Environment Canada

Performance Report

For the period ending March 31, 2000

David Anderson

Minister of the Environment

Executive Summary

Environment Canada's mandate is to preserve and enhance the quality of the natural environment, conserve migratory birds and other wildlife, conserve and protect Canada's water resources, and protect the health and safety of Canadians by providing forecasts and warnings of weather and other environmental risks so Canadians can take action to protect themselves, their property and their businesses.

This Performance Report focuses on the progress associated with the priorities listed in Environment Canada's *Report on Plans and Priorities for 1999-2000,* as well as on Science and Technology and on implementing the Department's Sustainable Development Strategy. Key areas where Environment Canada reached significant milestones during the year ending March 31, 2000 are specifically highlighted, and areas where the Department did not meet the expected targets are also described.

The priorities outlined in the *Report on Plans and Priorities for 1999-2000* to guide business line actions were:

- achieving results with partners under four broad themes -- climate change, clean air, water, and nature;
- sharing ideas and solutions with and among communities and other key target groups, with a focus on ecosystem initiatives, the Millenium Eco-Communities initiative and communicating knowledge; and
- safeguarding Canadians through national weather services.

With few exceptions, the Department succeeded in meeting its goals in these priority areas.

On climate change, federal, provincial and territorial ministers agreed on key elements to be included in a National Implementation Strategy to meet Canada's commitment to reduce emissions of greenhouse gases. Progress was made on several initiatives to improve air quality, including the development of Canada-wide Standards for particulate matter and ground-level ozone. In the context of broader freshwater conservation and protection efforts, the Department has been working with all provinces and territories to protect the ecological integrity of Canada's drainage basins from large scale water removals, including inter-basin transfers. In June 2000, the Canadian Council of Ministers of the Environment endorsed the adoption of a collaborative approach in addressing freshwater priority issues, including the possible development of a National Water Strategy. Renewal of the Federal Water Policy has been delayed so that it can now be undertaken as part of the broader National Water Strategy. A major milestone for the conservation of nature was reached in April 2000 when Bill C-33, the proposed *Species at Risk Ac*t, was introduced in Parliament.

Environment Canada worked to share ideas and solutions with communities through ecosystem initiatives and Millennium Eco-Communities. The Department also strengthened new partnerships, such as with municipalities through the Green Municipal Enabling Fund and the Green Municipal Investment Fund to design and create renewed infrastructure that will reduce greenhouse gas emissions.

Environment Canada continued to work around the clock to provide Canadians with weather warnings and forecasts. Safeguarding Canadians through national weather services is becoming increasingly important as incidences of severe weather increase. Environment Canada has addressed this need through actions such as installing national lightning and Doppler radar

networks. As part of providing better service to Canadians, Environment Canada is working to communicate weather forecasts more effectively and efficiently to Canadians through innovative means such as the Internet.

The Department continued to focus on improving the strategic management of its science and technology. Issues such as establishing research priorities, integrating social science and community-based knowledge into policy development, and strengthening the interface between science and policy were addressed.

Overall, as the following report demonstrates, the Department has met its goals for 1999-2000. This puts Environment Canada in a good position to continue to deliver on its commitments to providing a better quality of life for Canadians.

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Section 1: Minister's Message

This Performance Report for the period ending March 31, 2000 describes the action we have taken on clean air, water, climate change and protecting Canada's natural heritage. It also shows Environment Canada's progress working with communities and safeguarding Canadians through the national weather service.

After two years of intensive consultations, significant progress was made towards the first National Business Plan on Climate Change, expected later this year. My colleagues in the Government of Canada and in the provinces and territories agreed to begin reducing Canada's greenhouse gas emissions. The National Business Plan will put us on the path to being one of the most sophisticated nations in the world when it comes to producing and using energy.

The quality of our air is an important health and environmental issue for all Canadians. As part of my Clean Air Strategy, we took steps to implement higher standards for sulphur in gasoline and establish a new Canada-Wide Standard for ozone and particulate matter, air pollutants that are directly linked to respiratory illnesses. We also began work with the United States on an Ozone Annex to reduce transboundary pollution that contributes to air pollution in Canada.

One part of our strategy to prevent large scale removal of water from our freshwater basins is a Canada-Wide Accord with my provincial and territorial colleagues. Under that agreement, each government would commit to prohibiting bulk water removals and diversions from major drainage basins under their control. While not all provinces have yet endorsed the Accord, all have agreed on the objective and are putting in place, or will soon have, legislation and regulations prohibiting bulk water removals. We also engaged provinces and territories in a more comprehensive discussion on the future of water policy in Canada.

New legislation, the *Species at Risk Act*, was tabled in Parliament in April 2000. This legislation is the product of seven years of study, consultation, and planning. The proposed Act will be effective in protecting threatened or endangered species and their habitat on all lands in Canada.

As with the *Canadian Environmental Protection Act 1999*, which we have begun to implement, the proposed *Species At Risk Act* moves us away from the command and control style of the current legislation to a more cooperative model. These new approaches do more than regulate. They focus on a cooperative approach with tools such as the requirement for pollution prevention planning under the *Canadian Environmental Protection Act 1999*, or the habitat stewardship incentives under the proposed *Species At Risk Act*.

This shift is happening in a number of areas and fits into a new architecture of environmental management that is science-based, builds on partnerships and promotes incentives that will ultimately encourage innovation and environmental leadership. This work will allow Canada to modernize its approach to environmental issues.

Our national weather service continues to provide Canadians with around the clock service in providing weather forecasts and warnings. New Doppler radar have been installed to improve our ability to safeguard Canadians.

Over the last year, we made progress in leaving our natural legacy stronger and healthier. This report outlines our achievements over the last year and helps us understand the challenges that remain. All Canadians have a role to play in ensuring we have a clean environment for ourselves and generations to come. I encourage you to join me in this challenge.

David Anderson, P.C., M.P.

Minister of the Environment

Section 2 : Departmental Overview

2.1 Mandate

The mandate of the Minister of the Environment is to preserve and enhance the quality of the natural environment, including water, air and soil quality; conserve Canada's renewable resources, including migratory birds and other non-domestic flora and fauna; conserve and protect Canada's water resources; carry out meteorology; enforce the rules made by the Canada - United States International Joint Commission relating to boundary waters; and coordinate environmental policies and programs for the federal government (*Department of Environment Act*).

The legislation and regulations which provide Environment Canada its mandate and allow it to carry out its programs can be found at: http://www3.ec.gc.ca/EnvrioRegs

2.2 Our Mission and Vision

Environment Canada's mission is to make sustainable development a reality in Canada by helping Canadians live and prosper in an environment that needs to be respected, protected and conserved. To this end, we undertake and promote programs to:

- protect Canadians from domestic and global sources of pollution;
- conserve biodiversity in healthy ecosystems; and
- enable Canadians to adapt to weather and related environmental influences and impacts on human health and safety, economic prosperity and environmental quality.

Our 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.*

2.3 Delivering Results Through Business Lines

Environment Canada strives to fulfill its mandate of conserving and protecting our natural heritage, and protecting the health and safety of Canadians, through the efforts of its four results-based business lines: Nature, Clean Environment, Weather and Environmental Predictions, and Management, Administration and Policy. Each business line is led by an Assistant Deputy Minister who provides functional leadership through building shared ownership for priorities, strategies and performance commitments across the department.

