Environment Canada

Performance Report

For the
period ending
March 31, 1996

Improved Reporting to Parliament –
Pilot Document

©Minister of Public Works and Government Services Canada 1996

Available in Canada through

your local bookseller

or by mail from

Canada Communication Group – Publishing
Ottawa, Canada K1A 0S9

Catalogue No. BT31-4/3-1996
ISBN 0-660-60150-8

Foreword

This document was prepared as phase two of the Improved Reporting to Parliament Project which has been established within the Treasury Board Secretariat to improve the Expenditure Management information provided to Parliament, and to update the processes used to prepare this information. This is part of a broader initiative known as "Getting Government Right" to increase the results orientation and increase the transparency of information provided to Parliament.

During the period from August 1995 to June 1996, extensive consultations were held with Members of Parliament and other key stakeholders to examine options to improve the information provided to Parliament. A clear requirement was identified to provide a focus on departmental performance and actual results achieved.

In June, 1996 the House of Commons gave its concurrence to tabling, on a pilot basis, separate performance reports from sixteen departments and agencies. These pilot documents will be evaluated, and if Parliament and others endorse the approach, Parliament will be asked to formally approve the introduction of separate performance reports for all departments and agencies beginning in the fall of 1997.

These documents are also available electronically from the Treasury Board Secretariat Internet site: http://www.tbs-sct.gc.ca/tb/key.html

Comments or questions about this document, or the Improved Reporting to Parliament Project, can be directed to the TBS Internet site, or to:

Government Review and Quality Services
Treasury Board Secretariat
L'Esplanade Laurier
Ottawa, Canada
K1A 0R5
Telephone: (613) 957-7042

Environment Canada

Performance Report
for
the Period ending March 31, 1996

Preface

This performance report describes what Environment Canada (EC), with its partners, has accomplished toward:

- *sustaining a healthy environment* by developing scientific knowledge and expertise regarding the dynamic integrity of the environment and identifying actions Canadians can take to protect and restore the environment;
- *securing Canadians' safety from environmental hazards* by forecasting severe weather and providing emergencies prevention, preparedness and response advice; and
- *building a greener society* by responding to the challenge to reconcile environmental and economic interests and remove the barriers to environmentally responsible action.

These are the department's three results-focused business lines. Under its three business lines, EC has identified a series of multi-year results to be achieved — its framework of accountability — against which its performance can be measured year after year. The department has also defined measures of its performance to allow its progress toward these results to be tracked.

Environment Canada is one of the pilot departments participating into the Treasury Board's new Improved Reporting to Parliament Project (IRPP). Pilot departments were asked to report to Parliament on what they have achieved in succinct, meaningful, results-oriented information.

These reports on performance will allow Parliamentarians to focus on the results expected from government programs and the results those programs actually achieve.

Although EC has reported on results in its Main Estimates in previous years, this *Performance Report* is the department's first report under the Improved Reporting Initiative. In this report, EC sets out the results it is striving to achieve with its partners to make sustainable development a reality in Canada.

The emphasis in the *Performance Report* is on 1995-1996. However, given the nature of most environmental issues — long-term and complex — the time frame of EC's reporting has been broadened to provide a clearer context for its activities on each issue.

The environment is a shared responsibility. In this *Report*, EC is reporting on its progress towards environmental goals; however, EC cannot achieve these goals alone. EC must work with its partners, national and international, to achieve results. To some degree, progress toward each result is an indicator of the effectiveness of EC's leadership.

September 1996

Table of Contents

Preface

Section I: Message from the Minister of Environment ii

Section II: Departmental Overview 1

Roles and Responsibilities 1
Current Challenges and the Mission of the Environment Program 1
Organization and Delivery of the Environment Program 2
Objectives and Priorities 2
Corporate and Business Line Performance 3
Additional Information 4

Section III: Performance by Business Line 5

Business Line 1: A Healthy Environment 5
Atmospheric Change 6
Toxics 10
Biodiversity and Wildlife 15
Conserving Canada's Ecosystems 18
Compliance and Enforcement 20

Business Line 2: Safety From Environmental Hazards 23
Weather and Environmental Prediction 23
Emergency Prevention and Preparedness 26

Business Line 3: A Greener Society 29
Information Products and Services 29
Technologies, Jobs and Capacity-Building 31
Partnerships for Sustainable Development 33

Section IV: Change Management 37

Cultural Change 37
Expenditure Management 40
People 40

Section V: Appendices i

1. Organization ii
2. Financial Information iv
3. Contingent Liabilities viii
4. Acts Administered in Whole or in Part by Environment Canada viii
5. List of Annual Reports from Environment Canada x
6. Report on Operations under the International River Improvements Act for the Year Ending December 31, 1995 x
7. Sources of Departmental Information xi
8. Contacts for Further Information xii
9. Index xiv

Section I: Message from the Minister of Environment

Throughout its 25 years of existence, Environment Canada has focused its efforts in three broad directions. It has protected Canada's environment by conserving and improving our air, water and wildlife. It has provided Canadians with forecasts and warnings that help them safeguard their lives and property. And it has supported the long-term health of both the environment and Canadians, by researching and sharing information that is essential to effective environmental action.

These three directions are the business lines — ***A Healthy Environment***, ***Safety from Environmental Hazards***, and ***A Greener Society*** — by which Environment Canada sets its goals and commitments. Last June, I released an Action Plan that showed how the department intends to deliver on its commitments. This performance report shows how we, Environment Canada, Parliament, and all Canadians, will track the department's progress toward achieving the intended results.

Two themes recur in the report. First, Environment Canada has a strong record of performance. The report provides clear evidence that many aspects of Canada's environment today are measurably better than they were 25 years ago. In most parts of the country, the water we drink is safer, the air we breathe is cleaner, our rivers and lakes are healthier, and Canada is a world leader in its efforts to conserve species.

Environment Canada has had a central role in achieving those improvements. Our scientific excellence has enabled us to define problems, analyze causes, identify the best solutions and provide a solid basis for policies, regulations and programs to control and eliminate the problems. This cycle of effective science and corrective action is at the core of the department's performance on acid rain, ozone depletion, mercury and lead pollution, species recovery and many other issues. In addition, Environment Canada's proven capacity for leadership enables it to work with a wide range of jurisdictions and organizations, nationally and internationally, to reach consensus on common goals and the need for action.

We have come a long way since 1971; but we also have a long way to go. That is the second theme of this report. Canada, and this department, are facing new environmental and health challenges. Toxic substances have been accumulating and interacting in previously unsuspected ways to damage the environment. Despite successes in recovering some wildlife species, 275 species are still at risk. Although Environment Canada has steadily improved the accuracy and timeliness of its forecasts and warnings, Canada — and the world — are now experiencing more extreme weather incidents. Canada's environment is increasingly stressed by pollution from outside our borders; even the people and snowfields of our Arctic carry traces of contamination by substances such as PCBs, lead and DDT. In addition to all these environmental and health challenges, we face fiscal constraints that affect not just Environment Canada but all departments, all governments and all nations.

The department thus has a large task ahead of it. We want to build on our past successes to deal with the new pressures. Within Canada,we shall strengthen federal mechanisms for supporting our environment and human health through initiatives such as renewing the Canadian Environmental Protection Act and introducing legislation to protect endangered species. We shall build new partnerships for cooperative action with our many stakeholders in the public and private sectors. Internationally, we shall maintain our leadership and consensus-building efforts to work with other countries in resolving global environmental problems.

The department's task is large; so is its vision. We want to see a Canada where responsible decision-making by Canadians sustains the environment for the benefit of present and future generations. As we work with our partners to realize that vision, it is essential that we be able to measure our progress. This report gives us a baseline for doing so. By linking Environment Canada's goals to its expected results and identifying performance measures, the report responds to several important needs. It improves our reporting to Parliament and Canadians. It provides essential input to decision-making on expenditure management. Finally, by letting Canadians know what they can expect of Environment Canada, it sets out a clear framework of accountability for the department's partnerships with other organizations.

The February 1996 Speech from the Throne stated: "The quality of Canada's natural environment is a matter of national pride. Security for Canadians means sustaining our environment. All Canadians must work together to protect the environment." Environment Canada's past performance shows how it has contributed to maintaining and improving the quality of our environment. Through science and leadership, the department will extend that performance to meet future challenges.

The Hon. Sergio Marchi

Section II: Departmental Overview

Roles and Responsibilities

Environment Canada is a science-based department with a mandate (under the *Department of the Environment Act*) that covers preservation and enhancement of the quality of the natural environment, renewable resources (including migratory birds and other non-domestic flora and fauna), meteorology, enforcement of the rules of the Canada-U.S. International Joint Commission, and coordination of federal environmental policies and programs. The department also has broad advocacy responsibilities to promote and encourage practices that lead to environmental sustainability, and to cooperate with others having similar objectives. Science is the foundation of its policies, programs and regulations, and is essential to achieving every result.

VISION

At Environment Canada, we want to see a Canada:

- where people make responsible decisions about the environment; and
- where the environment is thereby sustained for the benefit of present and future generations.

Current Challenges and the Mission of the Environment Program

While the mandate of Environment Canada (EC) has not changed since it was founded in 1971, the range and character of the issues with which it must deal have evolved considerably.

Environmental concerns have broadened from the local to regional and now global scale. As issues transcend national boundaries and are found to be interacting in complex ways, the need has emerged for a more integrated, pro-active and equitable approach to environmental sustainability as well as to economic and social development.

Concerns related to the safety of Canadians from environmental hazards have also broadened. Property losses from meteorological hazards have climbed, evidence is mounting of greater atmospheric variability, and Canada's vulnerability to environmental accidents (as a consequence of new manufacturing processes, complex new transmission systems, new products transported and ageing infrastructure) is increasing. It is apparent we must lengthen the time frames for forecasting, warning and response, and must widen the parameters for managing environmental risks.

The **environment is a shared responsibility.** To enable Canadians to do their share, the challenges are to reconcile environmental and economic interests, remove barriers to environmentally responsible action, and foster capacity in all sectors of society to act in ways that will benefit the environment for present and future generations.

While recognizing that they share responsibility for the environment, **Canadians are concerned their health is being affected by pollution and want effective federal leadership and national standards to protect the environment and their well-being**. The challenge is to use EC's national perspective and pivotal leadership

position to focus relations with other jurisdictions on changes that will increase environmental protection.

Between 1995/96 and 1998/99, **fiscal constraints** mean Environment Canada will reduce its budget by a third, and its staff by close to a quarter. The challenge is to continue to build a department that delivers quality services economically and cost-effectively.

Sustainable development provides the integrating approach needed to respond to today's challenges nationally and globally. Making sustainable development a reality in Canada is the mission of the Environment Program. Environment Canada cannot achieve it alone but it is uniquely positioned to provide leadership.

MISSION

To make sustainable development a reality in Canada.

In order to help present and future generations of Canadians live and prosper in an environment that needs to be protected, respected and conserved, EC undertakes and promotes programs to:

- sustain the environment and reduce environmental risks to human health;
- provide weather forecasts and warnings and emergency preparedness services; and
- give Canadians the tools to build a greener society.

Organization and Delivery of the Environment Program

Environment Canada plans, administers accountabilities, and reports its performance through three results-focused business lines: *A Healthy Environment*, *Safety from Environmental Hazards* and *A Greener Society*. The first two are concerned primarily with addressing the environmental issues of today; the third is focused on building societal capacity to sustain the environment for the future. A fourth Activity — Administration — provides corporate leadership, integrated systems and common services to support the business lines.

Externally, Environment Canada's accountability is by business lines; internally, management of resources and delivery of results is by responsibility centre within existing organizational structures. The structures thus crosscut the business lines.

Environment Canada is organized into five headquarters services:

- Atmospheric Environment Service;
- Environmental Conservation Service;
- Environmental Protection Service;
- Corporate Services; and
- Policy and Communications;

and five integrated regions:

- Atlantic; Quebec; Ontario; Prairie and Northern; and Pacific and Yukon.

The matrix approach ensures that the focus of planning and reporting is on departmental results; it provides a shared strategic context for department-wide expenditure management; and as thoroughly as possible, it integrates the delivery of the Environment Program.

Objectives and Priorities

Through its first business line, *A Healthy Environment*, the department develops scientific knowledge and expertise regarding the dynamic integrity of the environment and the linkages between environmental components, and it also identifies actions Canadians can take to restore and learn to function within the thresholds of environmental sustainability. The strategy is to target areas of greatest risk and seek opportunities for leadership.

Its second business line, *Safety from Environmental Hazards*, is concerned with forecasting routine and severe weather, as well as emergencies prevention, preparedness and response advice. The core strategy is to focus on measures to widen the margin of safety from

hazards and lengthen the time frame within which risk can be managed.

The third business line, *A Greener Society*, responds to the challenge to reconcile environmental and economic interests, remove the barriers to environmentally responsible action, and foster the capacity of all sectors of society to act on their environmental values and responsibilities. The core strategy is to use the department's policies and leadership to align and mobilize decision-makers across jurisdictions and at all levels of society.

Monitoring and reporting on the environment underpin the department's effectiveness in each of its business lines and on every issue. The Canadian environment is subjected to a wide variety of stresses including increasing average temperatures, increasing levels of UVb radiation, deposition and accumulation of toxics, and the changing chemical and physical characteristics of the atmosphere. This is happening at a time when resource utilization by the forestry, agricultural, fisheries and tourism industries is increasing. Environment Canada's research and monitoring programs and its development of indicators are essential to understand issues and to design scientifically defensible control and management options.

MINISTER'S PRIORITIES

as detailed in Environment Canada's
Action Plan for 1996-2000

- building greater public support for the environment through the development and promotion of environmental citizenship
- environmental protection, with a focus on ridding our air and water of toxics
- environmental conservation, with a focus on protecting endangered species
- contributing to employment creation and growth
- building and mobilizing effective partnerships
- strengthening Canada's international voice

Under its three business lines, the department has identified a series of multi-year results. These results constitute a framework of accountability against which the department's performance can be measured year after year, and should serve to enhance Environment Canada's reporting to Parliament and to Canadians.

Environment Canada's *Action Plan for 1996-2000* details the Minister's priorities and the department's planned actions to meet them within this framework. The department's performance in delivering on the Minister's priorities will be the focus of the department's Performance Report for 1997. This year's report, the department's first under the *Improved Reporting to Parliament Initiative*, provides a baseline of sorts for future reporting and has a somewhat longer time frame and broader focus than will be the case with future reports.

Corporate and Business Line Performance

For each issue, the department's Accountability Framework sets out the results that the department, with its partners, will seek to deliver within its planning horizon. The results to be achieved tend to reflect the point Canada has reached in the life cycle of the issue. In the early stage of any issue, research and monitoring play a major role in understanding its ecological causes and consequences. Once science has defined the necessity for certain actions, policy decision-making becomes the more dominant activity. If the solution requires international action, the early stage may also involve considerable effort in national and international consensus-building. When the necessary actions are in place, tracking and reporting on effectiveness become the focus. In the later stages, the focus may be behavioural change and empowered local action. In the final analysis, environmental indicators provide essential context for all other measurement Environment Canada will do.

In Environment Canada, the stage an issue has reached is reflected in the kinds of results and measures of performance the department has selected. The chart to follow summarizes EC's continuum of results and measures.

Results to be Achieved	Measurements
Outputs are used to track and evaluate management and operational activities of an organization; they are a means by which to judge or evaluate an organization's performance against its own (internal) goals and objectives.	Outputs have ***performance measures***. Examples are: scientific understanding of an issue, numeric models, policy frameworks, agreement, regulations.
Intermediate outcomes, tracked over time, provide information on trends in the condition of a phenomenon. They are a means of judging whether an organization's activities, programs, policies or regulations have made any difference on the world outside.	Intermediate outcomes have their own ***indicators***. Examples are: reductions in loading to the environment, compliance with regulations, pollution prevention, restored habitat, quality services which meet clients' needs.
Long-term outcomes focus on trends in environmental, social, cultural and economic changes; driving forces behind these changes; how the ecosystem and its components (including humans) are responding to these changes; and societal responses to prevent, reduce or ameliorate stresses on the ecosystem.	Long-term outcomes have ***sustainable development indicators***. Examples are: conservation of bio-diversity, sustainability of ecosystems, lives and property saved from environ-mental disasters, the capacity of society to make responsible decisions, the integration of environment and economy.

In measuring the department's performance, four points should be borne in mind.

First, environmental improvements tend to take a long time to show up in our indicators.

Second, the nature of environmental problems and the actions EC takes mean one environmental indicator may serve to measure impacts of a number of programs. For example, toxics in cormorant gull eggs may serve as an indicator of the effectiveness of the department's toxics controls, wildlife programs and ecosystems initiatives.

Third, indicators generally measure the cumulative effects of many parties. Environment Canada's performance is inextricably linked to its ability to make, maintain and enrich partnerships, across jurisdictions, sectors and international interests. Many measures in this report relate to how effective Environment Canada has been in mobilizing others to act.

Fourth, stress on an ecosystem is caused by the interaction of many issues (e.g., acid rain, atmospheric ozone and toxics), which make it very difficult to measure the cumulative effects in scientific terms.

Additional Information

For further information consult Environment Canada's Action Plan (1996/97 - 1999/2000) and Business Plan.

Spending Authorities

Authorities for 1995/96 — Part II of the Main Estimates

Financial Requirements by Authority

Vote (millions of dollars)		1995/96 Main Estimates	1995/96 Actuals
	Environment Program		
1	Operating Expenditures	488.8	518.4
5	Capital Expenditures	58.6	49.8
10	Grants and contributions	46.5	54.5
(S)	Minister of the Environment — Salary and motor car allowance	0.1	0.1
(S)	Spending of proceeds from the disposal of surplus Crown assets	—	0.3
(S)	Contributions to employee benefit plans	35.9	37.7
	Total Program	629.9	660.8

This table includes data for the Canadian Environmental Assessment Agency (CEAA), which is no longer included in the Estimates of Environment Canada effective 1996/97. The Agency accounts for $8.5 million in Main Estimates and for $10.0 million in Actuals.

Departmental Appropriated Planned and Actual Spending (excluding CEAA)

ENVIRONMENT CANADA (millions of dollars)	Main Estimates 1995/96	Actuals 1995/96	Main Estimates 1996/97
Business Lines / Activities			
A Healthy Environment	264.7	247.3	230.6
Safety from Environmental Hazards	158.2	189.2	135.4
A Greener Society	124.5	129.1	113.9
Administration	74.0	85.2	66.5
Total	**621.4**	**650.8**	**546.4**

Net Cost of the Program by Business Line/Activity

1995/96 Comparison of Main Estimates to Actuals[1]

(millions of dollars)

	Human Resources (Full-Time Equivalent)	Operating	Capital	Grants and Contributions	Total Gross Voted Expenditures	Less Revenue credited to the Vote	Total Main Estimates
Business Lines/Activities							
A Healthy Environment	1,844	212.8	23.6	31.5	267.9	3.2	264.7
	1,773	208.5	10.3	32.4	251.2	3.9	247.3
Safety from Environmental Hazards	1,485	156.8	18.4	2.8	178.0	19.8	158.2
	1,558	184.9	22.8	3.5	211.2	22.0	189.2
A Greener Society	922	123.8	10.4	10.9	145.1	20.6	124.5
	914	118.9	13.3	18.0	150.2	21.1	129.1
Administration	870	67.8	6.2		74.0		74.0
	929	81.8	3.4		85.2		85.2
	5,121	**561.2**	**58.6**	**45.2**	**665.0**	**43.6**	**621.4**
	5,174	**594.1**	**49.8**	**53.9**	**697.8**	**47.0**	**650.8**
Other Revenues and Expenditures							
Revenue credited to the Consolidated Fund							(6.7)
							(10.6)
Cost of services by other departments							47.3
							47.3
Net Cost of the Program							662.0
							687.5

CEAA is excluded.

