gas emissions and building a sustainable development technology infrastructure in Canada.

About the Audit

Managing the federal approach and emissions trading

Objectives

1. To determine the extent to which the federal government has put in place a suitable management framework for the climate change initiative
2. To determine whether the federal government is able to assess its major climate change spending so as to report reliably and fairly on the costs involved in the climate change initiative
3. To determine if greenhouse gas emissions reduction strategies, including targets and policy tools for selected sectors, such as transportation and large final emitters, are based on sound data and analysis
4. To determine if the federal government is prepared to implement an effective domestic greenhouse gas emissions trading system in Canada

Scope and approach

Climate change is a broad issue that cuts across departments and agencies. The results of our preliminary audit work helped us to determine which federal departments and agencies to audit. The audit focussed on three central agencies and five departments with a variety of mandates for the management of climate change activities within Canada and internationally. We also selected them based on their relative contribution to the federal climate change initiative. We identify the eight departments and agencies, and the corresponding audit objectives against which they were assessed (Exhibit 1.19).

Exhibit 1.19 Departmental and agency coverage by audit objectives

Federal department or agency	Audit objectives			
	1	2	3	4
Canadian International Development Agency	○	●	○	○
Environment Canada	●	●	●	●
Foreign Affairs and International Trade Canada	○	○	●	●
Natural Resources Canada	●	●	●	●
Transport Canada	○	●	●	○
Central agencies				
Finance Canada	○	○	●	●
Privy Council Office	●	○	●	○
Treasury Board Secretariat	●	●	○	○

● Assessed against objective ○ Not assessed against objective

For each audit objective, we interviewed departmental officials and relevant stakeholders and reviewed departmental files, reports, and other documentation. Stakeholders were selected to represent a range of perspectives on federal performance, including that of provincial governments, industry, environmental non-government organizations, and market experts in the area of emissions trading. We identified international practices concerning emissions trading by reviewing key documentation and consulting relevant stakeholders.

In addition, we examined two sustainable development strategy commitments related to the audit objectives. We present the results of this work in Chapter 4, Sustainable Development Strategies. For each commitment, we interviewed key departmental officials and examined relevant documents. For Finance Canada's commitment, we also assessed the Department's response to a questionnaire.

Similarly, we examined Environment Canada's response to environmental petition 63 to determine whether the Department had taken action on its commitment to ensure that reports on the *Climate Change Plan for Canada* (2002) "[would] be made to the public every two years." We address the issue in this chapter and in Chapter 5, Environmental Petitions.

Criteria

- We expected that the federal government would have developed and implemented a regime for managing and co-ordinating the federal climate change initiative, and that the Privy Council Office and Treasury Board Secretariat would play appropriate roles in managing this horizontal initiative (Objective 1).
- We expected that the government had developed and implemented a framework for monitoring and reporting climate change expenditures (Objective 2).
- We expected that the federal government had conducted adequate analysis (economic, environmental, social, and risk) with respect to Canada's overall greenhouse gas emissions reduction target, sectoral emissions reduction targets, and selected policy tools (Objective 3).
- We expected that the federal government had conducted adequate analyses, identified main steps, developed an action plan, and implemented required actions for Canada's proposed domestic emissions trading system (Objective 4).

Audit work completed

Audit work for this chapter was substantially completed on 14 June 2006.

Audit team

Principal: Richard Arseneault

Lead Director: George Stuetz

Director (Financial): Caroline Smallman

Lisa Harris

Kathleen Hobbs

Stephanie Kalt
 Mark Lawrence
 Jessica Ling
 Erick Ordeman
 James Reinhart

Sustainable Development Technology Canada

Objectives

One set of audit objectives primarily focussed on the federal government’s relationship with Sustainable Development Technology Canada (SDTC). Specifically, we assessed

- whether the federal government had ensured that SDTC’s climate change activities are effectively aligned with other federal government climate change activities, and
- whether the federal government’s oversight of SDTC’s climate change activities is appropriate and whether the federal government is providing Parliament with appropriate information in a timely manner.

Another set of audit objectives primarily focussed on how well SDTC was fulfilling its mandate with respect to its climate change activities. Specifically, we assessed the extent to which

- SDTC’s strategic decisions adhered to its mandate (object and purposes) as set out in the *Canada Foundation for Sustainable Development Technology Act* and its applicable funding agreements with respect to its climate change activities;
- SDTC’s process for selecting and managing climate change projects were adequate given the context in which it operates, and are conducted in an independent and objective manner; and
- SDTC had established satisfactory procedures to measure and report on the effectiveness of its climate change activities.

Scope and approach

With respect to examining the federal government’s relationship with SDTC, we focussed primarily on Natural Resources Canada and Environment Canada—the two sponsoring departments and signatories to SDTC’s funding agreements. We also examined Industry Canada, given its involvement in the work of the Foundation through its interest in the technology sector.