Organizationally, the Department is divided into five headquarters services, five Regions, plus the Human Resources Directorate and Corporate Offices. Environment Canada's organizational structures crosscut business lines in a matrix management approach which allows programs to be delivered in a client-centered manner respecting regional differences.

A detailed description of Environment Canada's planning, reporting and accountability framework can be found at: http://www.ec.gc.ca/introec/mf_e.htm

Clean Environment

In the Clean Environment business line, Environment Canada: identifies threats from pollutants, their sources and means of controlling them through sound science; develops standards, guidelines and codes of practice to ensure adequate levels of protection of environmental quality; identifies and implements strategies for preventing or reducing pollution; administers and enforces regulations for pollution prevention and control within areas of federal jurisdiction; monitors levels and conducts studies of contaminants in air, water, and soil; represents Canada's interests in the development of international agreements and accords to reduce pollution; and provides advice and tools for preventing pollution and support to the development and deployment of green technologies.

Nature

In the Nature business line, Environment Canada: develops scientific knowledge and tools to understand and respond to the effects of human activities on ecosystems; manages migratory birds, National Wildlife Areas and Migratory Bird Sanctuaries; develops and implements recovery plans for threatened and endangered species; provides leadership on the implementation of the Convention on Biological Diversity; applies an integrated approach to conserving and restoring significant ecosystems, and provides tools to build local capacity; represents Canada's interests in international arenas dealing with wildlife, ecosystem health and biodiversity; and provides federal leadership in conserving and protecting Canada's water resources and aquatic ecosystems.

Weather and Environmental Predictions

Through this business line, Environment Canada: monitors the state of the atmosphere (weather, climate, and ultraviolet radiation), hydrosphere (rivers, lakes and oceans) and cryosphere (ice and snow); provides information on the past, present and future states of the physical environment; issues warnings of severe weather and environmental hazards; engages in scientific research on the causes of severe weather, climate change and variability, and the impacts of human activity on the atmospheric environment; provides advice on adaptation to changing weather and climate; and applies predictive models to other environmental issues.

Management, Administration and Policy

This business line provides: departmental leadership; strategic policy advice; socio-economic analysis; coordination of international activities of the department; leadership and coordination in fostering partnerships with industry, non-governmental organizations, Aboriginal peoples, provinces and other government departments; communications and public outreach services; and support services to decision making, management and accountability.

2.4 Chart of Key Results Commitments

To provide Canadians with:	To be demonstrated by:	Achievements reported in:
Clean Environment Business Line		
Protection from domestic and global sources of pollution.	Reduced adverse human impact on the atmosphere and on air quality.	Section 3.1 Page 18
	Understanding, and prevention or reduction of the environmental and human health threats posed by toxic substances and other substances of concern.	Section 3.1 Page 2
Nature Business Line		
Conservation of biodiversity in healthy ecosystems.	Conservation of biological diversity.	Section 3.2 Page 27
	Understanding and reduction of human impacts on the health of ecosystems.	Section 3.2 Page 29
	Conservation and restoration of priority ecosystems.	Section 3.2 Page 31
Weather and Environmental Predictions Business Line		
Adaptation to influences and impacts of atmospheric and related environmental conditions on human health and safety, economic prosperity and environmental quality.	Reduced impact of weather and related hazards on health, safety, and the economy.	Section 3.3 Page 37
	Adaptation to day-to-day and longer term changes in atmospheric, hydrological, and ice conditions.	Section 3.3 Page 40
Management, Administration and Policy Business Line		
Strategic and effective departmental management to achieve environmental results.	Strategic and integrated policy priorities and plans.	Section 3.4 Page 43
	A well-performing organization supported by efficient and innovative services.	Section 3.4 Page 46

2.5 Links to Government Priorities

The following diagram illustrates the links between current priorities of the federal government, Departmental priorities as set out in the 1999-2000 Report on Plans and Priorities, and the topics reported in the *Departmental Performance Report*. Reported topics are only listed once in the diagram, although it should be recognized that all of them address multiple priorities.

Government Priorities	Environment Canada Priorities	Topics Reported	Location in this Report
	Climate Change	Climate Change Action Fund – Public Education & Outreach	page 18
The Environment		Green Infrastructure	page 21
	Clean Air	Enforcement	page 23
		Progress on Reducing Smog	page 19
		Voluntary Approaches to Pollution Prevention	page 24
Health and Quality Care		Harmonization Accord and Canada-wide Standards	page 22
	Water	Strategy to Prohibit Bulk Water Removal	page 31
Children		Shellfish and Water Quality	page 24
		Ecosystem Science	page 29
		Environmental Quality Guidelines	page 30
	Nature	National Strategy for Species at Risk	page 27
		Over-Abundant Snow Goose Populations	page 28
	Safeguarding Canadians	Doppler Radar	page 37
	Millennium Eco-Communities	Millennium Eco-Communities	page 12
Stronger Communities	Ecosystems Initiatives	Atlantic Coastal Action Program	page 32
		Great Lakes Program	page 34
		Modern Management Agenda	page 47
Strong and United Canada	Improving Service to Canadians	Human Resources Management	page 47
		Revitalizing Human Resources	page 39
Aboriginal People		Engaging Aboriginal Peoples	page 44
Youth		Youth Round Table on the Environment	page 45
		Environmental Economics	page 43
Dynamic Economy		Road Weather Information Systems - Making Canada's Roads Safer	page 40
		Year 2000	pages 37, 46
	Science and Technology	Science and Technology Management	page 12
		Climate Change Action Fund- Science	page 41
Canada's Place in the World		International Efforts: Environmental Cooperation with China	page 45

2.6 Operating Environment

In fiscal year 1999-2000 there were significant developments in Canada influencing government actions. After a number of years of slow economic progress, the past year (1999) was the third consecutive year of aggregate growth exceeding 3%, with the strong expectation of growth at 4.5% for the year 2000. Government deficit at the federal level has largely been replaced by a surplus. The jobless rate is the lowest in decades and the country is experiencing a positive outlook on economic matters. However, for Environment Canada, fiscal constraint still remains an issue. Impacts of the current economic situation include the following:

- Within the federal government, fiscal constraint has significantly impacted the health sector, and to a lesser extent, environmental policy. The federal government has had to make hard choices resulting in reductions to the physical and human resources dedicated to environmental programs. Provincial governments have cut resources available to environmental programs as well, leaving holes in both the independent and shared federal/provincial responsibilities to protect the environment.
- Globalization of the world's economies is influencing national and international policies, including environmental policy. The development of policies, in environment or other areas, is being influenced by transnational corporations and interest groups.
- The "rights" debate is intensifying in the domain of Aboriginal and treaty rights. The establishment of Aboriginal self-government has provided a variety of new contexts for environmental protection. The authorities of the various jurisdictions are addressing new challenges and opportunities as a result.
- The improved economy has sharpened distinctions between rich and poor, and restraints on welfare policies have exacerbated the effects of widening income gaps. Recent court decisions with respect to individual rights and a lack of participation by citizens at all levels in public policy debates have resulted in the need for more consensual policy making around environmental management.

A positive economic outlook is being accompanied by an increasing focus on environmental issues and expectations of federal government leadership. With greater will on the part of civil society and greater fiscal capacity on the part of governments, the opportunity for the renewal of environmental policies exists. A strong economy allows enhanced policy making decisions. In particular, the integration of sustainable development as a key management precept in the government is possible, creating a vehicle to ensure that the incorporation of environmental policy into government decision making.