1 Shaded numbers are Actuals.

Section III: Performance by Business Line

BUSINESS LINE 1: A HEALTHY ENVIRONMENT

This business line addresses issues related to, and connections between: the air we breathe and our global atmosphere; the toxic substances we emit into our air, land and water; the diversity of life on earth; and the impact of human activities on ecosystems.

Conserving and protecting Canada's environment has been a core business of Environment Canada since its inception. When assessed against conditions 25 years ago, Canada's environment is improved. The water we drink is safer, the air we breathe is cleaner, our rivers and lakes are healthier, and in the international community Canada has one of the best records for conserving species. The evidence is that Environment Canada has made a material contribution to these achievements and, in the course of doing so, has earned an international reputation for scientific excellence and environmental leadership.

Complicating the picture, however, are changing environmental challenges. The evidence is compelling that the global environment is deteriorating at an accelerating rate and that Canada's environment is increasingly stressed by pollution from outside our borders. Some environmental problems are found to persist even when the cause has been removed, and others accumulate and have harmful effects even below detection levels. Most disturbing is that environmental issues are being found to interact in previously unsuspected ways, confounding conventional approaches.

Environment Canada is uniquely positioned to continue to provide leadership in addressing the evolving environmental challenges by virtue of its mandate, science, record of accomplishment and public credibility. Its influence is directed toward individuals, communities, various levels of government and industry, among others. The results achieved by Canada as a whole will be a measure of the department's leadership.

ENVIRONMENT CANADA'S GOALS in this business line are to:

- reduce negative impacts on the atmosphere and help Canadians better understand and adapt to these consequences;
- eliminate the threat posed by toxics;
- conserve and enhance Canadian and global biodiversity;
- conserve and restore ecosystems; and
- ensure a high level of compliance with Canada's environmental laws and regulations.

The department's strategy *is to target departmental actions toward the greatest sources of risk to the health of Canadians and the environment, and toward the leverage points at which federal leadership will be most effective, by:*

- increasing scientific and public understanding of the long-term and ecosystemic nature of environmental issues;
- enhancing the comprehensive monitoring and reporting of stressors and states of ecosystems;
- identifying issues amenable to national standards and regulations;
- promoting pollution prevention and eco-efficiency;
- enhancing the efficiency of its regulatory approaches; and
- developing opportunities for alliances and partnerships.

Environment Canada develops preventative, mitigative and adaptive standards and strategies to address **climate change, stratospheric ozone depletion, hazardous air pollutants, smog inhalable particulates and acid rain**, with a focus on energy and transportation sectors.

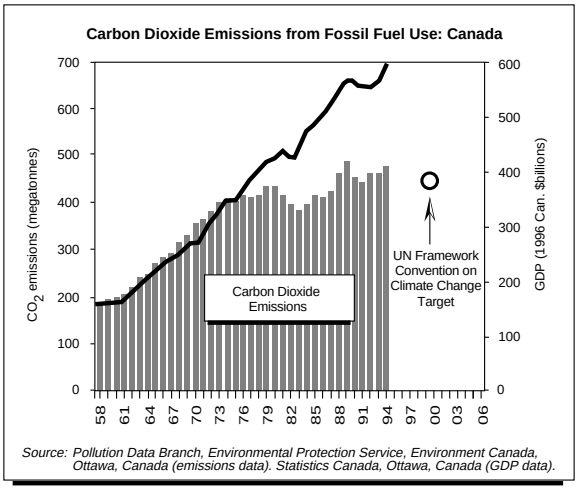
At the time of EC's creation, air pollution was viewed solely from the perspective of human health, regarded largely as a local problem and addressed unevenly across the nation via provincial legislation. Even with the creation of EC, for jurisdictional reasons federal involvement was limited in the early 1970s to identifying environmental problems and defining "best practicable technology." Throughout the 1970s, governments and then industry began to realize the extent to which air pollution is a transboundary and even global issue. During this time, EC improved its data base regarding air quality and began to play a prominent role on the international stage with respect to air pollution control.

Today, EC's approach is to identify issues, apply its science to measure and understand the nature and magnitude of the problems and their effects, and develop policies intended to mitigate, reverse and eliminate those effects. EC's activities target five issue areas — Climate Change, Stratospheric Ozone Depletion, Hazardous Air Pollutants, Smog and Inhalable Particulates, and Acid Rain — with a focus on energy and transportation sectors. Jurisdiction remains an issue that governs the degree to which EC can make progress on these issues.

***RESULT TO BE ACHIEVED*: Canada's greenhouse gas emissions (GHGs) are reduced and international actions promoted.**

There is increasingly compelling evidence that rising levels of CO_2 and other GHGs in the atmosphere are contributing to rising global temperatures and greater atmospheric variability. Effective control of GHG emissions requires concerted action by all levels of government in Canada and a wide range of other partners (the auto industry, power companies, individual Canadians, etc.).

The high priority that EC has placed on the control of GHG emissions since the late 1970s is largely responsible for the attention being given this issue by Canada's ministers of environment and energy, and for the leadership role being played by Canada internationally.



CO_2 emissions are used as a proxy to track trends in greenhouse gases and as an indicator of climate change.

In order to achieve this result, Environment Canada has combined its international and domestic actions under the Framework Convention on Climate Change, which Canada ratified in December, 1992. Specifically, in 1995, the Canadian Ministers of Energy and of the Environment agreed to the development of options to stabilize emissions and subsequently the National Action Program on Climate Change (NAPCC) was tabled in Berlin outlining specific measures intended for federal-provincial discussion.

Among Environment Canada's milestones toward achieving this result are the following:

- Environment Canada has sought the close cooperation of the provinces in implementing the National Action Program on Climate Change (NAPCC) to meet Canada's commitments under the Framework Convention on Climate Change.

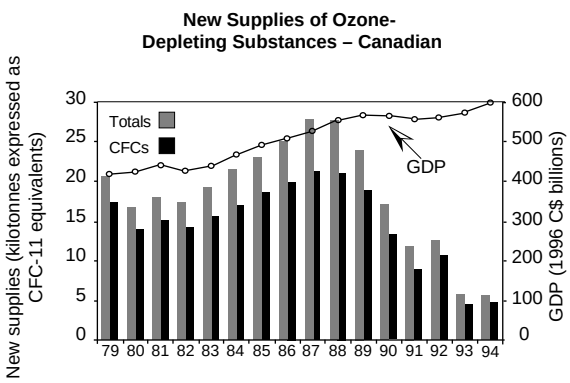
- It has the lead in the development of a federal action plan on climate change, and new regulations and standards are being prepared for emissions and fuels formulation.
- Improvements have been made to the General Circulation Model used to project future climate change, a national research network has been successfully launched to coordinate university and government research to further improve the climate model's predictive capability, trends in Canada's climate are undergoing careful analysis, and integrated, multidisciplinary studies into the impacts of climate change on Canadians within the MacKenzie and Great Lakes Basins are nearing completion.

Even though it has managed to bring the rate of increase in GHG emissions below the rate of growth of GDP, Canada is unlikely to be successful in meeting its goal of stabilizing GHG emissions at 1990 levels by 2000 without further mitigative action. The barriers to effective action include Canada's climate, population growth, declining use of public transport, the dramatic increase in private passenger transport, economic activity and jurisdictional issues.

***RESULT TO BE ACHIEVED:* Consumption of ozone-depleting substances (ODS) is stabilized, reduced or eliminated, and ozone layer recovery begins.**

Measurements indicate the ozone layer has been thinning over the last two decades and continues to decline, increasing the risk to human health and the health of ecosystems through increased ultraviolet (UV) radiation. Environment Canada has acted directly to address the problem as well as to build society's capacity to cope with the climatic results. Environment Canada played a major role in the development of the 1987 Montréal Protocol to control CFCs globally. In meeting Canada's commitments under the Protocol, EC has achieved the following milestones:

- Government controls have been placed on ozone-depleting substances (CFCs, HCFCs, halons, carbon tetrachloride, methyl chloroform and methyl bromide). New supplies of CFCs are clearly down despite relative increases in GDP. EC is monitoring this situation through its indicator program.



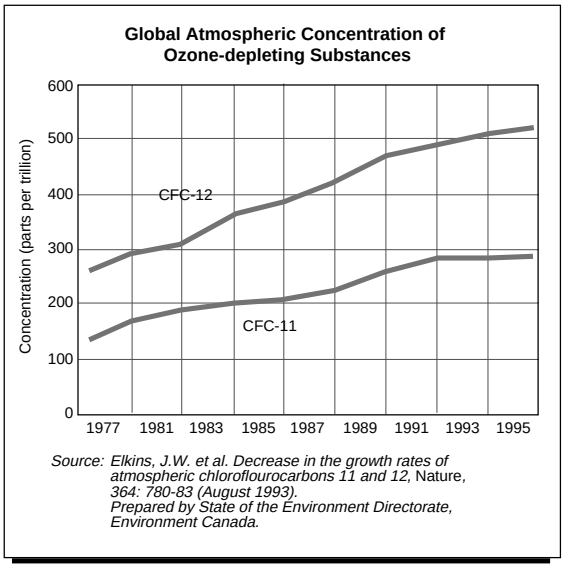
Source: Ozone-depleting substances: Commercial Chemicals Evaluation Branch (CCEB), Environmental Protection Service, Environment Canada, Ottawa, Ontario, Canada. Gross Domestic Product (GDP): Statistics Canada, Ottawa, Ontario, Canada.

Prepared by State of the Environment Directorate, Environment Canada.

The above provides an indicator of the effect of the 1987 Montréal Protocol on new supplies of ozone-depleting substances in Canada.

- At a meeting of the Parties to the Montréal Protocol in Vienna in December 1995, Canada agreed to accelerate the phase-out of methyl bromide and HCFCs.
- Research on ozone depletion and UV radiation is continuing, and development of equipment such as the Brewer Spectrophotometer is increasing our knowledge of UV and its effects.
- EC issues weekly reports on the status of the ozone layer over Canada, and its UVIndex informs the public of the risk of exposure.

The impact of EC's leadership in the international community is evident in the development of international controls that have slowed the rate of growth of atmospheric concentrations of CFCs.



The above is an indicator of the effectiveness of the 1987 Montréal Protocol in curbing concentrations of CFCs in the atmosphere.

Domestically, the impact of EC's science and policy is even more clear: production of methyl chloroform has been phased out and production of CFCs has stopped, Environment Canada's enforcement of ozone legislation is strict, and its information programs, such as its UVIndex, have produced growing public awareness of health risks and measurably changed the behaviour of Canadians. Canada still confronts the task of dealing with the estimated 42,000 tonnes of CFCs still in use.

The major challenge Canada faces is to ensure that developing countries comply with their agreements to phase out ODS by 2010. A number of key developing countries are continuing to increase their use of these substances. Recovery of the ozone layer requires compliance with the Protocol on a global basis.

Actual recovery of the ozone layer will take decades because the ozone-depleting substances already released are very long-lived. Continued research and monitoring of ozone depletion and its effects are necessary to ensure that the actions being taken to restrict ODS are working and are sufficient.

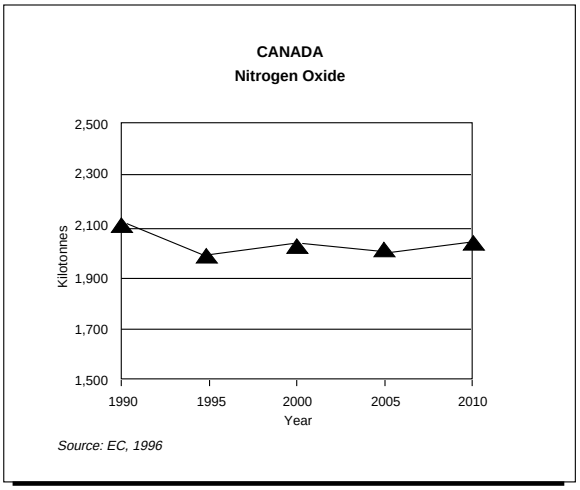
***RESULT TO BE ACHIEVED:* Canadian levels of smog and inhalable particulates are reduced.**

Poor air quality is only too familiar to Canadians in certain major centres, especially in summer. "Smog," as the condition is commonly known, is created when components — mainly emissions of oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) — combine in the presence of sunlight to form harmful ground-level ozone.

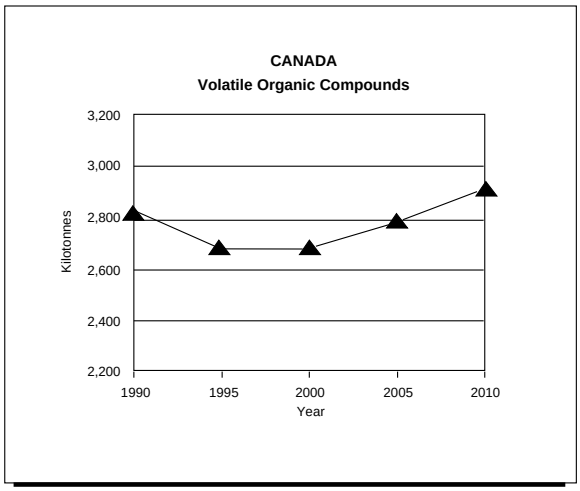
EC's actions toward improved air quality include the following:

- EC supports local and regional air quality initiatives with a national air quality monitoring program, the regulation of significant sources of pollution, standards for vehicle emissions, scientific research and agreements with the United States.
- Work is continuing on completing emissions control initiatives and supporting studies under the federal-provincial NO_x/VOC Management Plan.
- Canada is playing a leadership role in the development of new protocols on NO_x and VOCs, under the UN Economic Commission for Europe (ECE).
- The *Alternative Fuels Act* has been passed.

Smog levels have declined over the past 20 years and Canada's goal for emissions of NO_x from stationary sources under the Canada-U.S. Agreement have been achieved.



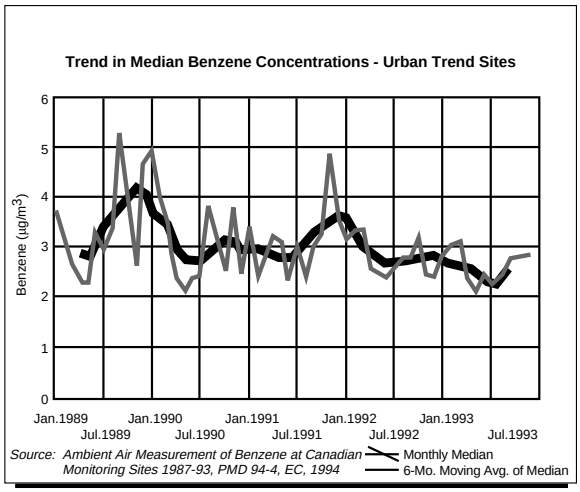
The above graph and the graph to follow represent the scenario for NO_x and VOCs if further actions are either not taken or ineffective.



However, absolute levels of emission remain high and the incidences of "bad air days" in major centres across Canada remain a serious concern. Furthermore, with the current level of emission controls and the forecast growths in industry, population and transportation activities, NO_X and VOC emissions are expected to rise unless additional action is taken. The Next Steps Smog Management Plan will set new emission reduction targets and establish a new management regime to ensure that consistent improvements are made in air quality. A clean air campaign is being developed to focus on the need for concerted action by government, industry and individuals to change behaviour in order to reduce the health and environmental risks associated with smog.

Another contributor to poor urban air quality are certain airborne particles. While government controls have resulted in a significant reduction in the level of larger airborne particles since 1979, there is concern finer particles (the so-called respirable particles) with diameters of less than 10 mm may be responsible for most of the airborne particle threat to human health. A national PM-10 air quality objective is being developed by Health Canada, Environment Canada, the provinces and municipalities.

Airborne toxic pollutants such as benzene, found in trace amounts in urban air, are becoming a concern to health professionals. The major source of airborne benzene in cities is unburned gasoline from vehicle exhaust. The main form of human exposure to benzene, other than from cigarette smoking, is through breathing city air. Average levels of benzene are being lowered by more efficient auto fuel combustion and the inspection of in-use vehicles.



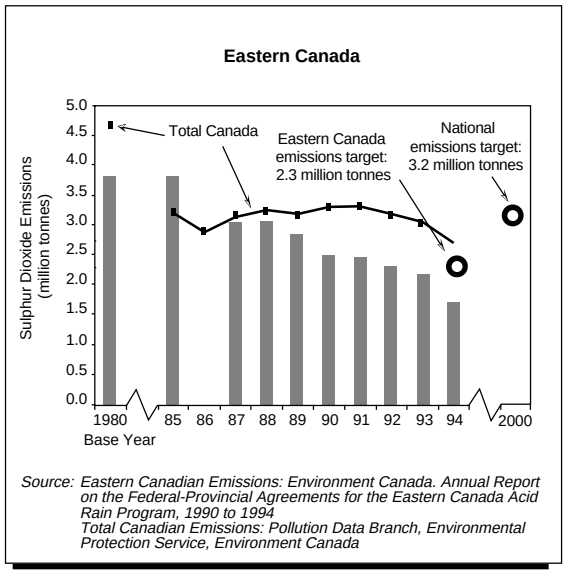
Benzene is an example of the toxic chemicals in the air of Canadian cities. The decreasing trend line is an indicator of cleaner vehicle exhaust.

RESULT TO BE ACHIEVED: **Negative impacts of acid rain are minimized.**

In the 1970s, EC determined that forests and lakes in Eastern Canada were being severely damaged by precipitation containing SO_2. Canada's commitment was to reduce SO_2 emissions in accordance with targets set by the UN ECE Protocol and the Canada-U.S. Air Quality Agreement.

EC's performance is evident in Canada's success in raising Americans' awareness of acid rain and in meeting and surpassing its SO_2 reduction targets ahead of schedule.

Despite these successes, acid precipitation continues to damage Canadian ecosystems, and the health effects of breathing tiny sulphate particles (formed from SO_2) are a growing concern. The Federal Government is working with the provinces to develop by 1997 a new National Strategy on Acidifying Emissions to further protect ecological and human health.



This indicator will continue to be used to track EC's performance in controlling emissions contributing to acid rain. The downward trend in SO_2 emissions continues: in 1995, emissions were 53% below 1980 levels, 22% below the 2.3-million-tonne cap under the Canada-U.S. Air Quality Agreement, and 17% below the cap under the UN ECE Protocol.

Progress on all atmospheric results is related in some measure to change in two sectors. Environment Canada has committed to target the following results related to energy and transportation:

- consideration of sustainability is increased in all Canadian **energy** decisions; and
- the environmental stress caused by **transportation** is reduced.

Performance indicators are under development to measure EC's impact on these sectors.

A Case Study: Lead

Environmental problems, by their very nature, overlap into other issues. In this example, the targeting of lead shows how the issue moved between a toxic and an atmospheric issue, as the lead available for up-take by living organisms led to controls on its presence in gasoline.

As a natural element, lead is found throughout the environment in concentrations that can vary widely. Most of the lead found in the environment is in a form unavailable to living organisms. However, "bioavailable" lead (lead that can be taken up by living organisms) poses a health risk. In humans, exposure to high lead concentrations can lead to accumulation of lead in body tissues and damage to the central nervous system.

Because of concerns about lead's adverse health effects, strategies to reduce emissions of lead generally and from gasoline in particular have been in place since 1974. Emissions of lead from gasoline peaked in 1973 at over 14,000 tonnes (about 70% of total lead emissions) and have been in decline ever since. In 1990, lead use in gasoline was phased out in Canada. Emission controls have thus far resulted in significant lowering of lead levels in urban air.