Our examination of how well SDTC was fulfilling its mandate focussed on SDTC’s activities related to climate change. It included a review of 30 projects that were selected because of their risk profile, including those that are significant in terms of dollars and projected reductions in greenhouse gas emissions. Our examination also included field visits to meet with selected project proponents.

We did not audit all aspects of SDTC, but focussed on decision-making and management processes relevant to its climate change mandates. Several of these processes are also used to deliver on SDTC’s clean air, clean water, and clean soil mandates, although we did not audit these other mandate areas.

We considered it important to examine the Foundation, given its sizeable level of funding for its climate change activities (\$280 million in dedicated funding) and its distinctive relationship with the federal government.

Our examination does not express a view about the merits of foundations as tools to achieve the government's policy objectives.

The Office of the Auditor General was granted the mandate, by Parliament, in June 2005 to conduct performance audits of certain foundations, including SDTC. The audit of SDTC is the first one undertaken under this mandate.

Criteria

The criteria for this audit were developed based primarily on the *Canada Foundation for Sustainable Development Technology Act*, SDTC's funding agreements, and prior Auditor General reports and internal guidance.

We expected that Natural Resources Canada and Environment Canada would

- make reasonable efforts to harmonize and co-ordinate SDTC's climate change activities with other organizations delivering similar programs, and
- develop a regime for reporting to Parliament and the public and for monitoring SDTC's activities.

We expected that SDTC would

- ensure that its strategic decisions related to its climate change activities meet its object (mandate) as set out in the *Canada Foundation for Sustainable Development Technology Act*, sections 2 and 5, and its funding agreements;
- ensure that its project approval and funding processes are designed to manage risks, ensure due diligence in spending, and achieve expected results; and
- put in place provisions for review, analysis, and corrective adjustment in accordance with the applicable funding agreements.

Audit work completed

Audit work for this chapter was substantially completed on 14 June 2006.

Audit team

Principal: Neil Maxwell

Director: Bob Pelland

Pierre Fréchette

Roger Hillier

For information, please contact Communications at 613-995-3708 or 1-888-761-5953 (toll-free).

Appendix List of recommendations

The following is a list of recommendations found in Chapter 1. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation	Entities' response
<p>Managing the federal approach</p> <p>1.34 Environment Canada, in collaboration with the Privy Council Office and the Treasury Board Secretariat, should ensure the development and implementation of effective governance and accountability for the climate change issue within the federal government. Key roles and responsibilities should be defined, assigned, and publicly reported; and which departments participate and how they do so should be specified. Appropriate funding, development, and implementation of mechanisms need to be established for</p> <ul style="list-style-type: none"> • overall decision making, • ongoing interdepartmental co-ordination, • monitoring and reporting to Parliament and to Canadians about past and future financial and non-financial performance related to climate change activities, and • evaluation and adjustment of policies and programs for climate change. (1.9-1.33) 	<p>The government's response. It is correctly pointed out in this chapter that a complex issue that implicates a number of federal organizations such as climate change requires effective horizontal management, including appropriate governance and accountability mechanisms. The government agrees that roles and responsibilities should be clearly defined, processes to support decision-making and co-ordination established, results reported to Parliament and Canadians in a transparent manner, and policies and programs subjected to regular evaluation and adjustment.</p> <p>In its response to Chapter 4 of the November 2005 Report of the Auditor General of Canada, the government made specific note of the central agency function in respect of horizontal initiatives. That function is to play a facilitating role in the launch of such initiatives in order to ensure that they are positioned effectively within government priorities and are established in such a way as to ensure that an integrated approach is developed. The Privy Council Office ensures that appropriate departments are involved in the Cabinet processes, that departmental leadership roles are identified, and that, where necessary, horizontal governance structures are put in place.</p> <p>At the same time, the Privy Council Office and other central agencies, such as the Treasury Board Secretariat, must respect the leadership and accountability of departments to implement initiatives, such as climate change, in a manner that is consistent with their areas of responsibility and respects Treasury Board management practices. As is acknowledged in this chapter, it is the responsibility of departments and agencies to manage such initiatives.</p> <p>The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and</p>

Recommendation	Entities' response
	<p>effective measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development on governance and accountability will be considered in developing the agenda.</p>
<p>The federal approach in the transportation sector</p>	
<p>1.44 Natural Resources Canada should ensure that the model, data, and results from the 2005 memorandum of understanding with the automotive industry are independently verified and that the results of the verification are reported publicly. (1.40-1.43)</p>	<p>Natural Resources Canada's response. Natural Resources Canada agrees with the recommendation. The Department has initiated discussions with the vehicle industry on independent verification of the data, model, and results from the accounting model used to monitor the memorandum of understanding with the auto industry before the first report on interim goals for the 2007 model year. The intention would be to ensure that the results of that verification would be available to the public. In addition, the department and industry have already released a progress report that is supplemental to the requirements of the memorandum of understanding.</p>
<p>1.45 In any future voluntary agreements, Natural Resources Canada should establish requirements similar to those found in Environment Canada's 2001 <i>Policy Framework for Environmental Performance Agreements</i>. While the automotive industry agreement addresses many of these requirements, at a minimum, such future agreements should include</p> <ul style="list-style-type: none"> • senior-level commitment by involved parties, • clearly identified environmental objectives, • baseline levels measured at the beginning of the agreement, • clear targets with timelines, • meaningful performance measures, • clearly defined roles and responsibilities for all parties, 	<p>Natural Resources Canada's response. Natural Resources Canada recognizes the requirements listed in Exhibit 1.8 of the present report and identified in Environment Canada's 2001 <i>Policy Framework for Environmental Performance Agreements</i>. The Department will immediately investigate options for adopting a similar policy framework for future voluntary agreements in the auto sector and for other sectors.</p>