Significant public support exists to improve our environment. For the first time, environmental pollution has displaced economic hardship as an urgent top-of-mind issue facing the country. In a recently released Environmental Sustainability Index[1], Canada ranked third best of 56 countries studied for the following composite indicators: environmental systems, environmental stresses and risks, human vulnerability to environmental impacts, and social and institutional capacity, and global stewardship.

[1] The Environmental Sustainability Index was developed cooperatively by the Center for International Earth Science Information Network at Columbia University, the Yale University Center of Environmental Law and Policy, and the Global Leaders for Tomorrow Environment Task Force of the World Economic Forum

Despite this positive outlook, from a state of the environment perspective there are several key issues that impact on how the Department operates. For example:

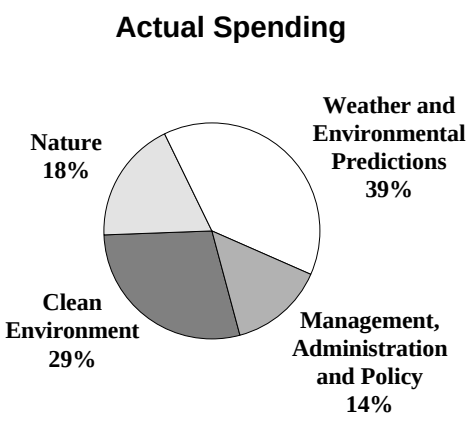
- Air pollution is the environmental issue Canadians are most concerned about, followed by water pollution and nature conservation.
- The majority of Canadians are convinced that the earth's climate and long-term weather patterns are changing, and that human activities are responsible.
- Researchers indicate an increase in the frequency and intensity of severe weather events over the last 15 to 20 years.
- Transportation is a significant source of air emissions contributing to climate change, air quality, and acid rain problems; the current trend of automobile use shows an increase.
- The safety and security of freshwater resources is now recognized globally as a priority issue. Although water appears abundant within Canada, 90% of the population lives in a narrow band within 300 kilometres of Canada's southern border, putting intense pressure on water supplies in this area and creating moderate to severe seasonal water shortages in some regions of the country. The Canadian urban consumption of water is declining slowly, but we still use more than most other industrialized nations. Canadians are increasingly concerned about the long-term management and sustainability of Canada's surface and groundwater resources, including issues related to water quality, source protection, and municipal wastewater.
- Canada's diversity of plants and animals, and the ecosystem that supports them, are threatened by a variety of human activities including the release of toxic substances.
- Environmental issues cannot be managed solely in a regional or even national context -- the Canadian agenda is being driven largely by global events and global approaches to environmental management.

2.7 Departmental Performance

Clean Environment	$ 154,021,447 *$ 225,252,699* **$ 227,459,529**
Nature	$ 145,292,700 *$ 153,798,744* **$ 143,532,905**
Weather and Environmental Predictions	$ 224,690,000 *$ 317,125,721* **$ 308,290,663**
Management, Policy and Administration	$ 94,297,897 *$ 108,935,616* **$ 113,053,248**
1999-2000 Total Gross	$ 618,302,044 *$ 804,565,077* **$ 792,336,345**

Planned Spending
Total Authorities
Actual Spending

Details provided in Table 1.



In the *Report on Plans and Priorities for 1999-2000* Environment Canada set out three strategic priorities for action:

- achieving results with partners under four broad themes -- Climate Change, Clean Air, Water, and Nature;
- sharing ideas and solutions with and among communities and other key target groups, with a focus on ecosystem initiatives, the Millennium Eco-Communities Initiative and communicating knowledge; and
- safeguarding Canadians through national weather services.

Highlights of progress on each of these priorities are described below.

Achieving Results With Partners

On **Climate Change**, Canada has started to slow the growth in its greenhouse gas emissions. In the mid-1990's, our emissions were increasing at a rate of approximately 3 % per year. In 1998, the last year for which complete data are available, the increase had slowed to 1 % per year.

Environment Canada is continuing to work with its federal, provincial and territorial counterparts to develop a national strategy on climate change and the first three-year business plan. In March

2000, federal, provincial and territorial ministers agreed on key elements to be included in the strategy to meet Canada's commitment to reduce greenhouse gas emissions. This strategy, which should be completed this Fall, will lay out a step-by-step path for reducing Canada's emissions. As well, key decisions on international rules and mechanisms to implement the Kyoto Protocol are scheduled to be taken at a meeting in November 2000 in The Hague. Environment Canada is co-leading the Canadian delegation to these negotiations.

Environment Canada scientists continue to work with other government departments, industry and the Canadian public to minimize impacts of climate change and climate variability on ecosystems and water resources.

In the 2000 federal Budget, the Government made an initial investment of more than $600 million in an number of areas critical to addressing climate change. These include promoting technology innovation, enhancing climate and atmospheric research, helping communities take action, expanding purchases of green power, renewing the Climate Change Action Fund and energy efficiency and renewable energy programs, and helping developing countries take action.


More information on climate change is available at http://www.ec.gc.ca/envpriorities/climatechange_e.htm

Environment Canada made progress on several initiatives to improve air quality through **Canada's Clean Air Strategy**. Most significantly, Canada-wide Standards for particulate matter and ground-level ozone were signed by federal, provincial and territorial ministers of the environment in June 2000. These standards commit all jurisdictions to reaching ambient air quality targets by 2010. Federal actions toward these targets include regulations on motor vehicles and fuels and research on air quality and its impact on human and environmental health. Cross-border sources of air pollutants are being addressed through negotiations on an Ozone Annex to the Canada-United States Air Quality Agreement. Environment Canada is also working with provinces to establish sulphur dioxide emission targets in follow-up to the Canada-wide Acid Rain Strategy for Post 2000 signed last year by federal and provincial ministers.


More information on Canada's Clean Air Strategy is available at http://www.ec.gc.ca/envpriorities/cleanair_e.htm

Much of the Department's effort to protect Canada's **Water** resources was directed toward the implementation of a Strategy to Prohibit Bulk Water Removal. This strategy responds to the views of Canadians that sound water management principles be applied and the integrity of major Canadian water basins be protected. Nine jurisdictions have endorsed the Canada-wide Accord to Prohibit Bulk Water Removals; all jurisdictions have prohibited, or are in the process of prohibiting, bulk water removal. In June 2000, Canada's environment ministers agreed that safe, clean and secure water is a common objective and that all jurisdictions have a role to play in achieving this. Ministers also agreed to establish task groups to work on strategies and solutions for freshwater priority issues. The Department plans to release a federal discussion document on fresh water later in 2000. The discussion document will serve as an important reference for informing the work of the task groups, engaging Canadians on a dialogue on water, and helping to frame the short and long-term federal priorities. The federal water policy will be looked at as part of the development of a national water strategy.

In November 1999, the Canadian Council of Ministers of the Environment released national water quality guidelines for over 100 substances – an initiative to which Environment Canada scientists were major contributors. The Council is also developing a National Water Quality Index which will help to standardize communication of water quality information at regional and

national levels.