Underpinning all the department's efforts in regard to atmospheric change is a substantial scientific effort, the result of which is intended to be: that knowledge of atmospheric processes is improved to anticipate and cope with future atmospheric changes. Measures of the impact of the department's R&D are under development.

Environment Canada determines the issues and risks associated with **toxics,** and implements targeted measures to virtually eliminate persistent bioaccumulative toxic substances and to prevent, control, or eliminate the use or release of other toxics of concern.

Since 1971, EC has been Canada's leader in identifying, monitoring and managing toxic substances, and toxics management continues to be a central component of its business. Scientific understanding and measurement of the effects of toxics have advanced considerably over 25 years. Concern has progressed from numbers of animal deaths caused by pollution to considering effects at the neurological and hormonal levels; from recognizing effects close to sources to considering the global distribution of substances; from measuring in parts per million to parts per quadrillion. As science has advanced, so too has our approach shifted away from "react and cure" or "command and control" to "anticipate and prevent".

Today, the favoured approach is pollution prevention and the virtual elimination or life cycle management of toxic substances. Consultation, partnership and cooperation are important factors in achieving Canada's goals related to toxics.

The impacts of EC's performance are evident in the dramatic reductions in levels of toxic substances such as mercury, lead and organochlorines, including DDT and its main breakdown product DDE, PCBs, dioxins and furans in the environment, and reductions in levels of toxic effluent discharges from many industrial plants into ecosystems of national importance.

Despite our successes, some substances remain at levels potentially harmful to wildlife and there is growing concern regarding continued low level exposure to a range of trace metals and persistent organic compounds. However, as our understanding and measurement of toxics entering the Canadian environment from domestic and international sources advances, the focus of EC's effort is shifting to considering the larger picture of complex ecological interactions, the indirect and long-term effects of toxic substances and, in turn, the whole array of available risk management opportunities.

The *Canadian Environmental Protection Act* (CEPA) provides a framework for federal action on toxics; its renewal will be based on sustainable development, pollution prevention, an ecosystem approach and biodiversity. It is intended to deal more quickly and efficiently with toxic substances, and to strengthen enforcement and harness the best regulatory, voluntary and economic tools to promote environmental protection and economic growth, with an emphasis on cooperation, science, and user/producer responsibility for substances.

RESULT TO BE ACHIEVED: **Sources and quantities of toxic substances, effluents, emissions and wastes requiring management are identified, through sound scientific research and assessments, and information is provided to Canadians in a timely and effective manner.**

The following actions represent the first necessary steps in controlling substances which pose a hazard to human and environmental health:

- To date, under CEPA, EC has developed two Lists of Priority Substances for assessment of toxicity. The first set of 44 substances has been assessed and management plans are being developed or implemented for the 25 substances that were assessed as toxic. The second list of 25 substances has been published in Part I of the Canada Gazette and is now being assessed.
- EC has also developed and publishes an annual National Pollutant Release Inventory (NPRI). In 1994, 1,713 facilities reported their releases against the almost 200 NPRI-listed pollutants.

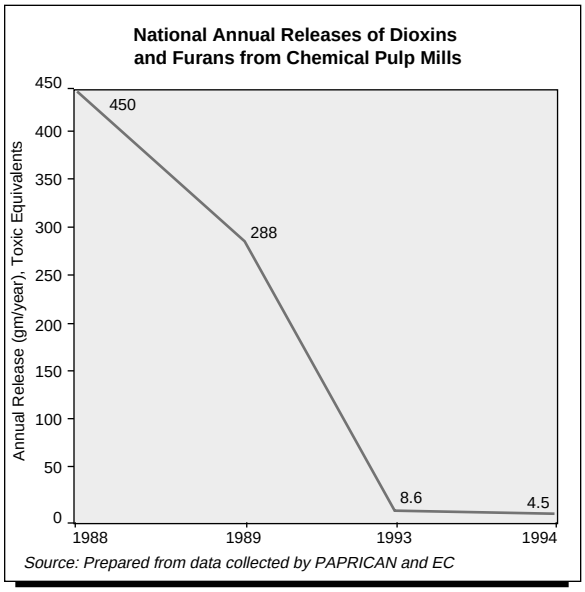
RESULT TO BE ACHIEVED: **Management actions are implemented toward the virtual elimination of persistent, bioaccumulative toxics (PBTs) resulting from human activity.**

In 1995, the federal government adopted a Pollution Prevention Strategy and a Toxic Substances Management Policy (TSMP) to manage toxic substances systematically. The TSMP seeks to:

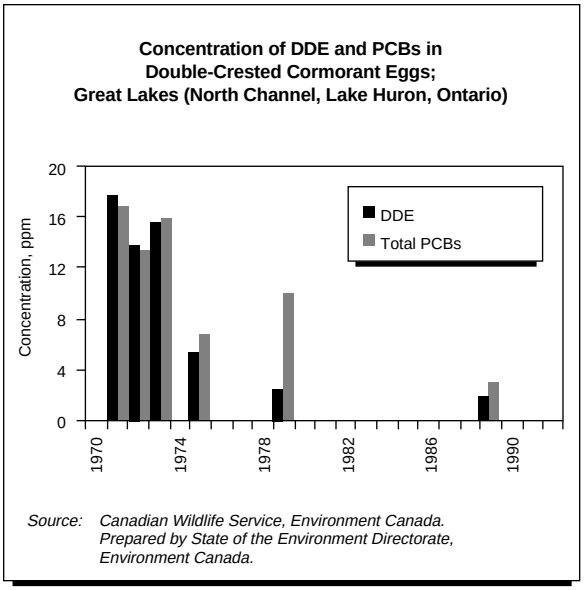
- virtually eliminate from the environment toxic substances that result predominantly from human activity and that are persistent and bioaccumulative (Track 1 substances); and
- manage other toxic substances and substances of concern throughout their entire life cycle, to prevent or minimize their release into the environment (Track 2 substances).

As part of its efforts, Environment Canada has taken the following actions:

- It has identified 13 candidate substances, including chlorodane, mirex and toxaphene, for virtual elimination and scientific justifications have been drafted. For those found to be PBTs, EC will take action to ensure phase-out of use and minimization of releases of by-products, contaminants and waste.
- Virtual elimination of designated toxic substances is a priority for the department's programs in ecosystems of national importance. See Ecosystems results, pp. 18-20, for performance information.



The concentrations of dioxins and furans from chemical pulp mills are an indicator of the effectiveness of EC actions to manage these substances.



This indicator is a proxy to illustrate the effectiveness of regulations to ban the use of toxic substances or severely restrict their release into the environment.

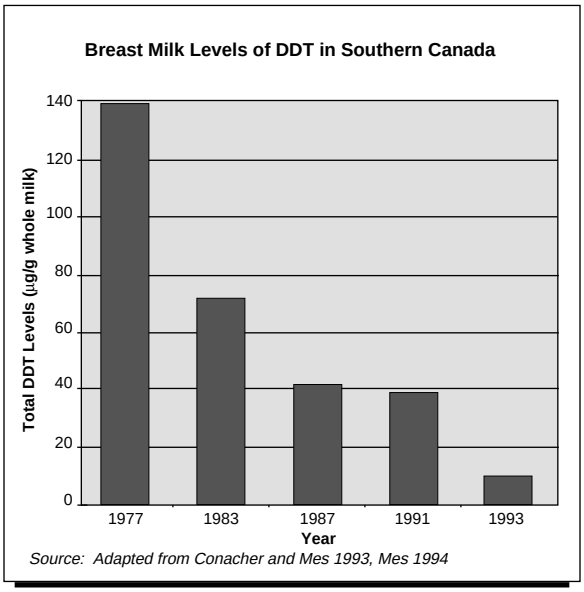
Hazardous air pollutants (HAPs), a specific toxics issue, includes persistent organic pollutants (POPs) such as DDT, which are known to have toxic effects on humans and animals even at extremely low concentrations. The atmosphere often carries these pollutants far from the original sources; many of the POPs are no longer used in Canada but originate in other parts of the world and are deposited in our North at high levels.

Environment Canada is leading the response to this issue through the following actions:

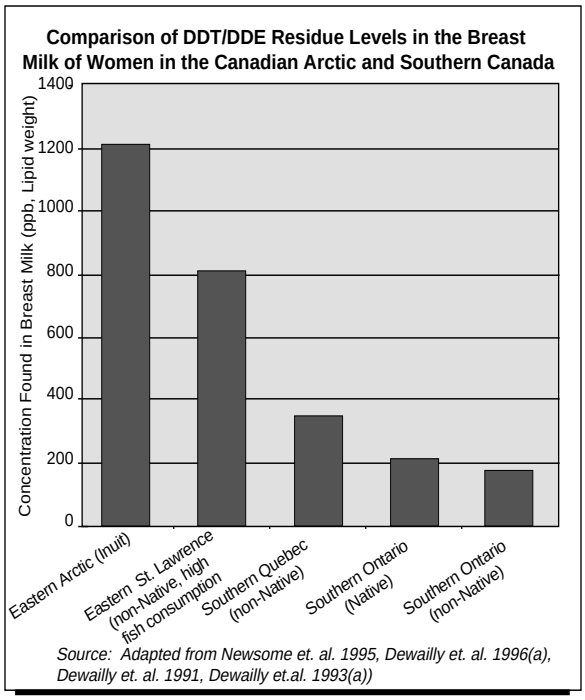
- The federal Toxic Substances Management Policy was drafted in part to provide a framework for managing HAPs domestically. Within this framework, a national strategy is being developed, and Canada's National Air Pollutants Surveillance network is being upgraded to expand our understanding of the deposition of pollutants.

But HAPs are an international problem. DDT, which concentrates and reaches higher and higher levels in the food chain, illustrates the challenge.

DDT has not been used in Canada since 1985, yet is present in the breast milk of Inuit in northern Quebec at levels four or five times higher than in populations in southern Canada. In order to address the problem of HAPs, both domestic and global actions are required.



The above trend indicates the effectiveness of regulations to reduce the health risks of DDT from domestic sources.



The graph above indicates the level of health risk posed by the long-range transport of DDT in the Canadian Arctic.

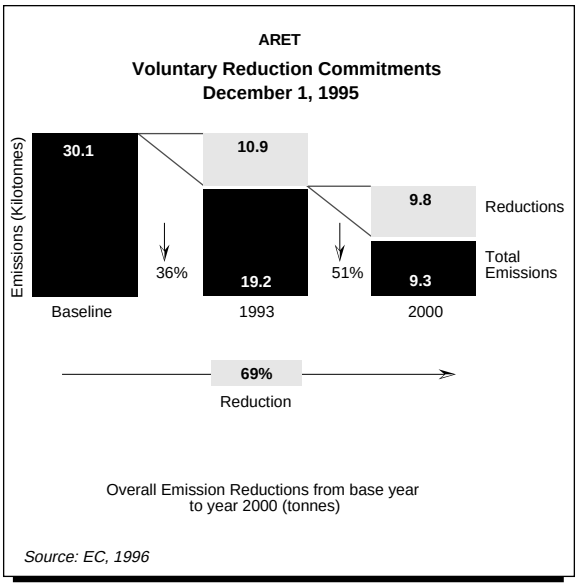
- Environment Canada has made significant contributions to the role Canada is playing internationally, in the development of the UN ECE Long-Range Transboundary Air Pollution Convention, the 1995 Washington Declaration and the Global Program of Action on Protection of the Marine Environment from Land-Based Activities. Also under development is a Canada-U.S. Binational Virtual Elimination Strategy.

RESULT TO BE ACHIEVED: **Management actions are implemented to prevent, reduce or eliminate the risks posed by toxics that do not meet all the TSMP Track 1 criteria, and by other substances of concern.**

One essential approach to the management of "Track 2" substances is the use of voluntary action. To this end, Environment Canada developed the Accelerated Reduction/ Elimination of Toxics (ARET) program, a national, multi-stakeholder initiative promoting voluntary action by emitters of toxic substances.

The following milestones are indicative of the initiative's success to date.

- By December 1995, 170 organizations (primarily companies) had participated in ARET. They have committed to a 69% reduction in 117 substances by the year 2000.



- EC is working with industry and other stakeholders to develop plans to reduce or prevent releases of those PSL substances suspected to be toxic through an approach called the Strategic Options Process (SOP).

Environment Canada has the responsibility to ensure that Canada is in compliance with: the Basel Convention on the Transboundary Movements of Hazardous Wastes and Their Disposal; the Canada-USA Agreement on the Transboundary Movement of Hazardous Waste; the OECD Council decision concerning the control of transfrontier movements of wastes destined for recovery operations; and the London Convention on Ocean Dumping. Canada became a party to the Basel Convention in 1992 with the introduction of the Export and Import of Hazardous Waste Regulations under CEPA and meets obligations under the London Convention by means of a system of permits (CEPA Part VI).

The following outputs contribute to Canada's commitments related to hazardous waste.

- A database for tracking ocean disposal permits and the quantities disposed is operational and accessible by headquarters and regions for the transfer of data and information.
- Environment Canada has developed a computerized tracking system for monitoring the transboundary movement of hazardous wastes to ensure that hazardous wastes are destined to environmentally sound facilities.
- It has also developed and published Canadian Council of Ministers of the Environment (CCME) guidelines for landfill gas management, compost quality, the burning of wastes as fuels in cement kilns, and lastly the recycling, treatment and disposal of transformers containing PCB liquids and PCB-contaminated materials, and completed an extensive study on solid waste management in Canada.

EC also provides the necessary leadership and co-ordination on the Greening of Government initiative to safely dispose of PCB wastes in a cost-effective manner. Among the steps Environment Canada has taken are the following:

- EC provides technical advice to federal departments on the treatment of low level PCB contaminated mineral oil and regulates the treatment process.
- Negotiations are ongoing with the established clients to dispose of their remaining stored PCBs. Some clients have minimal amount of waste remaining while others have yet to confirm their inventory. Plans are to meet the Federal Government's objectives for the destruction of all stored PCBs by the end of 1996. The current estimate of the total inventory of stored PCBs is 2,300 tonnes, of which about half has been removed to date for destruction.
- Environment Canada has been informed that seven departments have now disposed of all their stored PCB inventory. They are CSC, NCC, Bank of Canada, NRC, NRCan, Fisheries and Oceans, and Veterans Affairs.

Environment Canada's actions to address orphan and federal contaminated sites include the following:

- The five-year, $250-million joint federal-provincial National Contaminated Sites Remediation Program terminated in 1995/96. The program remediated 34 and assessed 11 additional orphan sites, remediated 18 and assessed 325 federal sites, and developed 55 clean-up technologies.
- In 1995, an interdepartmental committee was created as an ongoing mechanism to provide a consistent approach for dealing with contaminated sites on federal lands.

The impact of the department's efforts to reduce the threat posed by toxics can be seen in declining levels of organochlorines (e.g., DDT, DDE and PCBs) and furans and dioxins from pulp mills (98.9% since 1988). However, some organochlorines remain at levels potentially harmful to wildlife and there is growing concern

A Case Study: *Anatum* Peregrine Falcon

The example of the Peregrine falcon, a top-of-food chain predator, illustrates not only how the bio-accumulative effect of toxic substances affects the species, but also the department's integrated efforts at dealing with an issue that touches toxics, biodiversity, wildlife and ecosystems.

During the 1960s, the *anatum* peregrine falcon, a top-of-food chain species, declined due to DDT contamination. DDT was banned in Canada during 1969. In 1970, the Canadian Wildlife Service (CWS) initiated a captive-breeding project to maintain the remaining *anatum* peregrine gene pool and produce young to reintroduce back throughout its Canadian range once DDT levels were no longer threatening. Concurrently, CWS, together with provincial and territorial wildlife agency biologists, conducted five year surveys to document occupancy at nest sites, productivity, and collected unhatched eggs for pesticide analyses. Once captive-bred young were available, the first experimental releases occurred in 1975. Since then provincial, CWS and Parks Canada biologists, and non-government personnel have released approximately 1600 young peregrines throughout its once deserted range south of 60^0 N. Peregrine populations are now self-sustaining, as shown by the 1995 survey data, DDT levels are no longer threatening to the peregrine's survival, and the recovery plan goals have been achieved. Due to these successes, the CWS Captive-breeding Facility at Wainwright is being closed in the fall of 1996.

regarding continued low-level exposure to a range of trace metals and short-lived and persistent organic compounds.

EC's actions are intended to assure the sustainability of ecosystems and human health for present and future generations. To identify the impact of its actions, performance indicators will be established for major ecosystems, and the trends in preventing or reducing releases of toxics and other substances of concern will be monitored.

Environment Canada acts nationally and internationally to protect and recover **endangered species**, sustain **migratory birds** and **other wildlife** populations, and conserve wildlife habitat.

Globally, species are at risk from a variety of pressures: overuse or misuse, loss of habitat, toxics in the ambient environment, and the accumulation of persistent toxics in the food chain. The loss of species, lamentable in its own right, is also a key indicator of the overall health of the environment and of emergent risk to human health.

EC's goal is to conserve and enhance Canadian and global biodiversity. More specifically, its long-term objectives are to ensure that migratory birds and other wildlife populations are sustained or increased; that Canadian initiatives and expertise contribute to sustaining Canadian and global biodiversity; and that species at risk are identified, rehabilitated and re-established.

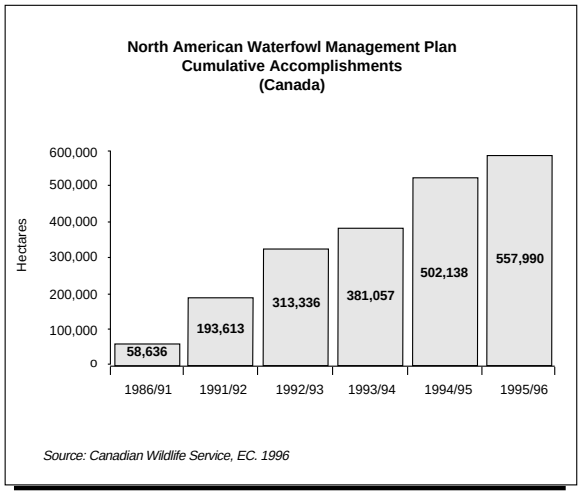
To these ends, EC employs two key strategies: promoting the sustainable use of natural resources, and taking action to conserve species, habitat and ecosystems.

RESULT TO BE ACHIEVED: **Designated wildlife populations, under federal jurisdiction, are sustained or increased to healthy levels.**

In 1986, Canada and the United States signed the 15-year North American Waterfowl Management Plan (NAWMP). The aim is to restore North American waterfowl populations to levels of the 1970s by securing, enhancing and managing key wetland habitat.