Recommendation	Entities' response
<ul style="list-style-type: none"> • consequences for failing to meet targets and incentives for achieving them, • periodic public reporting requirements, • provision for regular credible verification, and • regular evaluation of the agreement to determine progress and options for implementing corrective action, where necessary. <p>(1.40-1.43)</p>	
<hr/>	
<p>Addressing greenhouse gas emissions from large industrial emitters</p>	
<p>1.54 Environment Canada should ensure that emissions reductions achieved by the Large Final Emitter System are real, measurable, and verifiable, and that the method used to calculate them is transparent to parliamentarians and the public. Environment Canada should also assess on an ongoing basis, and in a transparent and timely manner, the uncertainties and risks associated with the system and implement actions to address them. (1.46-1.53)</p>	<p>Environment Canada's response. The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development will be considered in developing the agenda.</p>
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<p>Emissions trading as a tool</p>	
<p>1.86 Environment Canada will need to put mechanisms in place to ensure that the first phase of Canada's emissions trading system, including the Large Final Emitter System, works effectively. To ensure that emissions reductions are real, measurable, and verifiable, Environment Canada should</p>	<p>Environment Canada's response. The Government of Canada is developing a Made-in-Canada environmental agenda for reducing air pollution and greenhouse gas emissions. This approach will establish integrated and effective measures that will achieve tangible and realistic results. The recommendation of the Commissioner of the Environment and Sustainable Development will be considered in developing the agenda.</p>

Recommendation	Entities' response
<ul style="list-style-type: none"> • commit sufficient resources to develop, implement, and evaluate the system; • test and adjust monitoring, reporting, and verification systems to ensure that information reported is complete, accurate, and useful; • ensure transparency by publishing key data, including the business-as-usual projections, that parliamentarians and the public require to assess progress against targets; • develop a good communication strategy to fully inform all players about plans to introduce trading and to guide the players on how to participate effectively; and • engage an independent, expert advisory panel to monitor progress on system design and implementation—the panel should report annually and publicly. <p>At the end of the first phase, Environment Canada should</p> <ul style="list-style-type: none"> • evaluate the systems to identify issues of concern in areas such as cost, results, and effectiveness; • report its findings publicly; • consult relevant players and experts about potential system adjustments; and • adjust the emissions trading system and its components to address serious issues of concern. <p>(1.61-1.85)</p>	

Recommendation	Entities' response
<p>Sustainable Development Technology Canada</p> <p>1.122 For its funded projects, Sustainable Development Technology Canada should adopt alternative approaches to reporting projected reductions in greenhouse gas emissions, using a conservative approach. In particular, SDTC should re-examine the appropriateness of its discount rate and adjust its projection to account for significant project delays. Reported projections should be accompanied by a more explicit disclaimer, and they could reflect the status of the project (approved, contracted) and/or different time horizons for projected emission reductions. Once projects have been successfully completed, and the technologies have entered the market, the Foundation should begin reporting actual reductions. (1.117-1.121)</p>	<p>The Foundation's response. Sustainable Development Technology Canada (SDTC) accepts the recommendation and plans to re-examine its reporting methodology for projected reductions in greenhouse gas emissions in 2007.</p> <p>There is little precedent for reporting on projected reductions in greenhouse gas emissions, particularly for new technologies. In the absence of established methodologies, SDTC has drawn on findings in other markets to establish and apply a discount factor to applicant projections of 90 percent across the portfolio of investments to account for potential technological and market failures. SDTC is of the opinion that the 90 percent discount rate results in conservative projections. With SDTC's first seven projects starting their three-year reporting period, and other projects nearing completion, SDTC will be able to revisit its projections and discount rate in the coming years. In addition, SDTC fully intends to report on actual reductions reported by the applicants, once projects have been successfully completed and have entered the market.</p> <p>SDTC will enhance its projections with a more explicit disclaimer in its next corporate plan, to be published in October 2006. SDTC currently reviews the contract status of approved projects on a regular basis. Based on operational experience gained over the first four years of funding, SDTC is now in a better position to anticipate project delays and determine their potential impacts. As SDTC reviews its publicly reported projections, in October 2006, it will adjust them to more explicitly account for delays, which could cause significant changes in the anticipated timing of greenhouse gas emission reductions.</p>

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