 More information on water is available at http://www.ec.gc.ca/water_e.html

Environment Canada's main tool to achieve clean air and water is the *Canadian Environmental Protection Act* (*CEPA* 1999). The new Act was proclaimed into force on March 31, 2000. It is one of the most advanced environmental laws in the developed world. It emphasizes pollution prevention and provides a strengthened framework for protecting Canadians and their environment. All of the regulations developed since 1988 were adjusted for the new Act and two new ones were developed to ensure consistency and to enable effective implementation. Public information sessions were held in 12 cities across the country to advise Canadians of the new requirements in *CEPA* 1999. A National Advisory Committee, consisting of representatives from federal, provincial, territorial and Aboriginal governments, was established to enable national action and to encourage cooperative action in matters affecting the environment. This, in addition to progress made through the Canadian Council of Ministers of the Environment on the development of Canada-wide Standards under the Accord on Environmental Harmonization, will contribute to providing Canadians with the clean and healthy environment they deserve.

A major milestone was reached in the conservation of **Nature** with the introduction in the House of Commons of Bill C-33, the proposed *Species at Risk Act*, in April 2000. Under the 1996 Accord for the Protection of Species at Risk, the federal government and all provinces and territories are to establish complementary legislation to protect species at risk and their habitats. Species at risk legislation is currently in place in five provincial and territorial jurisdictions, and the proposed *Species at Risk Act* is intended to fulfill the federal government's commitment. The Bill provides for immediate protection of species and their habitats at the time they are listed, formalizes national assessment and reporting processes and ensures the timely development and implementation of recovery plans.

 More information on nature is available at http://www.ec.gc.ca/envpriorities/nature_e.htm

Sharing Ideas and Solutions

Ecosystem initiatives are cooperative efforts on targeted ecosystems to address and solve complex environmental issues as identified and agreed upon by stakeholders. Results achieved through the Atlantic Coastal Action Program and Great Lakes Program, two of six ecosystem initiatives across Canada, are reported in detail in Section III of this report. Some highlights from these initiatives include the following:

- Improvements and upgrades in waste water treatment achieved through the Atlantic Coastal Action Program have improved water quality and contributed to restoration of shellfish and recreational fishing industries in Atlantic Canada.
- Voluntary pollution prevention agreements with industry in the Great Lakes Basin have resulted in eliminating over 390,000 tonnes of toxic and hazardous waste releases into the environment.

Results from the other ecosystem initiatives will be reported in future Departmental Performance Reports.

 More information on ecosystems initiatives is available at http://www.ec.gc.ca/ecosyst/

Communicating scientific knowledge on the environment and human impacts is essential if Canadians are to make informed and responsible decisions. Environment Canada produces a range of communications products targeted to general and specific audiences, many of which include the news media as a message multiplier. For example, for three years now Environment Canada has partnered with the Discovery Channel to produce Earth Tones, a series of 20 vignettes a year that appears on the popular program "@discovery.ca". Vignettes feature the work of scientists across the Department and, for the first time this year, from four other science-based federal departments as well. Using television in this way brings federal science to an estimated 1.5 million viewers weekly.

More information on science at Environment Canada is available at http://www.ec.gc.ca/science/splash.htm

Millennium Eco-Communities are groups of committed citizens who are concerned about the environment and who want to make a difference in their community. Through the Millennium Eco-Communities website, Environment Canada provides a means for these communities to find and share information on environmental issues, best practices, tools, tips, and networking opportunities. Examples of projects include: Green Home Visits, energy retrofits, restoration of wetlands, tree planting, riverbank clean-ups, and developing local air emissions inventories.

More information on Millennium Eco-Communities is available at http://www.ec.gc.ca/eco/main_e.htm

Safeguarding Canadians

Research indicates that the frequency and intensity of hurricanes, tornadoes and severe storms has increased over the last ten to fifteen years, and the chance that extreme weather will affect Canadians is growing. Operating 365 days a year, 24 hours a day, Environment Canada issues timely and accurate weather forecasts and warnings to the public, as well as transportation and commercial clients, that help reduce casualties and damage from natural disasters. A national lightning network has recently been added, and a national Doppler radar network is being installed, to provide meteorologists with data needed to detect and predict severe weather more quickly and more precisely. Environment Canada contributes to improving scientific understanding of weather, hydrology and ice. This knowledge is the basis for policy development across the Department and for the creation of better prediction methods and tools. The Department continues to employ innovative ways to deliver weather information to all Canadians by telephone, television WeatherAlert messages, and the Internet.

More information on safeguarding Canadians is available at http://www.msc.ec.gc.ca/index_e.cfm

Other Ongoing Priorities

Strategic management of Environment Canada's **Science and Technology** plays a vital role in assuring the delivery of the Department's program operations, policy development, and services to Canadians, and to the development of a Federal Science and Technology Policy.

In 1999-2000, Environment Canada continued its efforts in developing policies for, and implementation of, best practices to support strategic management of its Science and Technology capacity. The Science and Technology Advisory Board developed a Departmental guide for integrating social science and community-based knowledge into planning and policy development. A research agenda for the Nature business line was completed. Development of

research agendas for other business lines is planned, and will make priority setting more transparent and facilitate capacity planning and partnership development.

At the interdepartmental level, Environment Canada assisted in restructuring the Panel of Energy Research and Development, and the development of the Federal Framework and Research Plan on Northern Science and Technology in Canada. At the federal level, the Department was a leading participant in the development of the Federal Framework for Science and Technology Advice in response to the Council of Science and Technology Advisor's report on strengthening the interface between science and policy. Environment Canada has taken the next step toward action on this framework through the development of a Departmental implementation plan.

 More information on Environment Canada's science and technology is available at http://www.ec.gc.ca/scitech/

Service to Canadians is a continuing concern at Environment Canada. The Department is currently sponsoring a Service Canada pilot project to develop tools and electronic infrastructure for improving public access to federal environmental information. Several regions are also working with other federal departments to improve community access to Government of Canada information, resources and tools. Environment Canada conducted a best practices review of innovative uses of new technologies in support of enhanced service delivery and community programming. This review demonstrated that the Department has significant innovative capacity which could support strategic investments in these areas. One example is CanExplore, a powerful search tool enabling citizens to access information on sustainable development from several departments. As part of the Government On-Line Initiative, Environment Canada is renewing its Internet capacity and web presence to meet the needs of Canadians and provide better service. Already, Environment Canada's Green Lane web site is accessed more than 2 million times per month.