The following outputs ensure that the Plan meets current requirements and demonstrates that we are progressing toward our objectives:

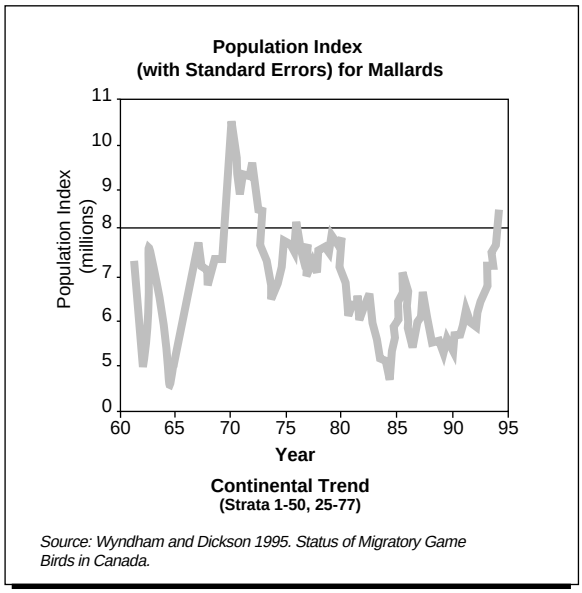
- In 1994, the Plan was updated to renew and expand the original commitment, and was signed by Mexico.
- By the end of 1995, some 27% of Canadian NAWMP habitat objectives had been met. Over half a million hectares of targeted wetlands and upland habitat were secured and enhanced, and an additional two million hectares had their use modified to support the objectives of the Plan.
- Populations of several species of waterfowl (including the Green-winged Teal, Mallard, Northern Shoveler and Gadwall) have begun to respond to the increased availability of habitat and improved weather conditions, while other populations (including Pintail, Blue-winged Teal, Canvasback, and Scaup) remain stable.



The above is an indicator of the progress in reaching the NAWMP habitat objective.

In 1995, after years of consultations with provinces, territories and Aboriginal interests in both Canada and the United States, Canada signed a Protocol amending the Migratory Birds Convention. As a result, the long-term conservation of North American migratory birds will be improved through a more comprehensive international framework.

By the end of 1992, five provinces had established zones banning the use of lead shot for hunting. In 1996, it will be prohibited to possess any shot other than non-toxic shot in National Wildlife Areas (NWAs), and any lead sinker or jig in an NWA where sport fishing is permitted.

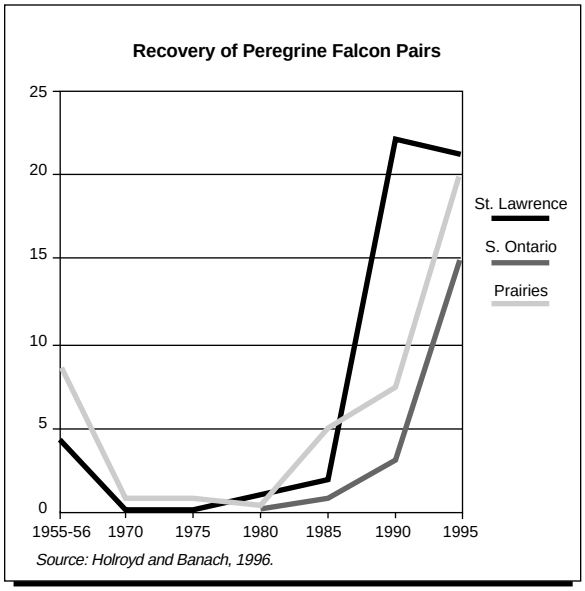


The above indicator is a measure to track the response of waterfowl to the increased availability of habitat.

RESULT TO BE ACHIEVED: **Positive recovery trends for designated threatened or endangered species are achieved.**

With other jurisdictions, EC seeks to develop and implement a national approach to endangered species protection. In 1988, the Minister of the Environment and provincial/ territorial wildlife agencies signed an agreement for the Recovery of Nationally Endangered Wildlife (RENEW). The following milestones indicate the progress being made in several species areas:

- Recovery teams were established for 43 of the 275 species listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as extinct, extirpated, endangered, threatened or vulnerable, and 15 recovery plans have been published to date. Recovery plans are prepared only for species of terrestrial vertebrates listed as endangered, threatened or extirpated.
- Four birds (Cooper's Hawk, Eastern Bluebird, Great Gray Owl and Trumpeter Swan) have been delisted from "vulnerable"; one (Baird's Sparrow) was delisted from "threatened"; and the Sea Otter was downlisted from "endangered" to "threatened."



The above is an indicator of the impact of Environment Canada's species recovery programs.

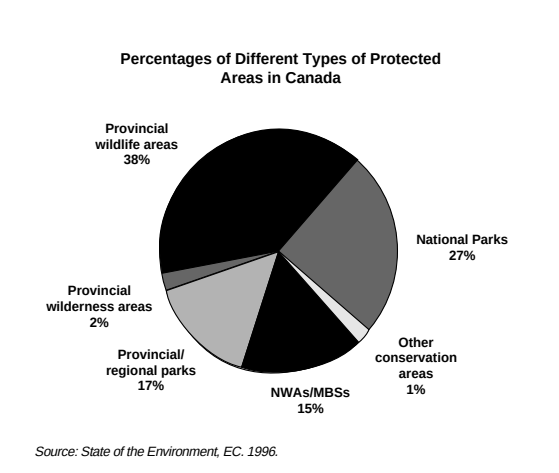
- In August 1995, the Minister of the Environment released the Cabinet-approved document entitled "The Canadian Endangered Species Protection Act: A Legislative Proposal" for public consultation.
- In June 1996, a memorandum regarding federal endangered species protection legislation received Cabinet approval.

In May 1996, the *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act* (WAPPRIITA) was proclaimed to control poaching and illegal trade in wild animals and plants, their parts and derivatives, one of Canada's main tools in meeting its commitments under the Convention on International Trade in Endangered Species (CITES).

RESULT TO BE ACHIEVED: **Significant wildlife habitat is protected and enhanced.**

The *Migratory Birds Convention Act* (1917) and the *Canada Wildlife Act* (1973) provide for the establishment of Migratory Bird Sanctuaries (MBSs) and National Wildlife Areas (NWAs).

The impact of EC's efforts to protect the habitat of migratory birds and other wildlife is evident in the amount of protected spaces in Canada.



The above shows the NWA/MBS contributions to the protected areas initiative in Canada.

- There are currently 49 NWAs protecting over 300,000 hectares and 98 MBSs covering over 11.3 million hectares. In total, this represents 1.17% of Canada and contributes 14.5% to the overall goal of protecting 12% of Canada.
- In addition, as a result of amendments made to the *Canada Wildlife Act* (CWA) in 1994, there is now a provision for the establishment of marine protected areas within the 200-nautical-mile limit.

RESULT TO BE ACHIEVED: **A national framework is in place to guide effective conservation of Canadian biodiversity.**

EC led joint efforts by all jurisdictions in Canada to develop a Canadian Biodiversity Strategy (CBS) so as to implement the 1992 UN Convention on Biological Diversity.

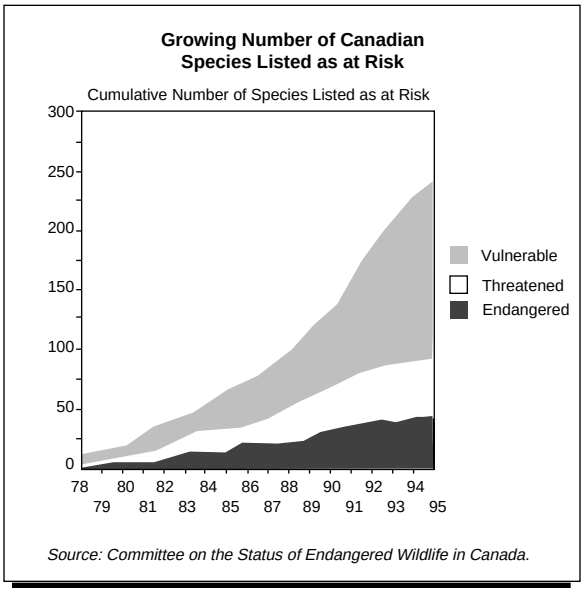
The following accomplishments are milestones toward realizing the above result:

- In April 1995, the federal Cabinet endorsed the CBS and an Action Plan on Biodiversity has been developed.
- In 1996, all jurisdictions signed an intergovernmental Statement of Commitment to Biodiversity Conservation.

RESULT TO BE ACHIEVED: **Canada's leadership and expertise advance the international biodiversity agenda.**

In recognition of Canada's leadership in biodiversity conservation, Montréal was chosen for the Permanent Secretariat of the U.N. Convention on Biodiversity.

EC's action on biodiversity conservation is based on high-quality scientific research by its own staff and in partnership with others. Examples include: monitoring and conservation of landbird populations in the Prairies, boreal and Arctic ecosystems; research on landscape-level influences of forestry on boreal forest bird communities; research on and monitoring of endangered species to determine risks and causal factors for decline; wildlife toxicology research and surveillance; linking science and traditional knowledge about landscape/waterscape biodiversity in Labrador; and the development of trapping systems in cooperation with the Fur Institute of Canada, the International Fur Trade Federation, the provinces and territories. EC has also supported the establishment of the Cooperative Wildlife Ecology Research Chairs at Simon Fraser and three Atlantic universities (Acadia, Memorial and the University of New Brunswick); the purpose is to foster high-quality post-graduate research in the field of wildlife ecology.



The above is an indicator of the challenge Canada faces in sustaining its biodiversity.

Generally speaking, Environment Canada has achieved notable results with such migratory species as Porcupine Caribou and duck and goose populations, and it has brought species such as the whooping crane back from the brink of extinction. Nevertheless, an increasing number of species are listed as either endangered or threatened. Despite significant progress in the protection of special spaces, the total area protected remains short of the 12% national goal and there remain many gaps in the national network of protected areas.

Environment Canada builds understanding of how **ecosystems** work and the impacts of human activities and natural events on them; develops and implements strategies to conserve ecosystems; and takes action on ecosystems of national priority.

A holistic, integrated or ecosystems approach is essential for dealing with issues of environmental sustainability. The approach combines multi-disciplinary scientific knowledge of the environment with an understanding of the social and economic factors that shape human attitudes, perceptions and behaviour. It assumes cooperation and collaboration among clients and stakeholders, from issue definition through to decision-making and implementation. Canadians can expect Environment Canada to contribute to the achievement of ecosystem sustainability by delivering on the following results:

- Ecosystem science is undertaken, scientific tools are created and information is transferred in support of ecosystem management initiatives.
- Vulnerable ecosystems of priority are identified and conserved through the development of regional, sectoral and other strategies/initiatives.

The initiatives for ecosystems of national priority across Canada are some of the best examples of the integration of shared science, governance, action and reporting.

RESULT TO BE ACHIEVED: **Initiatives focused on ecosystems of national priority across Canada are implemented to improve their health and sustainability.**

Atlantic Coastal Action Program (ACAP)
Since its launch in 1990, ACAP has helped 13 community-based groups in four Atlantic provinces examine and make plans to remediate degraded watersheds and estuarine areas. For each area, a Comprehensive Environmental Management Plan (CEMP) is being created with the involvement of communities, industries, farmers, fishermen, municipalities and provincial governments. For every $1 contributed by ACAP, non-program funding provides $5.

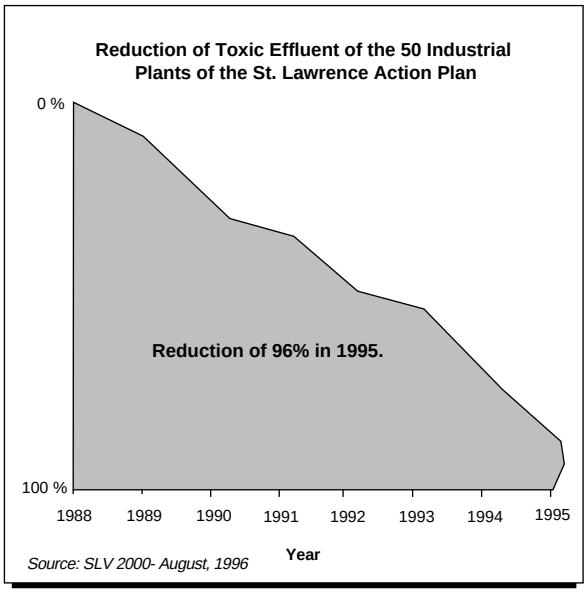
Progress in meeting the overall program objectives is well advanced. For example:

- CEMPs: environmental quality assessments have been completed in 13 sites; remedial options have been identified and evaluated in 11 sites; 11 CEMPs will be completed in 1996/97 and the remaining two in 1997/98.
- Biodiversity: creation of artificial wetlands in two sites; the restoration of 230 km of streams and the stabilization of 70 km of stream banks; and the protection of 65 hectares of wetlands.

- Economic performance: dozens of rural community people, including youth, women, Aboriginals and displaced fishery workers, have been employed by ACAP.

St. Lawrence Action Plan (SLAP)
In 1988, the federal government and the Government of Quebec launched SLAP, a five-year initiative to protect and conserve the St. Lawrence River ecosystem. The Plan's second phase, St. Lawrence Vision 2000 (SLV 2000), was launched in 1993 and will end in 1998.

One of the key considerations in restoring the river is the reduction of industrial toxic effluents.Some 50 plans were targeted for priority action, with an intended overall reduction of 90% in toxic liquid effluent. As the chart shows, this target was exceeded. In turn, it has contributed to the improvement of certain indicators of the state of the river, including sediment and water quality.



The above is an indicator of the impact of EC's efforts to reduce industrial toxic effluents as part of the St. Lawrence Action Plan (Chimiotox index).

The CHIMIOTOX indicator and the toxicity index, developed by EC, allowed for comparisons to be made between plants and assisted in setting reduction targets. SLAP generated an important economic spin-off (evaluated at $1.4 billion for the entire Plan) and allowed for the demonstration of efficient, harmonized federal-provincial intervention. Under SLV 2000, 56 additional plans have been targeted for action.

Another key concern is loss of habitat. Since 1988, intervention under the Plan has made it possible to protect over 10,000 hectares of habitat.

Great Lakes
In 1972, Canada and the United States signed the Great Lakes Water Quality Agreement (GLWQA) to address the deterioration of the Great Lakes ecosystem. A renewal of the Agreement in 1978, with further amendments in 1987, committed Canada, Ontario and the United States to restore and maintain the integrity of the Great Lakes ecosystem by reducing pollution, virtually eliminating the discharge of persistent bioaccumulative toxic substances and cleaning up designated areas of concern (AoCs). The results achieved include the following:

- Five banned pesticides have been virtually eliminated from the Great Lakes, and controls on phosphorus have brought levels down to very near targets.
- More than 35% of Ontario's high-level PCBs in the Great Lakes basin are being decommissioned and placed in storage.
- Canada has identified 17 Great Lakes Areas of Concern or pollution hot spots lying within its territory, five of them shared with the United States. For each area, a Remedial Action Plan (RAP) is being or has been developed to restore impaired beneficial uses. Implementation is carried out through cooperative efforts by the federal and provincial governments, communities, environmental groups and industry.

EC administers the Great Lakes Cleanup Fund, which has spent $43 million on approximately 230 RAP projects since 1991. Partners have contributed another $79 million. To date, about 10% of beneficial uses have been restored.

Northern River Basin Study (NRBS)
The NRBS, completed in June 1996, is the result of a five-year, comprehensive, cross-boundary, scientific research program on the basins of the Athabasca, Peace and Slave rivers. The program was developed by EC in partnership with the Province of Alberta and the Government of the NWT, and administered by a 25-stakeholder board consisting of municipal governments; Aboriginal groups; environmental, agricultural, health, academic, and industrial sectors; and the general public. NRBS provided the foundation for understanding the cumulative effects of industrial and municipal development on aquatic ecosystems. The program delivered some 150 "mini" science studies combined with Aboriginal traditional knowledge. Results from the study have already been used by provincial regulatory authorities, particularly in licensing pulp and paper mills.

Fraser River Action Plan (FRAP)
The long-term goals of FRAP, which was announced in 1991, are to prevent pollution, enhance basin ecosystems and engage the basin population in creating a sustainable society. The plan is a joint initiative of Environment Canada and Fisheries and Oceans Canada. The Fraser River Management Board (drawn from four levels of government, industry, communities and non-government organizations) is a key mechanism for establishing and maintaining partnerships under the Plan. Federal, provincial and municipal governments fund the Board, with EC supplying one fifth of its $1-million budget.

The following milestones have been achieved as a result of joint efforts under this Plan:

- Some 450 hectares of critical migratory bird habitat have been protected directly through FRAP, contributing to a total of 11,000 hectares protected within the province.
- Municipalities are upgrading their combined sewer outfall, and associated effluent loading has declined by 24%.
- Levels of dioxins and furans in fish and sediments are down in areas below pulp mills.
- In July 1996, the Fraser River Basin Board released its second Report Card evaluating progress toward sustainability in the basin. A Basin plan is currently under development, setting targets and identifying strategies needed to overcome threats to sustainability.

While improvements to Canada's ecosystems of national priority have been significant, difficult challenges remain:

- In Atlantic Canada, many coastal communities continue to discharge untreated water into coastal zones. Significant toxic clean-ups are required in Sydney. High levels of mercury are present in aquatic ecosystems in Nova Scotia and New Brunswick. The Bay of Fundy ecosystem is becoming increasingly degraded and the stocks of most commercial fish species are at critical levels.
- Some 140 riverside communities continue to discharge untreated waste water into the St. Lawrence, and stocks of many fish species are declining or permanently destabilized.
- In the Great Lakes, the costs of remediating AoCs are high; achieving targets for the reduction of toxics will require innovative approaches; and new issues are emerging, like the uncontrolled spread of non-native species and atmospheric deposition of contaminants.
- The Fraser River basin is showing signs of stress. A burgeoning population (expected to grow by 50% in the next 20 years), urban sprawl and expanding resource development threaten the environmental balance of the Basin.

Faced with these challenges, EC's approach with its partners is to contribute to strengthening communities so that they understand sustainability and actively care for their ecosystems.

Environment Canada's results — in conserving Canada's ecosystems, protecting Canada's endangered species and ridding our air and water of toxics — are all indicators of the effectiveness of the

Environment Canada targets **enforcement** activities against serious offenders of environmental laws and regulations, maintains a high level of compliance where it exists, and recognizes performance leaders.

department's compliance and enforcement activities. For example, half of all federal prosecutions for environmental offences in 1992/93 were related to ozone-depleting substances, contributing to the dramatic decrease in the supply of ozone-depleting substances in Canada.

EC has a long and successful history in enforcing the wildlife laws for which it is responsible, particularly on migratory birds (since 1917) and endangered species (since 1975). Similarly, it was enforcing the pollution prevention provisions of the 1978 *Fisheries Act* long before the *Canadian Environmental Protection Act* was proclaimed in 1988.

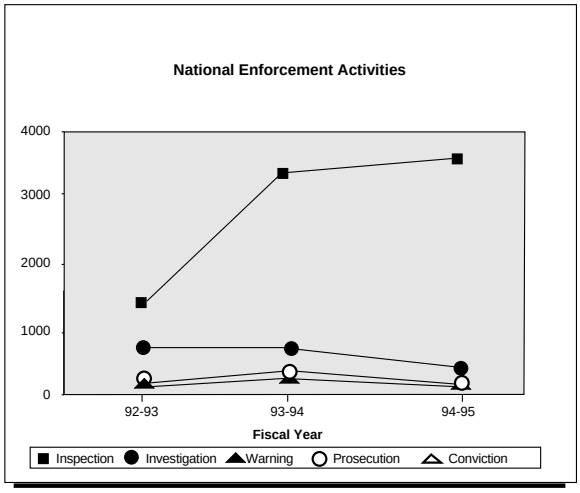
Environment Canada seeks fairly and effectively to enforce and promote compliance with Canada's environmental laws and regulations, while minimizing overlap and duplication with other government jurisdictions. Its objectives are a high level of compliance with laws and regulations, improved enforcement capacity, and an understanding by all Canadians of the law and what is expected of them.

***RESULT TO BE ACHIEVED:* A high level of compliance with laws and regulations, and improved enforcement capacity.**

The federal government is setting priorities for its enforcement activities to reflect federal roles and the national interest, while working cooperatively with the provinces and territories. The priorities comprise three broad departmental thrusts — strategic enforcement, promoting compliance and federal compliance. As a result, EC's focus is now on the targeting of serious offenders, maintaining a high level of compliance where it exists, and recognizing performance leaders.

The shorter term milestones which will lead to the intended result are noted below.

- Compared to previous years, 1995/96 saw a rise in the number of prosecutions for hazardous waste violations.
- Canada, Mexico and the United States have agreed to work together in preventing illegal import/export of controlled substances and hazardous wastes.
- With the United States, Canada participated in a working group on CFC smuggling.
- *Canada's Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act* (WAPPRITA) tightens controls on movement of endangered and other species across domestic and international borders.
- Proposed CEPA amendments are intended to reinforce the powers and responsibilities of inspectors, investigators and analysts.



***RESULT TO BE ACHIEVED:* Canadians understand the law, know what is expected of them and believe the law to be effectively enforced.**

Compliance rates for six key environmental regulations have been completed and published on the Green Lane (Environment Canada's Internet site). Further study is under way on developing indicators for compliance to achieve environmental and wildlife results.

RESULT TO BE ACHIEVED: **Federal government departments and agencies understand the law, know what is expected of them and act accordingly.**

Through inter-departmental committees such as the Federal Committee on Environmental Management Systems, Environment Canada is working with other government departments to enhance their understanding of compliance requirements.

- Collective work is under way to develop a manager's guide to compliance. Several departments have also participated in the development of CEPA regulations for federal facilities.
- The existing Memorandum of Understanding with the RCMP for delivering enforcement responsibilities has been rejuvenated.

Generally speaking, evidence of the effectiveness of the department's enforcement activities includes the scale of activities and the ratio of convictions to prosecutions. For example, the department obtained 80 convictions based on 93 prosecutions under the *Fisheries Act* and *Canadian Environmental Protection Act* (CEPA) from 1991 to 1995, with court orders totalling more than $4 million; and in this year, inspections of all pulp and paper mills in Canada will be carried out. Prosecutions of mills not in compliance have resulted in significant penalties, in one case alone totalling almost $1 million.

The real indicators of the impact of the department's enforcement/compliance activities, however, are to be found in its wildlife and toxics results.

BUSINESS LINE 2: SAFETY FROM ENVIRONMENTAL HAZARDS

This business line includes activities related to the forecasting of routine and severe weather and predictions of probable future states of the environment, and also to emergencies prevention, preparedness and response advice. It addresses issues related to public safety and to Canada's economic infrastructure (weather services and water data are essential to a wide range of economic sectors).

Over the past 25 years, Environment Canada has steadily improved the efficiency, accuracy and timeliness of its forecasts, warnings and response to emergencies. Today the challenge is the changing character and cost of environmental hazards. The department continues to carry responsibilities for providing weather forecasts and warnings, as well as emergencies response services. But Environment Canada must now build on its forecasting expertise and infrastructure to develop analytic and predictive capabilities for modelling future states of the environment; and it must build on its experience in emergencies response to identify areas of vulnerability and to transfer skills that will enable Canadians to manage environmental risks more effectively.

ENVIRONMENT CANADA'S GOALS in this business line are to:

- provide weather and environmental predictions as well as timely and accurate warnings of severe weather events to Canadians; and
- prevent or reduce the frequency, severity and environmental consequences of emergencies which affect Canada.

The department's strategy *in this business line is to target initiatives which may widen Canadians' margin of safety from environmental hazards by:*

- enhancing the department's predictive capability;
- modernizing delivery of warnings, predictions, tools and advice;
- promoting the prevention of pollution accidents; and
- enhancing partners' preparedness to respond to pollution accidents.

Environment Canada provides a broad range of weather warnings and forecasts. With these, Canadians can protect themselves from severe weather events and can plan their economic and social activities effectively. During the past 30 years, these warnings and forecasts have steadily improved as a result of scientific research in the field of meteorology as well as the introduction of improved weather observing systems such as Doppler radar and weather satellites.

Environment Canada delivers **weather forecasts and warnings,** and develops the capacity to provide other environmental predictions.

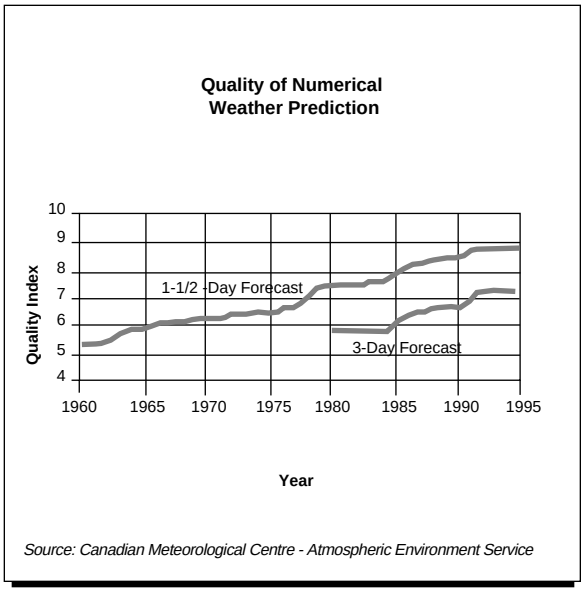
The department is now developing a broader capacity for environmental prediction. The goal is to model future states of the environment and to create likely scenarios based on longer time frames and a wider variety of parameters. We believe that Canadians will translate these assessments into practical measures leading to improved social, economic and environmental benefits.

The principal focus within this business line component is to prepare and deliver weather warnings and forecasts and to develop the capacity for providing predictions of additional environmental parameters on a wider variety of time frames.

RESULT TO BE ACHIEVED: **Timely and accurate weather forecasts and warnings.**

Environment Canada has made substantial progress in achieving this result but continues to improve its capacity.

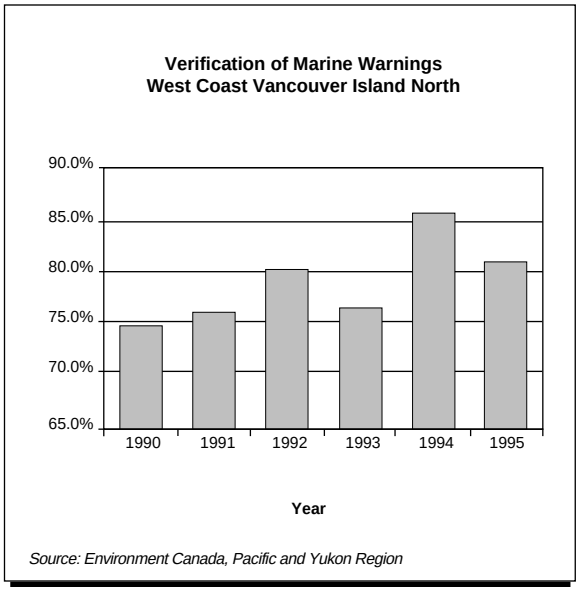
- During the past 35 years, scientists have developed sophisticated models of the atmosphere based on mathematical equations that describe how the weather changes on a day-to-day basis. These models have improved to such an extent that our current three-day predictions have the same accuracy that 1-1/2-day predictions had only 15 to 20 years ago. Computer models are one of the important tools used by meteorologists to prepare weather forecasts.



This graph illustrates the general trend for improvement in weather prediction models.

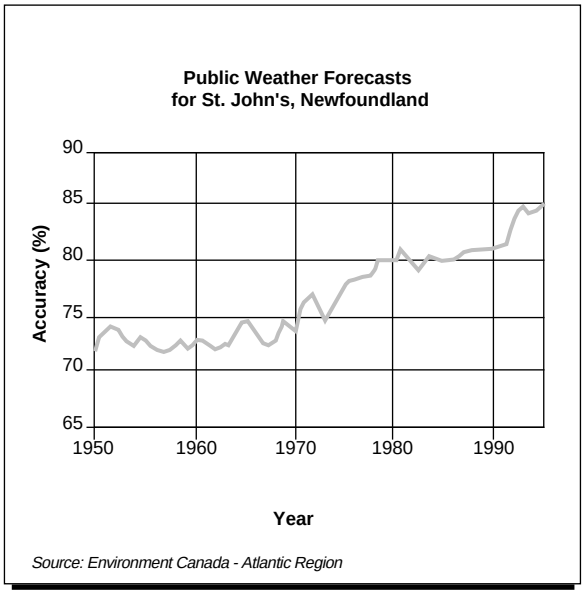
While lead times for weather warnings have generally increased, the department has also consulted with client groups to determine the most appropriate lead times. For example, in consultation with the marine community on the west coast, it has been determined that six hours is the optimum lead time for marine weather warnings in that area. Rather than invest effort to increase this lead time, the department has focused its efforts on improving the accuracy of the six-hour warning.

Satellite imagery (available since the mid-1960s) and more capable radar systems (including Doppler radar in some regions of the country) also contribute to our understanding of how the weather evolves and to our predictive capacity.



This graph illustrates EC's success in improving the accuracy of the six-hour warning.

Satellites and radar technology, data and analysis display systems, improved telecommunications, computer-based models of the atmosphere, improved scientific understanding of weather processes, and highly trained professional meteorologists have all contributed to an increase in the accuracy of weather forecasts and to longer lead times for weather warnings.



Among the milestones toward this result are:

- consolidated production of warnings and forecasts in 17 centres; and
- 11 Weatheradio and six Weathercopy sites.

***RESULT TO BE ACHIEVED:* Effective decisions by adapting to changing weather and climate.**

According to a recent survey, Canadians need access to weather forecasts at least once per day, with a significant number (26%) requiring a forecast more than once per day.

Weather forecasts are used to reduce economic loss and to enhance the country's economic productivity. A recent study, for example, found that the annual value of weather forecasts to the Ontario hay industry is about $54 million. Farmers use weather forecasts to plan pesticide spraying operations so as to reduce costs and environmental damage.

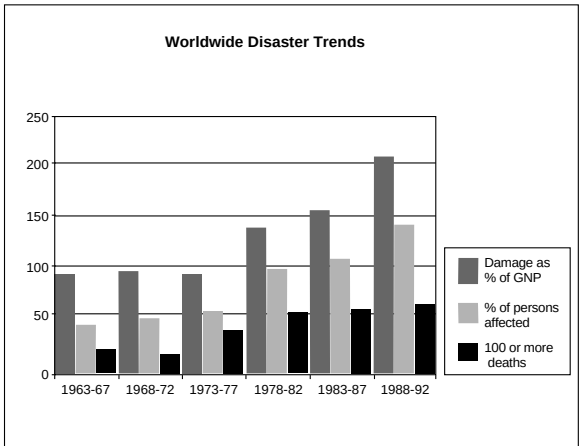
The following outputs contribute to Canadians success in adapting to and managing with changing weather conditions.

- Environment Canada provides up to 14,000 timely and accurate weather warnings per year.
- Daily forecasts of ultraviolet radiation levels were introduced during the early 1990s to help people adapt to increased UV levels, resulting from depletion of the ozone layer. Surveys show that Canadians are consistently more aware of the damage that the sun's rays may produce than people in other countries and are taking action to minimize these effects.

Next year, Environment Canada will introduce air quality forecasts to help people deal with threats to their health during pollution episodes.

***RESULT TO BE ACHIEVED:* Scientific capacity to assess the impacts of social and economic decisions on future states of the environment.**

The same computer-based technology that helps meteorologists prepare weather forecasts is also used by scientists to investigate climate change and variability.



Source: International Decade for Natural Disaster Reduction, 1994

Based upon our current understanding of the climate system, surface temperatures may increase by about three degrees Celsius by the end of the next century.

Our society faces a number of environment-related issues that will affect our social and economic future. There is mounting scientific evidence that global climate is also becoming more variable, leading to increased incidence of floods and other natural meteorological disasters. Recent examples include the rapid decline of fish stocks on the Atlantic and Pacific coasts, more numerous and extensive forest fires than normal, variability in agricultural productivity and severe floods in the province of Quebec.

There have also been several heavy hailstorms in Alberta and Ontario, resulting in millions of dollars of damage. The insurance industry considers the risk to be significant; it has urged governments around the world to take steps to minimize the negative impacts that humankind may have upon the climate system, and to mitigate impacts that may be unavoidable.

Many of these problems are complex, with environmental concerns being but one component of the puzzle. However, the ability to predict the future state of the environment would

provide Canadians with important policy tools to improve economic, social and environmental decision-making. Such tools are necessary for sustainable development to become a reality.

All Canada's costliest natural disasters in recent years have been weather-related.

❑ Saguenay floods, 1996	Not available.
❑ Calgary hailstorm, 1991	$360M
❑ Winnipeg floods, 1993	$160M
❑ Edmonton tornado, 1987	$149M
❑ Calgary hailstorm, 1996	$140M
❑ Winnipeg hailstorm, 1996	$120M
❑ Saskatchewan hailstorm, 1994	$100M
❑ Barrie tornado, 1985	$85M

Source: Environment Canada - 1996.

In large measure, the decisions that people make reflect the information upon which they are based. People need to know how the environment is likely to change so as to protect themselves from natural hazards and make decisions preparing for the future. Equally, we need to understand how the environment is likely to evolve in the future as a consequence of economic and social decisions taken today.

Environment Canada is well positioned to respond to the environmental prediction and information needs of Canadians: EC has a strong scientific capability, highly educated and trained personnel, and an extensive telecommunications capacity. Our ability to predict future states of the environment is improving as a result of scientific research and development. If we continue to build upon this capability, the economic and social benefits will be significant.

During the next few years, we will develop measures allowing Canadians to judge the department's performance in this important area.

Environment Canada promotes pollution prevention, preparedness, improved science and technology, and ongoing response advice in the event of **emergencies**.

Accidental releases of polluting substances into the air, land or water can cause severe adverse effects on human health and the environment. Such a release is, in essence, a "flash flood" of toxics. An accidental release has the potential to input more toxics into the environment in one spill than the accumulated chronic releases of the same toxics.

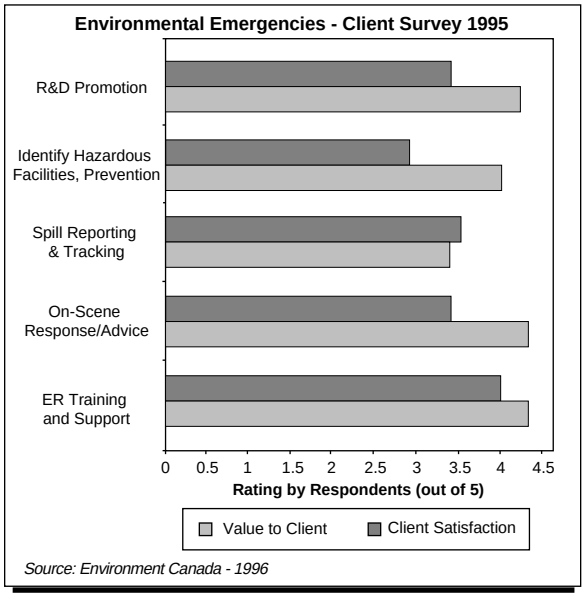
Environment Canada seeks to prevent or reduce the frequency, severity and environmental consequences of emergencies affecting Canada and Canadians. The department focuses on prevention of accidental releases of polluting substances; preparedness for handling releases; and effective, reliable support to lead response organizations in the event of a release.

- For many years the department has emphasized emergency preparedness and response. Its aim was to minimize environmental hazards by providing Canadians with appropriate preparedness policies, standards, codes of practice, contingency plans, and particularly technologies for response and remediation.

Environment Canada has taken the strategic decision to shift its focus from emergencies response toward the prevention of accidental releases, the development of national standards, and transfer of skills for preparedness. It recognizes the need to prepare for emergencies and provide response advice when they occur.

However, prevention is the most efficient way to deal with the accidental release of hazardous substances into the environment, and is the most effective channel for the department's limited resources. The shift is also appropriate because the magnitude of the challenge of dealing effectively with increasing risks requires the cooperation and involvement of many stakeholders, and because the lead role in

emergencies response usually rests with other jurisdictions or other federal government departments.



Recent survey results (see graph above) indicate client support for Environment Canada's emergencies program. They also underscore the importance of EC's decision to focus efforts on prevention.

***RESULT TO BE ACHIEVED:* Prevention of accidental releases.**

Environment Canada's Emergencies program plays an important role in achieving the objectives of life-cycle management of substances under the Toxics Substances Management Policy as well as the Pollution Prevention Strategy, and it is closely linked with the Weather and Environmental Prediction component of the department's Action Plan.

At the international level, Canada has participated in the Organization for Economic Cooperation and Development (OECD), and it leads the Emergency Prevention, Preparedness and Response Activity of the Arctic Environmental Protection Strategy. Under the Strategy, agreement has been reached on notification of major emergencies. Several international maritime organizations/industry guidelines have also been approved.

On the domestic front, Environment Canada is working with the Major Industrial Accidents Council of Canada (MIACC) to promote cooperation in prevention, preparedness and response through the development of consensus-based tools and techniques, such as standard risk assessment methodologies and a handbook on risk communication.

***RESULT TO BE ACHIEVED:* Preparations for handling accidental releases.**

- ❑ Environment Canada has provided significant support to the Canadian Coast Guard in implementing the 1990 Convention for Oil Pollution Preparedness Response Cooperation and developing an equivalent hazardous materials spill regime.
- ❑ EC has undertaken a number of research and development projects to improve spill prevention, detection and control. These include the assessment of oil spill skimmers and spill treating agents, development with the United States of a laser-based remote sensor for airborne detection of oil slicks, and research with a number of Arctic nations on methods for cleaning oiled shorelines.

***RESULT TO BE ACHIEVED:* Advice and specialized support to lead responders.**

- ❑ Since 1995, Environment Canada has worked with the Canadian Council of Ministers of the Environment and individual provinces to improve spill prevention, notification and reporting.
- ❑ In June 1996 the department initiated a project through MIACC to explore options with various stakeholders.
- ❑ On July 30, 1996, the *Irving Whale* was raised from the bottom of the Gulf of St. Lawrence. The barge, which sank 26 years ago and polluted the beaches of Prince Edward Island and the Magdalen Islands,

had been leaking oil and PCBs ever since. Because of the extraordinary threat posed by the barge and the conditions under which it had to be raised, Environment Canada was called upon to play a part in the salvage far beyond its customary support role. Canada's largest marine salvage project was a team effort successfully co-managed by Environment Canada and the Department of Fisheries and Oceans. As a result of these efforts, further serious contamination of the fragile Gulf environment has been prevented.

- The department has fostered public- and private-sector partnerships such as MIACC, the International Spills Countermeasures Technology Committee, and the Federal Committee for Environmental Emergencies. Further progress will target federal-provincial harmonization, the development of national standards, and the support of global efforts to prevent and reduce the environmental harm caused by emergencies.

In addition to the performance indicators provided, Environment Canada will develop other measures of its performance in preventing, preparing and responding to emergencies.

BUSINESS LINE 3: A GREENER SOCIETY

In this business line Environment Canada provides information services and technology partnerships, creates contexts for decision-making, and integrates environmental and economic considerations. It is also working towards more inclusive processes and more comprehensive frameworks that align effort across a range of issues and jurisdictions.

Environment Canada's policies and relations with other departments and jurisdictions historically tended to be one-off and revolve around single issues. Now the need to address increasingly interconnected issues and broaden participation in environmental policy-making have led EC to a stronger focus on framework policies and national standards developed with partners across jurisdictions and sectors.