 More information on the CanExplore search engine is available at http://canexplore.gc.ca/

2.8 Key Co-Delivery Partners

Key Results	Area of Cooperation	Key Co-Delivery Partners
Clean Environment Business Line		
Reduced adverse human impact on the atmosphere and on air quality	National Implementation Strategy on climate change	Natural Resources Canada, provinces and territories
	Canada-wide Standards	Canadian Council of Ministers of the Environment, provinces and territories
	Canada - U.S. Air Quality Agreement	United States Environmental Protection Agency
	Federal Smog Management Plan	Transport Canada, Natural Resources Canada
	Green infrastructure	Natural Resources Canada, Federation of Canadian Municipalities, Treasury Board of Canada Secretariat, Department of Finance Canada
Understanding, and prevention or reduction of the environmental and human health threats posed by toxics substances and other substances of concern	Assessment of toxic substances	Health Canada
	Pollution prevention and emergency preparedness	Industry
	Enforcement of environmental laws and regulations	Provinces and territories, Canada Customs and Revenue Agency, Royal Canadian Mounted Police
	Protecting shellfish, freshwater fisheries and the marine environment	Fisheries and Oceans, Canadian Food Inspection Agency
	Environmental assessment and review of the *Canadian Environmental Assessment Act*	Canadian Environmental Assessment Agency
Nature Business Line		
Conservation of biological diversity	Implementation of the Accord for the Protection of Species at Risk in Canada	Provinces and territories, Fisheries and Oceans, Parks Canada Agency and other federal departments, Aboriginal organizations, non-government organizations
	North American Waterfowl Management Plan	U.S., Mexico, provinces and territories, other federal departments, private conservation groups
	Implementation of the Biodiversity Convention and Strategy	Agriculture and Agri-Food Canada, Fisheries and Oceans, Natural Resources Canada, provinces and territories
Understanding and reduction of human impacts on the health of ecosystems	Toxic Substances Research Initiative	Health Canada
	Development of environmental quality guidelines and national environmental indicators	Federal departments, provinces and territories
	Ecosystem science	Health Canada, Industry Canada, Natural Resources Canada, Agriculture and Agri-Food Canada
	Northern Contaminants Program	Indian and Northern Affairs Canada
	Ecological monitoring and assessment	Federal departments, provinces and territories, universities, community groups

Key Results	Area of Cooperation	Key Co-Delivery Partners
Conservation and restoration of priority ecosystems	Freshwater management, including implementation of Federal Strategy to Prohibit Bulk Water Removals	Federal departments, provinces and territories
	EcoAction 2000	Community groups, non-profit organizations
	Environment Canada's Northern Agenda	Arctic Council (Arctic states), other federal departments, territories, Aboriginal organizations, northern communities, non-governmental organizations, private sector
	Ecosystem Initiatives	Other federal departments, provinces, territories, Aboriginal organizations, communities, universities, non-governmental organizations, private sector
Weather and Environmental Predictions Business Line		
Reduced impact of weather and related hazards on health, safety and the economy	Delivering warnings of weather and related environmental hazards to the public	Media
	Global telecommunications and data standards for the global exchange of meteorological data and products	World Meteorological Organization
	Data, information and services to ensure safe delivery of their mandates and to safeguard public and marine safety (preventative and reactive).	NAV Canada; Other government departments such as Health Canada, National Defence, Fisheries and Oceans (Coast Guard), Emergency Preparedness Canada
	Hydrological and forestry information and data in support of transboundary water, floods, and forest management	Provinces
	Radar and satellite data and imagery for warnings of weather, ice and related environmental hazards, transboundary flows and water management	Canadian Space Agency, United States government agencies (National Weather Service, National Oceanic and Atmospheric Administration, Corps of Engineers, Geological Survey), World Meteorological Organization
	Emergency response related to nuclear accidents and volcanic eruptions	International Atomic Energy Agency, Health Canada, International Civil Aviation Organization
	Research and development on severe weather	Universities, national and international research institutes, private sector
	Programs to encourage youth and employment equity groups to pursue careers in science and atmospheric science in particular	Canadian Meteorological and Oceanographic Society and academia
	Detection of significant weather	Thousands of volunteers (severe weather watchers, amateur radio operators, ships of opportunity)
Adaptation to day-to-day and longer term changes in atmospheric, hydrologic, and ice conditions	Delivering weather and environmental predictions and information to the public	Media
	Multidisciplinary research and modeling related to atmospheric and environmental sciences	Research community (universities and institutes in Canada and abroad such as the United Kingdom Hadley Centre, the European Centre for Medium Range Weather Forecasts)
	Consensus on climate change science, impacts and advice for policy makers on adaptation and mitigation	Intergovernmental Panel on Climate Change, Inter-American Institute for Global Change Research and others

Key Results	Area of Cooperation	Key Co-Delivery Partners
	Data and research and development for understanding of environmental impacts on people and business and developing coping strategies	Other government departments such as Natural Resources and Health Canada
	Radar and satellite data and imagery for weather and environmental predictions	U.S. National Weather Service, Canadian Space Agency, U.S. National Oceanic and Atmospheric Administration, World Meteorological Organization
	Monitoring Canada's climate	Cooperative federal and provincial agencies and thousands of volunteer climate observers
Management, Administration, and Policy Business Line		
Strategic and integrated policy priorities and plans	Aboriginal governance in Environment	Indian and Northern Affairs Canada, Human Resources Development Canada, Health Canada, Aboriginal organizations
	Environmental Valuation	Statistics Canada, Canadian Municipalities, Universities
	Furthering international cooperation	Other government departments such as Department of Foreign Affairs and International Trade, Canadian International Development Agency, Health Canada, Natural Resources, Fisheries and Oceans, Industry, Agriculture and Agri-food Canada
	Harmonization of environmental management between federal and provincial governments	Canadian Council of Ministers of the Environment, provinces and territories
A well-performing organization supported by efficient and innovative services	Strengthening sound management	Treasury Board of Canada Secretariat
	Delivery of common services	Public Works and Government Services Canada

Section 3: Business Line Performance

This Section provides more detailed information on performance of selected programs in each of Environment Canada's four business lines. Programs were selected based on their relation to government-wide or departmental priorities, availability of performance information from monitoring, evaluation or audit, or the presence of significant risks to the achievement of the Department's goals and objectives. Given limitations of space it is not possible to report annually on all of Environment Canada's programs or accomplishments, however, complete coverage of all major areas of work will be provided over a multi-year period.

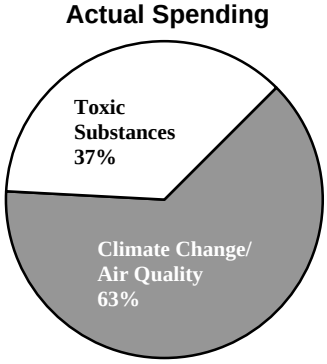
3.1 Clean Environment Business Line

In the Clean Environment business line, Environment Canada acts to protect Canadians from domestic and global sources of pollution. Emphasizing a pollution prevention approach, it leads in the development of shared, long-term strategies to identify and reduce the impacts on the environment and on human health of substances released as a result of human activity. Through this business line, Environment Canada aims to achieve two long-term goals:

- reduced adverse human impact on the atmosphere and on air quality; and
- understanding, and prevention or reduction of the environmental and human health impacts posed by toxic substances and other substances of concern.

Financial Information by Long-Term Goal

Reduced adverse human impact on the atmosphere and on air quality.	$ 36,730,753 *$ 95,514,198* **$ 94,189,031**
Understanding, and prevention or reduction of the environmental and human health threats posed by toxic substances and other substances of concern.	$ 117,290,694 *$ 132,738,501* **$ 133,270,498**
1999-2000 Total Gross	$ 154,021,447 *$ 225,252,699* **$ 227,459,529**
Planned Spending *Total Authorities* **Actual Spending**	



The $73.4 million increase in 1999-2000 actual spending over planned spending is mainly due to:

- a Grant to the Federation of Canadian Municipalities to create the Green Municipal Investment Fund and the Green Municipal Enabling Fund ($62.5 million) (see page 21 for more details on the Funds);
- an increase in funding for air quality equipment and facilities ($3.3 million);
- funds for the environmental clean-up of the Sydney Tar Ponds ($2.6 million); and
- compensation for salary increases related to new collective agreements.

* Details provided in Table 1

Following are selected achievements for the Clean Environment business line by long-term result.