Just as EC's approach to environmental policy is shifting, so too are the means by which EC is equipping Canadians to act on their environmental concerns. In order to share responsibility for the environment, Canadians need to be able to relate environmental, economic and social considerations to create opportunities for sustainable development decision-making. They need ready access to timely and useful environmental information and advice — the tools, technologies and know-how with which to act. And they require structures of governance (i.e., formal and informal rules, laws, policies and institutions) that reinforce environmentally responsible behaviour.

ENVIRONMENT CANADA'S GOALS in this business line are to:

- promote responsible environmental citizenship by helping Canadians use timely environmental information and advice effectively;
- provide Canadians with tools to prevent pollution and to develop green technologies and capacity that create social, economic, and environmental benefits; and
- mobilize effective partnerships nationally and provide a strong international voice to build a sustainable development agenda.

The department's strategy *for this business line is to target its efforts toward individual opinion leaders, sectors, communities and especially youth so that they in turn will engage all Canadians to act on their environmental values, by:*

- building awareness, knowledge and informed public judgment;
- building capacity in communities, sectors and institutions for environmentally responsible action; and
- advocating and creating a system of incentives for environmentally responsible action and sustainable development.

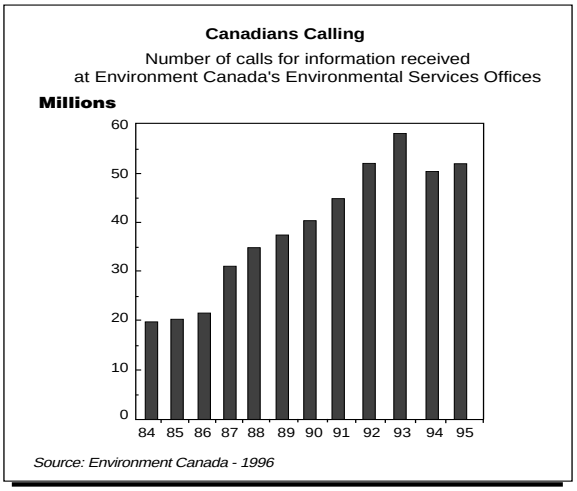
Environment Canada always has been a major source of information, expertise and technological solutions on a wide range of environmental conditions and issues. Today the department views its information not as a by-product of its activities but as an essential component of its leadership. Moreover, it sees the production and dissemination of its information as a business very much linked to its mission — a business to be managed as innovatively and effectively as possible.

Environment Canada develops and delivers **information products** that meet the needs of Canadians, and it helps them become better environmental citizens.

RESULT TO BE ACHIEVED: **Canadians receive products and services from Environment Canada that meet their needs.**

EC continues to provide products and services to meet the health and safety needs of broad economic sectors and social communities. At the same time, it is also addressing the needs of particular clients in developing a growing number of products and services on a cost-recovery, or commercial basis.

EC is pursuing a client-oriented, business-like approach involving three elements: market development, product development and service delivery.



The above is an indicator of EC's performance in responding to Canadians' demand for environmental information.

The increase in revenues from these commercial products and services is an indication of the level of satisfaction of Canadians with these products and services.

***RESULT TO BE ACHIEVED:* Products and services are developed that help Canadians make environmentally responsible decisions.**

The outputs below are indicative of EC's success in providing Canadians with timely, understandable information to aid their decisions.

- In November 1994, EC launched its World Wide Web site, known as the Green Lane on the Information Highway. This provides 24-hour, one-window access to selected products, services, data, programs and policies of the department and its partners in Canada and abroad. Statistics on Green Lane usage will be used in future as an indicator of the utility of EC products and services. Green Lane nodes have been created for the Biodiversity Information Network and the National Pollutant Release Inventory.
- The State of Canada's Environment Infobase was launched on the Green Lane in 1996. It features the comprehensive 1996 report on the State of Canada's Environment, the national series of environmental indicators, and the national spatial ecological framework, as well as state-of-the-environment fact sheets and teachers' aids.
- Under the National Environmental Indicators Program, indicators have been developed to track 10 issues of national significance, including climate change, stratospheric ozone depletion, energy consumption, urban air quality, water use and waste water treatment, passenger transportation and acid rain. Indicator research and development are continuing in partnership with other agencies and organizations on a further six issues, including biodiversity and sustaining marine, forest and soil resources.
- EC has developed environmental information systems integrating environmental data, expertise and economic information with decision support technologies to achieve sustainable development of aquatic ecosystems. For example, a geographical information system to assist with the identification of Canadian endangered species has also been developed.

In future, trends in the level of Canadians' environmental knowledge and levels of client satisfaction will be measured to demonstrate the department's performance in this area.

***RESULT TO BE ACHIEVED:* Broad public support exists for the services provided by Environment Canada.**

The diversity and consistency of EC's client base is a measure of the intended result. Below are several examples of the variety of services provided.

- EC's Ice Services Program produces ice forecasts and warnings for the navigable waters of the Canadian Arctic, the East Coast, the St. Lawrence River and the Great Lakes. As a key partner, the Canadian Coast Guard provides over $10M in vote-netted revenue annually to support marine transportation. Each year, the department produces approximately 2,500 ice forecasts

and warnings, and 5,000 maps depicting current and forecast ice conditions, to support policy and science as well as marine navigation. In 1995/96, the Ice Service successfully introduced Radarsat as the primary ice surveillance platform, replacing aircraft and reducing the cost of ice reconnaissance by $3M per year.

- Under the Water and Climate Monitoring Program, EC collaborates with provinces in monitoring water levels and computing streamflow rates throughout the country. Clients, including provincial hydro utilities, use the information for engineering and environmental purposes, to reduce the risks from floods, and for ecosystem management. EC also receives climate observations from observing stations; these help define the climate of Canada and identify climate trends.
- EC operates the Montréal Biosphere, which in 1995 was named as the first Ecowatch Centre in Canada. In 1996 the Biosphere is expected to attract 100,000 visitors. Its educational programs and awareness activities promote and disseminate knowledge about water resources and Canadian ecosystems; they encourage people to conserve water and ecosystems; and they continue to create and lead a network of observers and partners who help the Biosphere achieve its mission.

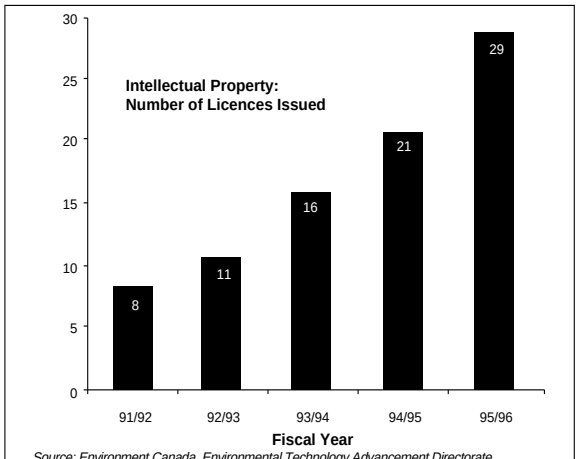
Environment Canada develops and transfers **environmental technology** and expertise to Canadian industry and communities to improve their capacity.

EC seeks to provide Canadians with tools to prevent pollution and develop green technologies and capacity that create social, economic and environmental benefits. It accelerates the development and application of environmentally sound and economically competitive technologies, and makes them available to industry, the public and other stakeholders. In June 1995, a federal Pollution Prevention Strategy was released.

Significant departmental actions include:

- advancing green technologies and techniques to address problems and create jobs;
- assisting industrial sectors to become more economically competitive;
- protecting jobs and the environment through pollution prevention;
- providing leadership through exemplary compliance with the *Canadian Environmental Assessment Act* and Cabinet directives; and
- helping Canadians develop the capacity to address environmental priorities.

Over the long term, federal leadership has helped promote nationally consistent environmental regimes. The development of regulations and practices goes hand in hand with the development of environmental technologies and techniques. Clean technology benefits the Canadian and global environment in terms of better health and quality of life. At the same time, increased efficiency makes industrial sectors more competitive nationally and internationally.



Source: Environment Canada, Environmental Technology Advancement Directorate, Technology Transfer Office, Intellectual Property Office, Intellectual Property Management Information System, 1996.

The above is an indicator of performance in the transfer of expertise and technologies to the public.

Over the near term, environmental risks and damage are reduced; green technologies and techniques become widespread; green jobs and

economic growth are promoted; environmental assessment is integrated into government decision making; and EC-provided information helps Canadians factor the environment into their decisions. Outstanding challenges are:

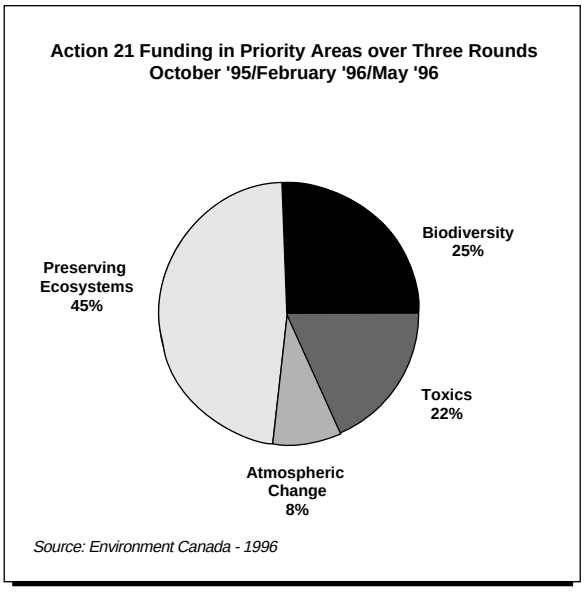
- to help small and medium-sized businesses (SMEs) unable to improve environmental performance because of limited financial resources and/or expertise; and access the booming market for environmental technologies, techniques and capacity-building tools.

RESULT TO BE ACHIEVED: **Increasing emphasis is placed on pollution prevention domestically and internationally.**

- "Pollution Prevention: A Federal Strategy for Action," adopted by Cabinet in June 1995, is a comprehensive strategy to promote a broad array of approaches to pollution including clean production, efficient resource use, reuse and recycling, and product life cycle management.

RESULT TO BE ACHIEVED: **Canadians are equipped to address environmental priorities.**

- The Action 21 Program was created in 1995 to respond to the Red Book commitment "to communicate the individual and collective actions needed for sustainable development."



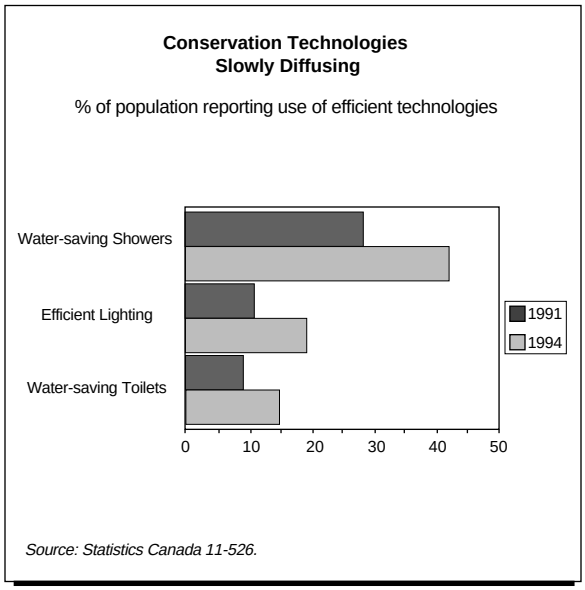
- Action 21 has funded over 200 projects which contribute tangible results in support of EC activities in four key issue areas (see graph).

RESULT TO BE ACHIEVED: **Green technologies, know-how and expertise transferred to the public.**

- With Canadian environmental industry partners, the International Environmental Management Initiative funded $2.8 million in technology transfer projects.

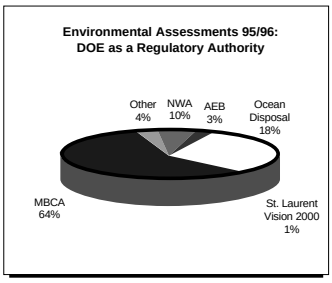
RESULT TO BE ACHIEVED: **Industrial sectors become more "eco-efficient" by adopting green technologies and services, international obligations are met, and economic growth and jobs are fostered.**

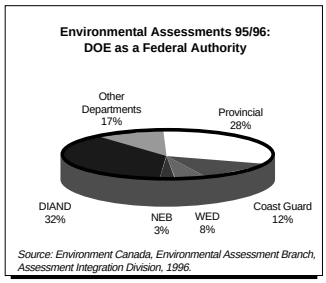
- Agreements worth some $20 million were signed between Canadian and Asian interests as a result of a Minister-led environmental industry trade mission.
- Environment Canada was a key contributor to the International Standards Organization (ISO) process of setting environmental management system standards.



RESULT TO BE ACHIEVED: **EC provides leadership through exemplary compliance with the Canadian Environmental Assessment Act and Cabinet Directives.**

Environment Canada's level of environmental assessment activity is considerable, both in regard to its own projects and in support of the assessment process of other departments.





The Regulatory Authority graph provides a measure of the department's own activity in complying with the Canadian Environmental Assessment Act.

The Federal Authority graph provides a measure of the department's involvement in the Environmental Assessment Review Process of other departments.

Performance indicators are under development related to: increasing emphasis on pollution prevention domestically (governments, public, industry) and internationally; and EC's compliance with the *Canadian Environmental Assessment Act* and Cabinet Directives regarding environmental assessment of policies.

Indicators will include: trends in release of toxic effluent by various economic sectors; trends in the number of environmental technologies commercialized; trends in use of new green technologies; and levels of client satisfaction regarding environmental assessment advice.

Environment Canada provides leadership in **sustainable development** at the federal level, builds shared agendas with other sectors of Canadian society, and promotes and protects Canadian interests internationally.

Sustainable development is a responsibility shared by all Canadians, and the federal government, along with every sector of society, has an important role to play in meeting this goal. While government has a leadership responsibility, progress will be achieved only through effective partnerships.

Environment Canada has contributed to establishing partnerships through a series of strategic interventions based on the department's unique capacities and expertise. The department is an advocate for environmental sustainability within government and more broadly in society; it contributes scientific expertise to support better decisions; it shares the creativity, dedication and experience of its organization to identify opportunities and solutions to challenges; and it invests resources to lay the groundwork for short-term and longer-term results at the local and regional levels.

The move toward sustainable development involves changes in societal values, corporate cultures and individual perceptions. Such broad-based change is incremental and long-term. Similarly, results are incremental and evidence of change can be subtle. Effective partnering arrangements require an investment of time and good will, and success is more often measured in terms of qualitative change.

RESULT TO BE ACHIEVED: **Visible federal leadership and action in integrating sustainable development into government policies and operations.**

Within the federal government, progress toward sustainable development and environmental sustainability will be achieved in two ways.

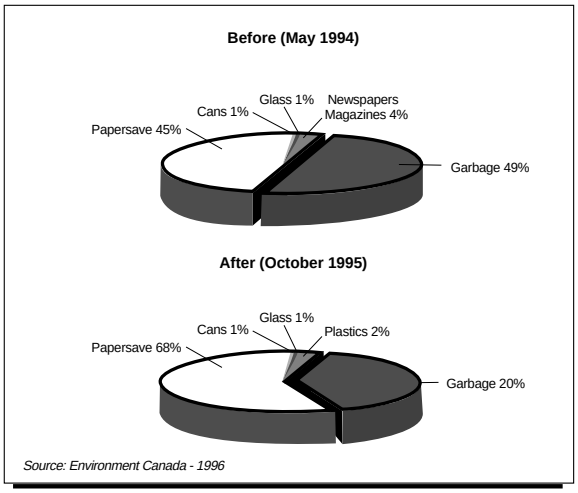
First, the direct effect of government (as Canada's largest "corporate" entity) on the environment will be minimized through efforts to green government operations. Second, the impact (often indirect) of government legislation and policies on environmental sustainablity will be identified and addressed where necessary through appropriate revisions to policies and programs. Environment Canada provides scientific expertise as well as practical tools and techniques to contribute to progress in these areas.

Influencing Change in Government

- In 1995, the federal government approved a sustainable development policy framework developed cooperatively by government departments with the advice of an external advisory group. This cooperative venture resulted in the *Guide to Green Government*, which was signed by the Prime Minister and every Minister in Cabinet.

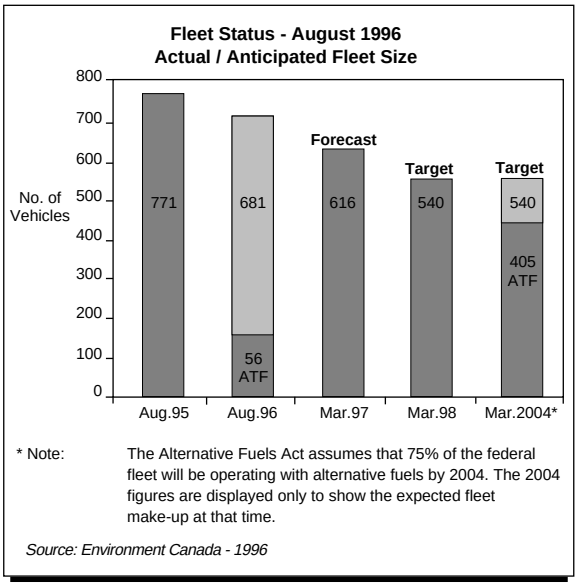
- The Government created a clear accountability mechanism for integrating sustainable development into its business in 1995, when it established the office of Commissioner of the Environment and Sustainable Development, and required federal departments to prepare sustainable development strategies for tabling in the House of Commons. In the short term, success will be measured by the development of these strategies. In the longer term, it will be measured by the extent to which all elements of sustainable development — environmental, social and economic — are integrated into policy, legislation and operations.

- Within its own operations, Environment Canada has reduced its environmental impact through a successful No Waste program, facility retrofits to reduce energy and water consumption and green procurement practices.



The above illustrates EC's performance in the NCR in its waste reduction program.

- The department led government efforts to work together on the development of environmental management systems (EMS), and to share information on "best practices" and efficient and effective approaches to issues such as the destruction of PCBs and contaminated site management.



The actual and expected conversion of vehicles to alternate fuels is an indicator of integrating sustainable development into operations.

In the short term, success will be measured by the implementation of "best practices" relative to individual issues. In the longer term, success may be measured through trends in continuous improvement brought about through the full implementation of the EMS.

***RESULT TO BE ACHIEVED:* Partnerships established to promote, develop and rationalize environmental policies and practices.**

Engaging Individual Canadians

Canadians want the federal government to work closely with them in sustaining the environment. Establishing approaches that will ensure the highest level of environmental quality throughout Canada requires constructive working relationships and strategic partnerships with provinces, territories, Aboriginal peoples, business and non-governmental organizations, and also with individual Canadians. In the short term, establishing effective and productive partnerships is essential to working toward the setting of national approaches to environmental management and sustainability. In the longer term, success will be measured by the achievement of a national consensus on a framework and the means for implementation.

Environment Canada's initiative, Action 21, consists of two components: a funding program to support environmental action at the community level, and a public awareness initiative, called "Canada's Healthy Neighbourhoods," which encourages all Canadians to adopt environmentally friendly lifestyles. The approach showcases environmental action on the part of Canadians and is designed to empower and motivate others to reduce their burden on the environment. In the first year, the campaign launched:

- a series of TV segments aired on 18 stations/networks generating an estimated 14 million "impressions" as of mid-June; and
- print PSAs appearing in publications, nationally generating an estimated 5.5 million "impressions" as of mid-August.

Environment Canada/Health Canada "Healthy Environment" programs, encouraging action to improve air quality, air hourly on the Weather Network/MeteoMedia to an estimated weekly audience of 5.8 million adults.