Long-Term Goal:

Reduced adverse human impact on the atmosphere and on air quality

Climate Change Action Fund – Public Education and Outreach

Environment Canada manages the Public Education and Outreach program, one of four components of the Climate Change Action Fund, in partnership with the Office of Energy Efficiency at Natural Resources Canada. The program has two main objectives: to increase awareness and understanding of climate change, and to encourage Canadians to reduce their greenhouse gas emissions in their communities and adapt to climate change. Of the $150 million allocated to the Climate Change Action Fund between 1998 and 2000, $30 million was directed to Public Education and Outreach. This funding was renewed for another three years in the 2000 federal Budget as part of a broad package of environmental initiatives.

Taking Action on Climate Change

One example of a project funded by the Climate Change Action Fund is the City of Regina's "Cool Down the City" program. This program will raise public awareness of climate change and engage citizens in activities to help meet the goal of a 20% reduction in carbon dioxide emissions by 2005. Information and tools will be targeted to industries, businesses, transportation users, residents and students.

In 1999, 6.5 million copies of the supplement "Our Climate is Changing" were distributed in newspapers across Canada. Tracking research showed above-average readership. Canadians requested another 100,000 copies of climate change information products as a result, and the Government of Canada climate change web site received 55,000 visits in December 1999, up from the monthly average of 5,000 visits. Further supplements are planned in 2000. Other outreach activities have included briefings of science reporters by government experts, periodic distribution of media kits, and circulation of articles on climate change issues and Climate Change Action Fund projects to Canadian daily papers.

The Public Education and Outreach program also provides funding to support projects that encourage Canadians to take action. Over 60% of proponents are community-based organizations, with the remaining 40% sponsored by educational institutions, other levels of government, businesses and Aboriginal organizations. Figures 1 and 2 show the distribution of the 126 projects that received approval by region and by theme, as of March 31, 2000. Funding for these projects of just under $16 million leveraged an additional $38 million from sponsoring or partner organizations. Results of the program include:

- the Climate Change Calculator, an innovative web-based tool that allows individuals to learn how they can reduce their greenhouse gas emissions;
- increased access for teachers to booklets, videos, support programs, web sites, posters and touring programs to support school curricula;
- comprehensive climate change plans being developed by municipalities representing more than 40% of Canadians.

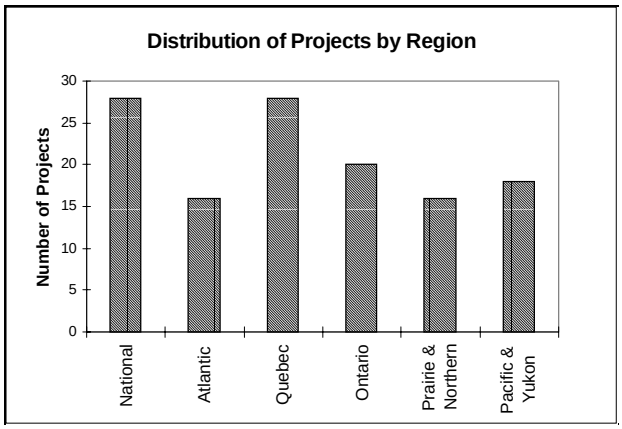


Figure 1

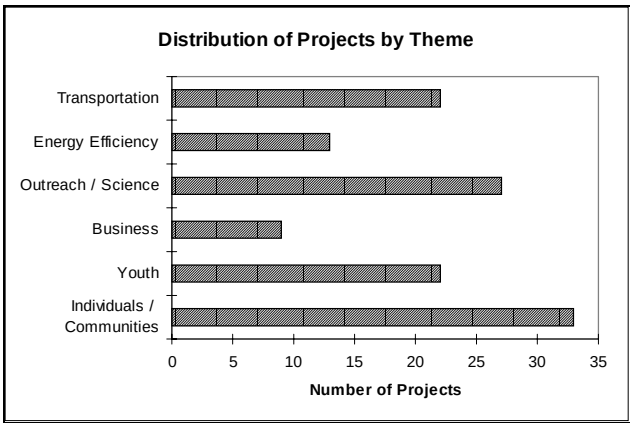


Figure 2

(Source: Climate Change Bureau, Environment Canada)

More information on Climate Change Action Fund projects is available at http://www.climatechange.gc.ca

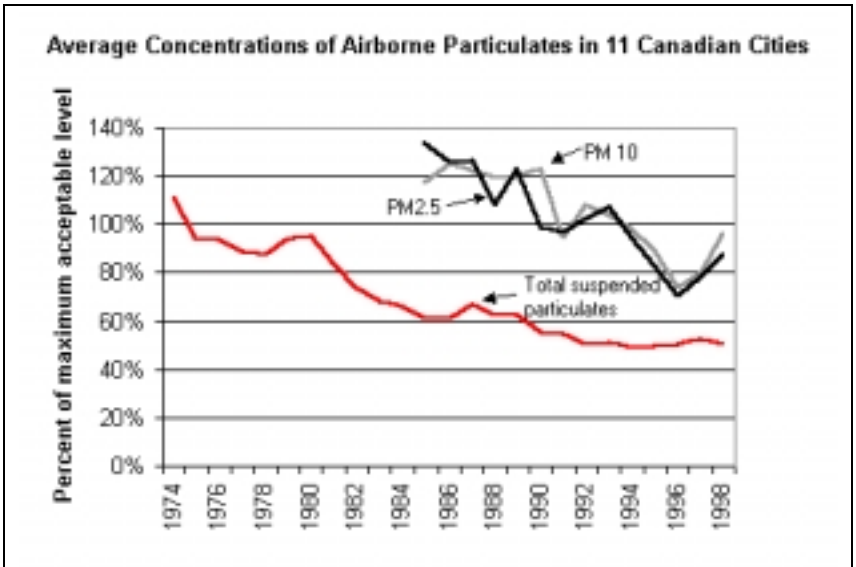
Progress on Reducing Smog

Air quality is consistently regarded by Canadians as one of their top environmental concerns. It is also a major health issue as it has been estimated to contribute to premature death of at least 5000 Canadians per year. Smog is the name given to a mixture of pollutants that reduces air quality, primarily ozone and particulate matter, but also including sulphur dioxide (SO_2), nitrogen oxides (NO_x), volatile organic compounds (VOC) and carbon monoxide. Ozone is not emitted directly, but forms through the reaction of NO_x and VOC in strong sunlight.

Atlantic Region Smog Advisories and Daily Smog Forecasts

Smog is a concern in the Atlantic provinces largely because they lie downwind of the major industrial and population centres of the United States and central Canada. Air quality has long been of concern to people living in the Greater Saint John New Brunswick region in particular. Environment Canada responded by launching a smog advisory program for the Greater Saint John region in 1993, and a daily smog forecast in 1997, in partnership with the province of New Brunswick. Smog advisories are issued when ground level ozone levels are expected to exceed the current National Ambient Air Quality Objective of 82 parts per billion , thereby allowing the public to modify their daily plans accordingly, as they do for ultraviolet radiation forecasts. In 1999 and 2000, the smog forecast and smog advisory programs were expanded to include, in May 1999, the entire southern half of New Brunswick, and then northern New Brunswick in May 2000, Prince Edward Island in June 2000 and Nova Scotia in August 2000. Discussions with the Province of Newfoundland and Labrador on providing smog forecasts and advisories in that province are underway.