***RESULT TO BE ACHIEVED:* Canada's strong international voice promotes and protects domestic environmental security and economic interests and foster resolution of global commons and trade issues.**

The linkages between environment and development, and the threats to environmental sustainability, are issues of global concern. Internationally, Canada promotes environmental cooperation and reinforces its domestic priorities. It does so through the negotiation and implementation of treaties and agreements, through its participation in international institutions, and by the cooperative relationships that it builds with other countries on a regional or bilateral basis.

Canada is an active participant in a broad variety of international activities that are key to its economic, social and environmental well-being. To international discussions, Canada must take national positions that reflect the integration of environmental, social and economic considerations. Canada must also promote the adoption of international actions and agreements that reflect principles of sustainable development and priorities for environmental sustainability.

Influencing the International Agenda

- In 1994, Canada hosted a meeting of environment ministers of the Asia Pacific Economic Cooperation (APEC) forum which resulted in agreement on a framework of principles for environment. In 1997, Canada will host a follow-up meeting that will integrate the environmental component into the APEC agenda and workplan.

- In 1995/96, the Intergovernmental Agreement regarding the North American Agreement on Environmental Cooperation (NAACE) came into force.

- Canada's approach to greening the G-7 Summit in Halifax, led by Environment Canada, proved so successful that subsequent events have developed a similar approach. Also, Canada has successfully brought the issue of greening government to the international agenda, through institutions such as the G-7 and the Organization for Economic Cooperation and Development (OECD).

- Canada is a party to over 130 international treaties and agreements on the environment. These agreements range from bilateral arrangements to deal with specific issues (e.g., the Canada-U.S. Air Quality Agreement) to broad international agreements on global issues (e.g., climate change or biodiversity). Through the development of these agreements and their implementation, important linkages are made between domestic and international priorities.

- Canada hosted a successful meeting of the Commission for Environmental Cooperation in Toronto on Aug 1-2, 1996. Canada, the United States and Mexico agreed to cooperative initiatives to protect the environment and public health. Included were measures to address deregulation, environment and trade, air pollution, and enforcement and protection of migratory birds and monarch butterflies.

- Canada has negotiated the Canada-Chile Environmental Cooperation Agreement as part of the Canada-Chile bilateral Free Trade Agreement, which is expected to be signed in November 1996.

Section IV: Change Management

Over the last year, Environment Canada's management has been responding to three major challenges: cultural change, expenditure management and people.

Cultural Change

a) Results-Based Approach

Managing by results is becoming the norm in Environment Canada. It is building on successes and lessons learned through experiences such as the St. Lawrence Vision 2000 program, in which several federal and provincial departments collaborated to deliver a five-year, $191-million plan.

Environment Canada has developed a results-based business planning approach in which managers, with clients and partners, identify target results and are then held accountable for delivering those results. Every year, each of 11 Tables prepares an action plan identifying clear results statements, major deliverables and performance indicators. The 11 action plans serve as the basis for developing the Corporate Business Plan and the Minister's Action Plan. Assistant Deputy Ministers and Regional Directors General also prepare Management Contracts with the Deputy Minister; these set out their accountability for results and contribution to each other's results, within the framework of the Corporate Plan.

The departmental financial coding system is being modified to link resources more closely to results in order to improve priority-setting and decision-making on resource pressures and on reallocation. EC's review function has been integrated into the process of corporate planning and accountability. The emphasis of review will be on performance monitoring and reporting, achievement of results, the implementation of service standards, organizational learning and responsiveness, and accountability mechanisms or frameworks.

All of this plus a monitoring and reporting system (currently being developed) are establishing a strong results-based management culture.

The department has taken a number of steps to improve service delivery. A key part of the department's approach to innovative service delivery is its focus on commercialization, which will result in modest but important revenues.

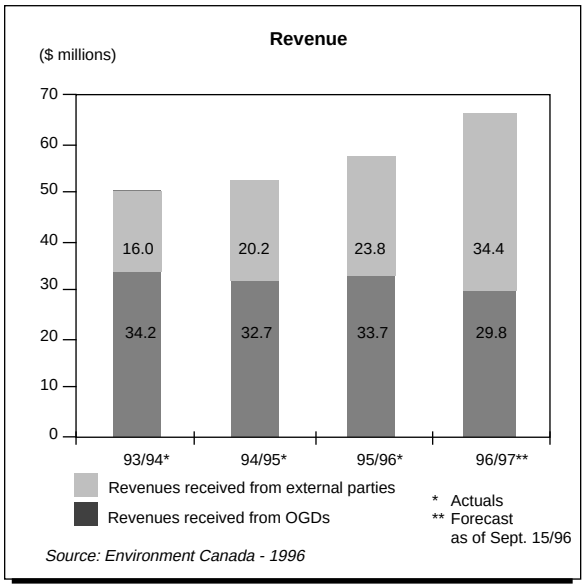
b) Commercialization and Revenue Generation

Over the past few years, the department has placed increased emphasis on recovering the costs and generating revenue from products and services benefiting individuals or groups. Over the past three years, the Atmospheric Environment Program has had notable success in this direction.

Program Review and the new Expenditure Management System have pushed the department to reduce costs through better management practices, and to further pursue

opportunities for revenue generation and cost recovery where appropriate. An integrated approach to commercialization is being encouraged that concentrates efforts on initiatives with the greatest revenue potential.

The department currently generates annual revenues in excess of $50 million. The primary source of this revenue has been scientific and professional services, most notably the provision of weather services. Revenue sources are now shifting to clients outside the federal government. Only 58% of revenues in 1996/97 are expected to come from federal sources (see graph).



The department is now examining various activities for cost recovery/saving and revenue generation potential so as to increase revenues by $9.3 million in 1998/99, as required under Program Review II. By that year, revenue from commercial and other revenue-generating or cost recovery activities will account for approximately 12 to 13% of the department's resource base.

The projected increase in current-year revenue is largely attributed to commercialization initiatives such as:

- the sale of meteorological services, particularly customized weather forecasts, to business, media, airlines and municipalities;
- fire weather support to the province of British Columbia;
- instructional services to NAVCAN;
- 1-900 telephone weather services;
- licensing of software to Britain's Royal Navy;
- enhanced cost recovery for publications and training services across the department;
- realization of new or expanded markets for hydrometric products and services; and
- licensing of intellectual property such as the Microwave Assisted Process (MAP), a chemical extraction process.

Performance in the commercialization area will be measured by:

- product diversification to meet client needs for meteorological products and services;
- enhanced cost recovery for publications and training services across the department;
- new or expanded markets for hydrometric products and services; and
- development of the full potential for cost recovery for permits, licences and fees.

Environment Canada is taking a practical approach to commercialization based on a national policy framework, full integration into departmental business planning, and a realistic examination and assessment of commercial potential. The policy framework and its supporting guidelines are being built to reflect the links between commercialization and the broader issues of alternative service delivery.

c) Alternative Service Delivery (ASD)

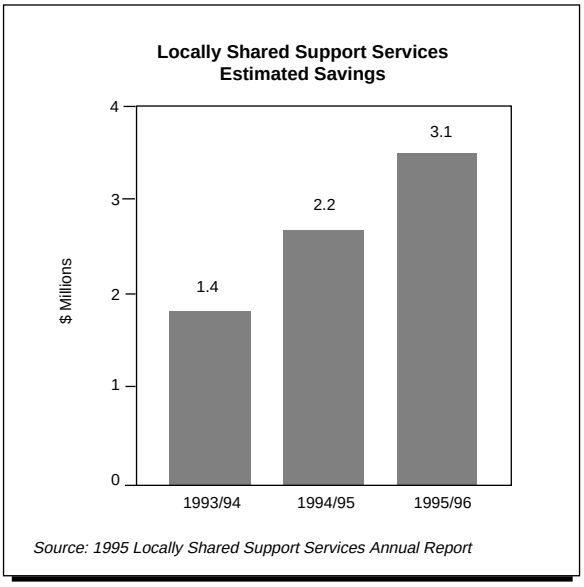
Alternative Service Delivery (ASD) is the promotion of client-oriented, affordable and innovative government services.

Environment Canada's commercialization approach, based on cost recovery and revenue generation, is one element of ASD.

Environment Canada has a long history of ASD, for example:

- market-sensitive production and dissemination of products/services;
- partnered monitoring of ecosystems;
- levering compliance with environmental regulations through ARET and the NPRI;
- covenants between industry, governments and communities to enhance environmental protection;
- a "single window" approach to pulp and paper regulations with Quebec;
- the Canada/BC Laboratory agreement;
- licensing of the MAP technology;
- commercial services of the Atmospheric Environment Program; and
- partnering, as in the North American Waterfowl Management Plan.

One creative approach pioneered within Environment Canada has been the establishment of Locally Shared Support Services (LSSS) among the seven federal departments in the Terrasses de la Chaudière complex in Hull (TLC).



The above chart demonstrates the estimated savings realized over the last three years.

This initiative, begun in 1992, is intended to save costs while improving and streamlining administrative operations and services. To date, over $3M in savings and improved efficiencies have been realized in this cooperative and operational program managed by the TLC Council on Administration. An LSSS Discussion Group of ADMs from the NCR and RDGs representing the Regional Federal Councils has been formed to consider the role of LSSS in the future as increased emphasis is placed on ASD and portfolio management.

Success of the LSSS initiative will be measured by the following indicators:

- client satisfaction;
- minimization of costs;
- improved management practices;
- productivity gains; and
- development of new innovative ideas.

The examples mentioned have been implemented within the existing structure of Environment Canada. The following involved considerable restructuring and are, therefore, much closer to the devolution/privatization end of the ASD spectrum:

- In 1991, the department developed a government-owned, contractor-operated agreement for the Wastewater Technology Centre in Burlington. The Centre has recently become an employee holding company.
- In July 1995, the Environmental Choice Program was privatized as Terrachoice Services Inc. As of April 1, 1997, the program will be self-funded.

d) Information Technology

The department has made a major commitment to the use of technology to support decision-making and accountability reporting requirements of management, and to improve service delivery. The strategy is to modernize the department's information technology (IT)

infrastructure and complete its systems for managing financial and human resources information, sharing management tools and best practices.

Several systems are under development to improve information management. They include the enhancement and implementation of national computer-based decision support systems and information technology to support information exchange and decision-making.

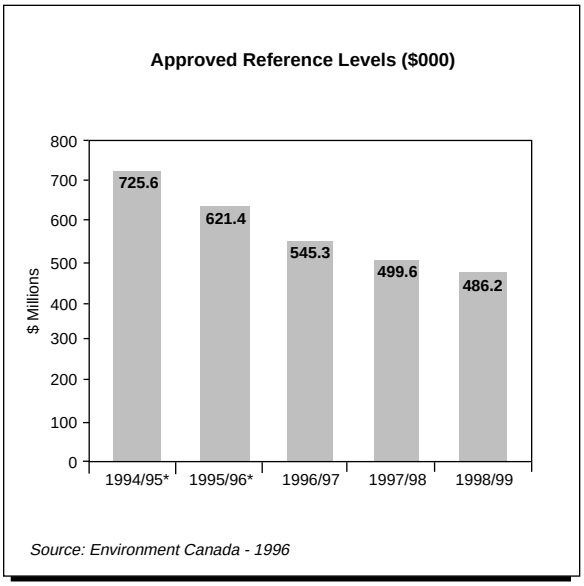
Performance will be assessed through:

- measurement against published Service-level agreements;
- network (telecommunications and service) availability;
- overall client satisfaction;
- ability of the IT infrastructure to address program needs of the department;
- completion of information systems development and implementation on time;
- continued operation of existing systems;
- managers' access to tools and training;
- managers' record in making financially informed decisions;
- participation and implementation of federal government-wide initiatives; and
- meeting information requirements of Parliament and Central Agencies.

Expenditure Management

As a result of Program Review, between 1994/95 and 1997/98 Environment Canada's budget will decline from $725.6 million to $499.6 million. Further cuts of $17 million from 1997/98 to 1998/99 will bring total reductions to about one third (see graph).

To ensure that resources flow to the highest priorities, the department is strengthening its corporate planning and its mechanisms for identifying emerging issues and areas of greatest risk.



* *Excludes resources related to the Canadian Environmental Assessment Agency and to the National Round Table on the Environment and the Economy.*

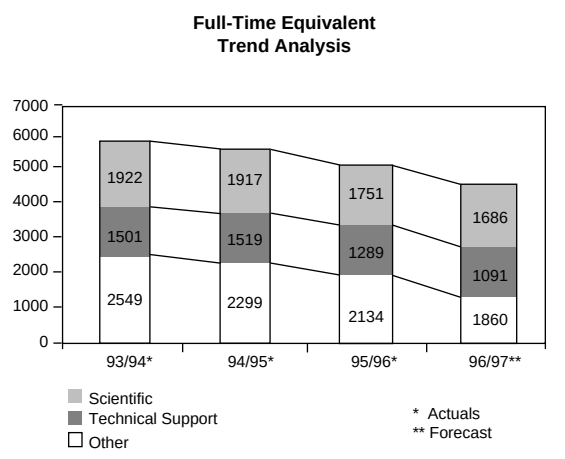
The 11 Tables are used as a mechanism for establishing corporate priorities and providing recommendations on resource pressures, reallocations and investments to the new Subcommittee on Resourcing.

People

Under Program Review Phases I and II, staff reductions of 666 brought the indeterminate staff down from 5,275 to 4,609. Most of the planned reductions scheduled for 1995/96 have occurred and the department is on target for its series of reductions. Ultimately, between 1994/95 and 1997/98, staff numbers at Environment Canada will fall by approximately 1,400 (25%). As the department implements Program Review and other budgetary reductions, it is attempting to retain its science core.

In meeting Program Review commitments, every effort is being made to mitigate impacts through program adjustments, technological improvements and alternative delivery.

Phase III of Program Review is expected to be the most challenging: approximately 400 employees will be declared surplus, and employment opportunities may be limited inside and outside the Public Service.



Source: Environment Canada - 1996

To help smooth the transition period and mitigate the impact on employees, a number of measures were put in place in Phase I and will continue as Phase III is implemented:

- an effective communications plan;
- support systems, such as training, retraining and counselling sessions; brokerage and out-placement services; alternate work arrangements; and
- technological support including access to an employment information system and a vacancy management system.

While full support of employees affected by Phase III will continue to be a major management concern over the coming year, the main focus will shift from downsizing to revitalization in preparation for the future. The emphasis will be on ensuring that the department has the correct values, competencies and knowledge mix to carry out its mission.

Over the next several years, Environment Canada will develop a more integrated, strategic approach for managing its human resources. It will focus on:

- revitalization and re-skilling of its work force;
- improving communication;
- improving morale and motivation; and
- integrating human resource management to everyday management of departmental business lines.

Performance will be measured by:

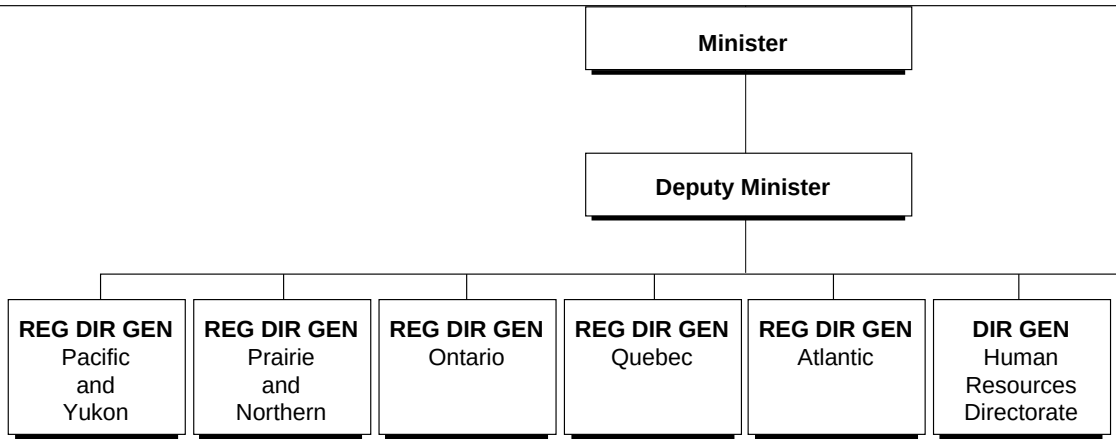
- a clearer context for human resources (HR) policy development and design of HR initiatives;
- building consensus on HR direction, approaches and priorities;
- better integration of HR management and business management;
- improved HR management practices;
- client satisfaction;
- employee satisfaction;
- managers' and employees' access to tools; and
- employees' access to training.

Section V: Appendices

1. Organization ii
2. Financial Information iv
3. Contingent Liabilities viii
4. Acts Administered in Whole or in Part by Environment Canada viii
5. List of Annual Reports from Environment Canada x
6. Report on Operations under the International River Improvements Act for the Year ending December 31, 1995 x
7. Sources of Departmental Information xi
8. Contacts for further Information xiii
9. Index xiv

1. Organization

1.1 1995/96 Actual Expenditures by Region/Service and Business Line/Activity (excluding $10.0 million for the Canadian Environmental Assessment Agency)



A Healthy Environment	26.9	22.2	21.2	23.0	14.6	
Safety from Environmental Hazards	20.0	39.6	17.2	15.7	14.8	
A Greener Society	8.3	13.9	7.5	10.5	7.7	
Administration	6.0	7.6	11.7	7.2	7.2	6.8
Total – $Millions	**61.2**	**83.3**	**57.6**	**56.4**	**44.3**	**6.8**
Full-time Equivalents	478	796	487	439	418	84

ADM Policy and Communications	Corporate Offices	**ADM** Corporate Services	**ADM** Atmospheric Environment Service	**ADM** Environmental Protection Service	**ADM** Environmental Conservation Service	**Total Millions**
		0.4	27.7	44.2	67.1	**247.3**
		0.1	75.5	6.3		**189.2**
14.5		0.4	10.3	43.5	12.5	**129.1**
0.4	6.0	26.7	0.4	2.0	3.2	**85.2**
14.9	**6.0**	**27.6**	**113.9**	**96.0**	**82.8**	**650.8**
126	120	292	844	506	584	**5,174**

2. Financial Information

2.1 Details of Revenues by Business Line/Activity ($ Millions)

	Main Estimates 1995/96	Actuals 1995/96	Main Estimates 1996/97
Revenue credited to the Vote by Business Lines/Activities			
A Healthy Environment			
Information Products	0.1	0.3	0.4
Realty Revenue	0.1	0.2	0.3
Scientific and Professional Services	2.1	2.6	4.3
Regulatory Services	0.7	0.3	0.7
Miscellaneous Services	0.2	0.5	0.6
	3.2	3.9	6.3
Safety from Environmental Hazards			
Information Products	0.3	0.4	0.4
Sale of Sponsorships/Advertising	0.3	0.2	0.3
Realty Revenue	0.4	0.3	0.3
Scientific and Professional Services	17.8	20.4	21.4
Media Services	0.5	0.2	0.3
Miscellaneous Services	0.5	0.5	1.9
	19.8	22.0	24.6
A Greener Society			
Information Products	0.3	0.4	2.1
Realty Revenue	0.0	0.3	0.4
Scientific and Professional Services	20.2	20.1	21.8
Miscellaneous Services	0.2	0.2	0.3
	20.6	21.1	24.6
Total credited to the Vote	**43.6**	**47.0**	**55.6**