Figure 3 shows that the average concentrations of fine airborne particles for 11 of Canada's largest cities decreased by roughly one-third from 1985 to 1998. Since 1990, Environment Canada has worked with many federal departments, provinces and territories, municipalities, industry and citizens to reduce smog, starting with the first NO_x/VOC Management Plan in 1990. The federal government built upon the 1990 plan with the Phase 2 Federal Smog Management Plan in 1997. However, as is demonstrated in Figure 4, several areas of Canada continue to exceed the National Ambient Air Quality Objective for ozone of 82 parts per billion.



Basis for maximum acceptable level:
PM_{10} -- provincial standards
$PM_{2.5}$ -- Canada-wide standards
Total suspended particulates -- National Ambient Air Quality Objective

Figure 3

(Source: Environmental Protection Service, Environment Canada)

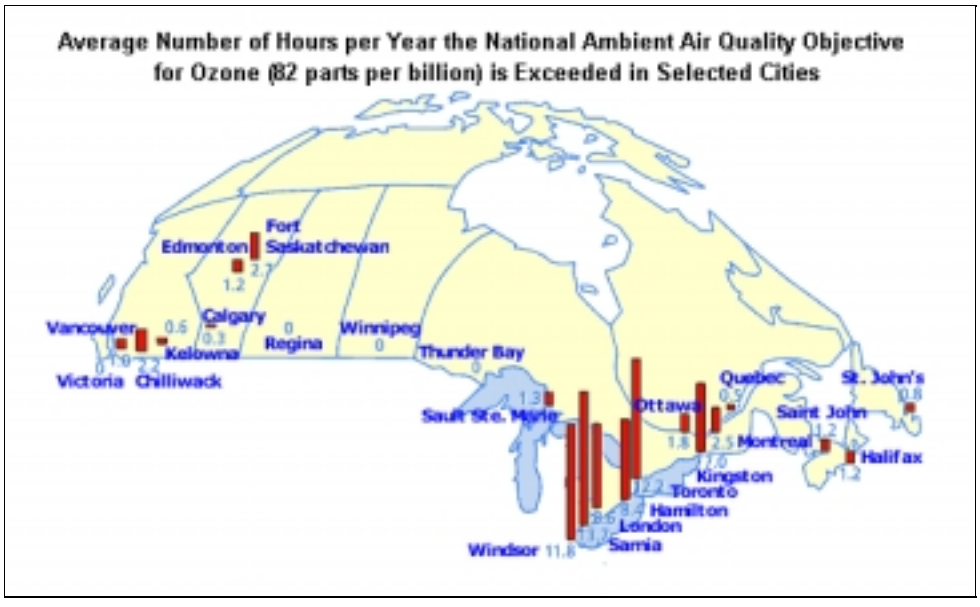


Figure 4

(Source: Environmental Protection Service, Environment Canada)

Given this situation, coupled with recent health science that indicates the seriousness of the effects of smog on human health, the Canadian Council of Ministers of the Environment ratified new Canada-wide standards for ozone and fine particulate matter ($PM_{2.5}$). The new Canada-wide standard for ozone of 65 parts per billion by 2010 is a more stringent standard than the National Ambient Air Quality Objective, and there is now a clear timeline for achieving the target. This is also the first time Canada has a standard for fine particulate matter. As part of these Canada-wide standards, ministers agreed to initial actions to achieve the standards and made a commitment to report regularly on progress.

A recent audit by the Office of the Commissioner of the Environment and Sustainable Development found that the federal government did most of what it had promised to do under the 1990 NO_x/VOC Plan. Later phases did not develop as had been expected, however, which has meant that the original target of all parts of Canada meeting the 82 parts per billion objective by 2005 will not be met. The Commissioner recommended that lessons learned from this Plan be incorporated into future strategies to reduce smog, in particular, that Environment Canada and its partners clearly state expected results and accountabilities and provide Parliament and the public with timely and transparent reporting on national progress. The Canada-Wide Standards for particulate matter and ozone include sound management principles consistent with these recommendations.

More information on smog and air quality issues is available at http://www.ec.gc.ca/air_e.html

Green Infrastructure

Municipalities are key partners in efforts to reduce greenhouse gas emissions and to improve air and water quality. Recognizing their important role, Environment Canada and Natural Resources Canada jointly provided $125 million through two funds designed to help municipalities take action. These resources account for approximately half the amount shown under 1999-2000 actual spending toward the long-term goal of reducing adverse human impact on the atmosphere and on air quality.

The Green Municipal Enabling Fund is a five-year fund that will provide grants to cost-share energy audits and feasibility studies on projects designed to improve air, water and soil quality, protect the climate and encourage the sustainable use of renewable and non-renewable resources. The Green Municipal Investment Fund will provide loans and loan guarantees to enable recipients to improve environmental performance and energy efficiency of municipal operations in such areas as water and wastewater treatment, public transit and waste management. Demonstration projects will be eligible for grants sourced from the fund's accumulated interest.

The Federation of Canadian Municipalities will set up councils to manage the funds and review committees to evaluate project proposals. The funds are designed to complement the Infrastructure Canada initiative currently being negotiated with the provinces, and are part of a comprehensive package of programs contained in the 2000 federal Budget, representing an investment by the Government of Canada of $700 million addressing climate change, clean air, clean water and healthy habitats.

More information on these funds is available from the Federation of Canadian Municipalities at http://www.fcm.ca

Long-Term Goal:

Understanding, and prevention or reduction of the environmental and human health threats posed by toxic substances and other substances of concern

Harmonization Accord and Canada-Wide Standards

The Canada-Wide Accord on Environmental Harmonization and three Sub-Agreements were signed in January 1998 by federal, provincial and territorial environment ministers, with the exception of Quebec. The Accord is intended to enhance environmental protection, promote sustainable development and achieve greater effectiveness, efficiency, accountability, predictability and clarity of environmental management for issues of Canada-wide interest.

Much of the work to date under the Harmonization Accord has focused on the development of Canada-Wide Standards for the following substances: particulate matter, ground-level ozone, benzene, mercury, petroleum hydrocarbons, and dioxins & furans. Standards for particulate matter and ozone, benzene, and mercury emissions from base-metal smelters and incinerators (the two largest Canadian sources of human-generated mercury emissions) were ratified by ministers in June 2000. Ministers also accepted in principle, but have not yet signed, standards for petroleum hydrocarbons in soil (contaminated sites), mercury in dental amalgams, mercury-containing lamps, and dioxins and furans from pulp and paper boilers burning salt-laden wood, and from waste incinerators. In addition to the standards for particulate matter and ozone described earlier in this report, the standards for dioxins and furans, mercury and benzene also contribute significantly to cleaner air. Also noteworthy is the commitment to pursue virtual elimination contained in the standard for dioxins and furans, a commitment consistent with the requirements of the *Canadian Environmental Protection Act*, 1999.

Science and Technology behind the Canada-Wide Standards

Petroleum hydrocarbons (PHCs) consist of a wide range of organic compounds found in or derived from geological sources such as oil and coal. They provide energy to heat our homes and places of work, fuel our transportation systems, power manufacturing processes and tools, and provide a source of numerous synthetic materials. However, when PHCs are released to soil they cause a wide variety of problems related to their toxicity, mobility (particularly through air and ground water) and persistence. The draft Canada-Wide Standard for PHCs in soil is a remediation standard that sets out the levels to which sites contaminated by PHCs must be cleaned up -- if and when they are subject to remediation.