2.1 Details of Revenues by Business Line/Activity ($Millions)

	Main Estimates 1995-96	Actuals 1995-96	Main Estimates 1996-97
Revenue credited to the Consolidated Revenue Fund by Business Lines/Activities			
A Healthy Environment			
Realty Revenue	0.5	0.5	0.5
Scientific and Professional Services	0.4	0.8	0.4
Regulatory Services	3.8	3.0	1.2
Miscellaneous Services	0.3	1.5	0.1
	5.0	5.8	2.2
Safety from Environmental Hazards			
Miscellaneous Services	—	0.3	0.1
	0.0	0.3	0.1
A Greener Society			
Scientific and Professional Services	1.0	0.8	0.8
Environmental Choice Program	0.6	—	—
Miscellaneous Services	0.1	0.3	—
	1.7	1.1	0.8
Administration			
Miscellaneous Services	—	3.4	—
	0.0	3.4	0.0
Total credited to the CRF	**6.7**	**10.6**	**3.1**
Total Program Revenues	**50.3**	**57.6**	**58.6**

2.2 Distribution of Capital Expenditures ($ Millions)

	Main Estimates 1995/96	Main Actuals 1995/96	Estimates 1996/97
Equipment - new and replacement			
Meteorological	2.5	2.6	1.3
EDP and communications	6.5	10.9	5.2
Ice observing	4.7	4.6	2.2
Scientific and Research	12.0	8.0	4.1
Motor Vehicles	1.4	0.6	0.4
Satellite Program	0.3	0.3	0.1
Surface-based remote sensing	2.2	5.1	5.0
All others	15.3	8.0	5.3
Land, buildings and works			
Major construction	10.4	0.6	0.3
Regular renovation and maintenance	3.3	9.1	5.8
Total	**58.6**	**49.8**	**29.7**

2.3 Transfer Payments by Business Line/Activity ($ Millions)

(G) Grants; (C) Contributions	Main Estimates 1995/96	Actuals 1995/96	Main Estimates 1996/97
Business Lines/Activities			
A Healthy Environment			
Payments to:			
Non-Profit Institutions and Organizations			
Sustainable Management Program for the Fraser River Basin (C)	2.1	1.6	1.3
University of Victoria to manage and operate the Canadian Climate Research Network (C)	—	2.7	2.9
Implementation of the Montréal Protocol on substances that deplete the ozone layer (G)	1.8	1.8	1.8
St. Lawrence Vision 2000 - Community Interaction Program (C)	0.6	0.8	0.8
St. Lawrence Vision 2000 - Habitat Enhancement Program (C)	0.5	0.8	0.5
University of Guelph for the Canadian Network of Toxicology Centres (C)	1.8	1.8	1.8
Wildlife Habitat Canada Foundation (G)	3.0	2.3	—
North American Waterfowl Management Plan (C)	2.3	2.5	2.3
Royal Society of Canada for the Global Change Program Secretariat (C)	0.8	0.8	0.8
Others	1.8	1.7	1.0
Industry			
Technological development and Demonstration Program (TDDP) - St. Lawrence River (C)	1.0	0.9	0.9
Others	0.5	0.2	0.2

2.3 Transfer Payments by Business Line/Activity ($ Millions)

(G) Grants; (C) Contributions	Main Estimates 1995/96	Actuals 1995/96	Main Estimates 1996/97
Provinces and Territories			
Northern Rivers Study (Peace-Athabasca-Slave) (C)	—	0.8	—
Province of Quebec for the St. Lawrence Action Team (C)	2.5	2.5	2.5
North American Waterfowl Management Plan (C)	0.7	0.7	0.7
Waterfowl crop depredation (C)	0.6	—	—
Fed.-Prov. water resources projects (C)	1.4	—	0.9
Others	1.1	1.2	0.7
Municipalities			
Wildlife Habitat Compensation Program - Fraser River (C)	2.2	2.2	2.2
Others	0.1	0.2	0.1
International Organizations	0.3	0.5	0.3
Other Federal Government Departments			
University Research Councils Program (G)	5.3	6.3	3.9
Others	1.1	0.1	0.1
	31.5	32.4	25.7
Safety from Environmental Hazards			
Payments to:			
Non-Profit Institutions and Organizations			
Meteorological Research (G)	1.1	1.1	0.9
Others	0.3	0.2	0.2
International Organizations			
World Meteorological Organization (C)	1.4	2.2	1.7
	2.8	3.5	2.8
A Greener Society			
Payments to:			
Persons	0.6	0.6	0.5
Non-Profit Institutions and Organizations			
Great Lakes Pollution Prevention Centre (C)	1.0	0.9	0.9
Environmental Networking Organizations under the Community Support Initiative (C)	0.6	0.6	0.6
Action 21 Program (C)	4.5	4.0	4.6
Asia-Pacific Foundation for the GLOBE Conferences (C)	0.6	0.6	0.5
Canadian Council of Ministers of the Environment (C)	0.8	0.8	0.8
Others	0.1	0.1	0.1
Industry			
Terrachoice Environmental Services to support the management and operations of Environmental Choice Program (C)	—	1.1	1.2
Others	0.2	0.2	—
Provinces and Territories			
Province of Quebec - Hydrometric Agreement (C)	0.6	0.6	0.2
Others	0.7	1.0	—

2.3 Transfer Payments by Business Line/Activity ($ Millions)

(G) Grants; (C) Contributions	Main Estimates 1995/96	Actuals 1995/96	Main Estimates 1996/97
Municipalities			
Others	0.1	0.2	—
International Organizations			
Commission for Environmental Cooperation to meet Canada's share of the costs of operating the Secretariat (C)	—	4.1	—
Sustainable Cities Foundation (G)	0.9	0.7	0.5
International Institute for Sustainable Development (G)	—	2.2	1.7
Others	0.2	0.3	—
	10.9	18.0	11.6
Total Grants and Contributions	**45.2**	**53.9**	**40.1**

3. Contingent Liabilities

There are currently 14 claims against the department on various grounds including breach of contract, damage to property and physical damage.

As of March 31, 1996, the contingent liabilities associated with these claims were estimated at $8.2 million.

4. Acts Administered in Whole or in Part by Environment Canada

Environment Canada is responsible for administering the 14 following acts:

The Canada Water Act (Part III is repealed)
The Canada Wildlife Act
The Canadian Environmental Assessment Act
The Canadian Environmental Protection Act
The Canadian Environment Week Act
The Department of the Environment Act
The Game Export Act
The International River Improvements Act
The Lac Seul Conservation Act
The Lake of the Woods Control Board Act
The Migratory Birds Convention Act
The National Wildlife Week Act
The Weather Modification Information Act
The Wild Animal and Plant Protection and Regulations of International and Interprovincial Trade Act

In addition, the department is responsible for administering parts of acts or providing specific advice and information under certain sections and provisions of the acts that follow:

The Access to Information Act
The Aeronautics Act
The Agricultural and Rural Development Act
The Arctic Waters Pollution Prevention Act
The Auditor General Act
The Canada Shipping Act
The Energy Supplies Emergency Act
The Export and Import Permits Act
The Federal Real Property Act
The Financial Administration Act
The Fisheries Act
The Forestry Act
The Hazardous Products Act
The Health of Animals Act
The International Boundary Waters Treaty Act
The James Bay and Northern Quebec Native Claims Settlement Act
The Motor Vehicle Safety Act
The National Energy Board Act
The National Housing Act
The National Round Table on the Environment and the Economy Act
The Navigable Waters Act
The Northern Inland Waters Act
The Pest Control Products Act
The Privacy Act
The Resources and Technical Surveys Act
The Territorial Lands Act
The Transportation of Dangerous Goods Act

5. List of Annual Reports from Environment Canada

a. Canada Water

Annual Report

b. Canadian Environmental Protection

Annual Report

c. Department

Access to Information and Privacy: Annual Reports

d. International River Improvements

Annual Report (see below)

6. Report on Operations under the International River Improvements Act for the Year ending December 31, 1995

The *International River Improvements Act* received assent on July 11, 1955. This Act provides for the licensing of international river improvements to ensure that the water resources of Canada are developed and utilized in the national interest. The Act does not apply to international river improvements constructed under the authority of an Act of the Parliament of Canada, or situated within boundary waters as defined in the Boundary Waters Treaty of January 11, 1909, or constructed, operated and maintained solely for domestic, sanitary or irrigation purposes.

Administration

Regulations for administering this Act were passed by Order-in-Council P.C. 1955-1899 dated December 29, 1955, and amended P.C. l987-l943 dated September l7, l987 and P.C. 1993-764 dated April 20, 1993. The Department of the Environment has administered this Act since June 197l.

Activity

During l995, no licences were issued under the Regulations of the *International River Improvements Act*.

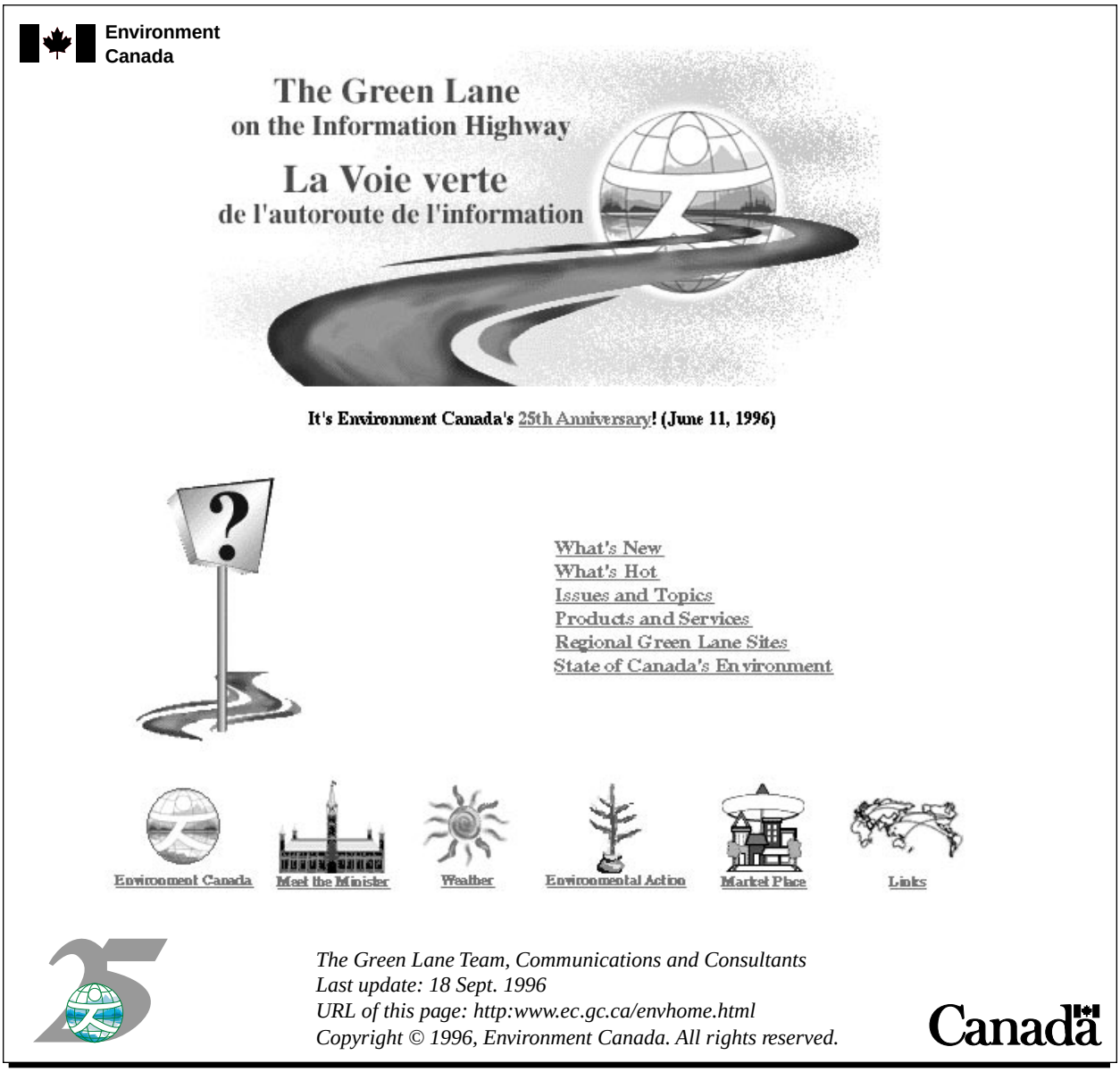
The proposed renovations and raising of the Eastend Dam on the Frenchman River in Saskatchewan was excepted from the application of the Act according to the Regulations amended in 1987.

7. Sources of Departmental Information

Hard copy departmental publications can be obtained from the:

Enquiries Centre
Environment Canada
Ottawa, Ontario
K1A 0H3
1-800-668-6767
1-819-997-2800

The Environment Canada Green Lane address on the World Wide Web is:
http:www.ec.gc.ca/envhome.html



8. Contacts for Further Information

Headquarters Directors of Communications

Paul Hempel
Environmental Protection Service
351 St. Joseph Boulevard
12th floor
Hull, Quebec
K1A 0H3
Telephone: (819) 953-6603 Fax: (819) 953-8125

Karen Dufton
Environmental Conservation Service
351 St. Joseph Boulevard
9th floor
Hull, Quebec
K1A 0H3
Telephone: (819) 994-6079 Fax: (819) 994-0196

Joan Butcher
Atmospheric Environment Service
10 Wellington Street
5th floor
Hull, Quebec
K1A 0H3
Telephone: (819) 997-0458 Fax: (819) 994-8854

Regional Directors of Communications

Wayne Eliuk
Atlantic Region
Environment Canada
45 Alderney Drive
Dartmouth, Nova Scotia
B2Y 2N6
Telephone: (902) 426-1930 Fax: (902) 426-5340

Pierre Normand
Région du Québec
Environnement Canada
1141, route de l'Église
7e étage
Sainte-Foy (Québec)
G1V 4H5
Téléphone : (418) 648-5777 Fax : (418) 648-3859

Claire Scrivens
Ontario Region
Environment Canada
4905 Dufferin Street
Downsview, Ontario
M3H 5T4
Telephone: (416) 739-4848 Fax: (416) 739-4776

Tim Hibbard
Prairies and Northwest Territories Region
Environment Canada
266 Graham Avenue, Room 1000
Winnipeg, Manitoba
R3C 0J7
Telephone: (204) 983-2110 Fax: (204) 983-0964

Sheila Ritchie
Pacific and Yukon Region
Environment Canada
224 West Esplanade
North Vancouver, British Columbia
V7M 3H7
Telephone: (604) 666-9733 Fax: (604) 666-4810

9. Index

A Healthy Environment — Preface, ii, 2, 5
A Greener Society — Preface, ii, 2, 3, 29
Accelerated Reduction/Elimination of Toxics (ARET) — 13
Accidental Releases — 26, 27
Acid Rain — ii, 4, 6, 9, 10, 30
Action Plan on Biodiversity — 17
Action 21 — 32, 35
Alternative Service Delivery — 39
Arctic Environmental Protection Strategy — 27
Atlantic Coastal Action Program (ACAP) — 18, 19
Atmospheric Change — 7, 10

Basel Convention on the Transboundary Movements of Hazardous Wastes and Their Disposal — 13
"Best Practices" — 34, 35
Biodiversity/Wildlife — 5, 11, 14, 15, 17, 18, 21, 22
Biosphere — 31

Canada-U.S. Agreement on the Transboundary Movement of Hazardous Waste — 13
Canada-U.S. Air Quality Agreement — 9, 10
Canada-U.S. Binational Virtual Elimination Strategy — 13
Canada Wildlife Act — 16, 17
Canadian Biodiversity Strategy — 17
Canadian Environmental Protection Act (CEPA) — 11, 13, 21, 22
Canadian Endangered Species Protection Act — 16
CFCs — 7, 8
Climate Change — 6, 25, 30
Commercialization — 37, 38
Commissioner of the Environment and Sustainable Development — 34
Contaminated Sites — 14, 34
Convention on Biological Diversity — 17
Convention for Oil Pollution Preparedness Response Cooperation — 27
Convention on International Trade in Endangered Species (CITES) — 17
Cost Recovery — 29, 38

Department of Environment Act — 1

Ecosystem — 4, 5, 7, 11, 14, 15, 18, 19, 20, 31
Ecowatch Centre — 31
Emergencies Prevention, Preparedness and Response — 2, 26, 27
Emergencies Program — 27
Endangered Species — 3, 15, 16, 17, 20, 21, 30
Enforcement/Compliance — 20, 21, 22
Environmental Citizenship — 3, 29
Environmental Hazards — Preface, 1, 2, 23, 26
Environmental Industry — 32

Environmental Information System 30
Environmental Management Systems 22
Environmental Predictions and Warnings 23
Environmental Sustainability 1, 33, 34, 35

Federal Committee for Environmental Emergencies 28
Forecast Prediction 25
Framework Convention on Climate Change 6
Framework of Accountability Preface, iii, 3
Fraser River Action Plan (FRAP) 20

Global Program of Action on Protection of the
Marine Environment from Land-based Activities 13
Great Lakes 19
Great Lakes Water Quality Agreement 19
Greenhouse Gas Emissions (GHGs) 6, 7
Green Lane 21, 30
Green Technologies 29, 31, 32, 33

Hazardous Air Pollutants (HAPs) 6, 12
Hazardous Wastes 13, 14, 21

Ice Services 30, 31
Information Products and Services 29
Inhalable Particulates 6, 8
International Environmental Management Initiative 32
International Spills Countermeasures Technology Committee 28

Lead Shot 16
Leadership Preface, iii, 1, 2, 3
London Convention on Ocean Dumping 13
Long Range Transport of Air Pollutants Convention 13

Major Industrial Accidents Council of Canada (MIACC) 27, 28
Migratory Birds 15, 17, 36
Migratory Birds Convention Act 16
Migrating Bird Sanctuaries 16, 17
Montréal Biosphere 31
Montréal Protocol 7

National Action Program on Climate Change (NAPCC) 6
National Air Pollutants Surveillance Network 12
National Contaminated Sites Remediation Program 14
National Pollutant Release Inventory (NPRI) 11, 30
National Wildlife Areas 16, 17
Nitrogen Oxides/Volatile Organic Compounds 8, 9
North American Waterfowl Management Plan (NAWMP) 15
Northern River Basin Study (NRBS) 20

Oil Spill 27
Ozone-Depleting Substances ii, 4, 7, 8, 21

Partnerships iii, 3, 4, 10, 29, 30, 33, 35
PCBs (Polychlorinated Biphenyls) 14, 28, 34
Persistent Organic Pollutants (POPs) 12
Pollution Prevention Strategy 11, 32
Priority Substances List 11, 13
Protected Areas 17, 18

Recovery of Nationally Endangered Wildlife (RENEW) 16
Research and Development 10

Safety from Environmental Hazards ii, 12
Share Responsibilities Preface, 1
Smog 6, 8, 9
St. Lawrence Action Plan (SLAP) 19
St. Lawrence Vision 2000 19
State of Commitment to Biodiversity Conservation 17
State of the Environment (SOE) 25, 30
Strategic Options Process 13
Stratospheric Ozone 6, 30
Sustainable Development Preface, 2, 4, 29, 30, 32, 33, 34

Technologies and Know-how 29
Technology Transfer 32
Toxics 3, 4, 5, 10, 11, 12, 13, 14, 15, 19, 20, 22, 25, 26
Toxic Substances Management Plan 11
Toxic Substances Management Policy (TSMP) 12, 27
Track 1 11, 13
Track 2 11, 13

Ultraviolet Radiation (UV) 3, 7, 25

Water Monitoring Program 31
Waste Reduction Program 34
Weather Forecasts 2, 23, 24, 25, 38
Weather Observing 23
Weather Prediction 23, 24
Weather Warnings 23, 24, 25
Wetland Habitat 15
Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (WAPPRIITA) 17, 21