In addition to co-chairing the Development Committee for the standard with the province of Alberta (the standard's "Champion"), Environment Canada made significant contributions to the science and technology on which the draft standard is based. These included coordinating development of a method for measuring PHCs in soil, research on eco-toxicity testing, and development of techniques for separating the PHCs into size fractions needed to assess and manage the risks they pose to the environment and human health.

In keeping with the requirements of the Accord, a review was conducted by the Environmental Planning and Protection Committee of the Canadian Council of Ministers of the Environment to evaluate the effectiveness of the Accord and document progress over the first two years of its implementation. The review, released in June 2000, found that environmental results are not yet visible, however, sharing of resources, knowledge and ideas had improved among participating jurisdictions. Views of external stakeholders covered a broad spectrum, however, the review found general support for the principles of the Accord and the priorities that were identified for action. Both government officials and stakeholders emphasized the need to implement existing agreements rather than negotiating new ones.

More information on environmental harmonization is available at
http://www.mbnet.mb.ca/ccme/3e_priorities/3ea_harmonization/3ea.html

Enforcement

Environment Canada enforces 29 pollution regulations under the *Canadian Environmental Protection Act* as well as the pollution prevention provisions of the *Fisheries Act* and eight related regulations. In provinces where cooperative arrangements are in place, certain inspection and enforcement activities may be conducted by provincial inspectors.

Figure 5 summarizes enforcement activity for pollution regulations for 1999-2000. Priority was given to the import and export of hazardous waste, control of ozone depleting substances, and the requirement for notifications of new chemical and biological substances by manufacturers and importers.

Enforcement Activity for Pollution Regulations for 1999-2000

Legislation	Administrative Verifications	Field/Site Inspections	Investigations	Referrals to Other Governments or Departments	Warnings (written and oral)	Directives	Prosecutions
Canadian Environmental Protection Act	2530	784	64	48	480	9	26
Fisheries Act	2281	544	44	61	118	25	4

Figure 5

(Source: Office of Enforcement, Environment Canada)

Enforcement in Action

In January 2000, Akzo Nobel Chemicals Ltd. pleaded guilty to violating the New Substances Notification Regulations. This was the first time in Canada a company was convicted under these Regulations, which have been in place since March 1994.

The New Substance Notification Regulations, made under the Canadian Environmental Protection Act, ensure that no new substances are imported into Canada on a commercial scale until an assessment has been carried out to determine the risk they pose to the environment and human health.

The substance imported was subsequently assessed to be toxic to the aquatic environment and subject to stricter pollution controls.

Inspections drive enforcement activity. Where an inspection discovers an incidence of non-compliance, one or more enforcement actions may follow, for example, official warnings or directives. Inspections may also lead to investigations and, in some cases, prosecutions.

Inspections and verifications under the *Canadian Environmental Protection Act* for 1999-2000 represented a significant increase (approximately 25%) over this activity for the previous year. Inspection and verification activity under the *Fisheries Act* remained relatively constant as compared to 1998-1999.

Additional resources for enforcement of pollution laws and regulations, as announced in the 2000 Federal Budget, will begin to be applied in the 2000-2001 fiscal year. These resources will enable the Department to hire additional staff, increase the number of inspections and investigations for priority regulations, and put in place an intelligence capacity to deal with such

issues as involvement of organized crime. Environment Canada is nearing completion of the 15 projects of its National Enforcement Action Plan and has made internal reallocations in preparation for this increased enforcement capacity.

More information on enforcement of environmental laws and regulations is available at http://www.ec.gc.ca/enforce/homepage/english/

Voluntary Approaches to Pollution Prevention

The Accelerated Reduction / Elimination of Toxics program (ARET) is a voluntary, non-regulatory initiative intended to reduce emissions of 117 toxic substances, including 30 that persist in the environment and may accumulate in living organisms. In 1994, the ARET Stakeholders Committee, composed of representatives of Environment Canada, other federal departments, provincial governments and industry, issued a challenge to eight industry sectors to reduce, by year 2000, persistent, bioaccumulative toxic substance emissions by 90% and all other toxic substance emissions by 50%.

Pollution prevention action plans have been submitted to the ARET program by 316 facilities from 169 companies and government organizations. Total emissions of ARET substances since the base year (which may vary by organization) have been reduced by 26,358 tonnes to 1998, the last reported year, with a further reduction of 3,052 tonnes projected for 2000. The total projected reduction amounts to 75% of base year emissions, exceeding the 50% target for overall emissions. The target for emissions of persistent, bioaccumulative toxic substances, however, will not be met; reduction commitments in industry action plans total 71% for these substances.

Environment Canada conducted an evaluation of ARET in 1999-2000 to assess the effectiveness of the program and to help determine future support for similar initiatives. Using data from the National Pollutant Release Inventory, ARET participants were found to have reduced their emissions by 58% from 1993 to 1996, while non-participants increased their emissions by 1%. However, most of the ARET reductions were due to a small percentage of participants, occurred before the program started, and were likely influenced by other factors such as the federal pulp and paper regulations. The evaluation recommended that future voluntary initiatives be more closely linked to other departmental programs, only be used where emitters are strongly motivated to go beyond “business as usual”, and that information to support decision making on the management of toxic substances be improved. The Department is incorporating these recommendations into a policy framework for Environmental Performance Agreements that is currently being developed and is consulting with stakeholders on a possible successor program to ARET.

More information on the Accelerated Reduction / Elimination of Toxics program is available at http://www.ec.gc.ca/aret/homee.html

Shellfish and Water Quality

Under the Canadian Shellfish Sanitation Program, Environment Canada conducts surveys to identify pollution sources and to monitor water quality so that shellfish growing areas may be classified for fitness for harvesting. The program also involves Fisheries and Oceans, which is responsible for publicizing and enforcing fishery closures, and the Canadian Food Inspection Agency, which oversees handling, processing and import and export of shellfish, as well as monitoring for contamination from naturally occurring biotoxins. Environment Canada allocates

approximately $2 million annually to this program.

The area closed to shellfish harvesting on both the Atlantic and Pacific coasts has increased significantly over the last decade. While a few closures are due to chemical contamination or the presence of natural biotoxins produced by marine microorganisms, most closures are caused by bacteria from sewage discharges, run-off from urban and rural areas, and other wastes. The risk of such pollution increases with proximity to highly urbanized or agricultural areas. Economic losses to the shellfish and aquaculture industries from municipal effluents have been estimated at approximately $10 -12 million annually in Atlantic region alone.

Community Action on Water Quality

Coastal communities have begun remediation and restoration of shellfish growing areas, and the number of these projects is increasing. Clean-up activities in Charlotte County, New Brunswick, Yarmouth Harbour, Nova Scotia, Murray River, Prince Edward Island and other areas have resulted in a total of 2,485 hectares of shellfish areas being reopened for commercial harvesting in Atlantic Region.

Community volunteers under the guidance of the Baynes Sound Stewardship Action Group identified and addressed pollution hot spots affecting this central Vancouver Island coastal area. Baynes Sound supplies half of the cultured shellfish product on the British Columbia coast. This community-driven project, to which Environment Canada provides technical and funding support, has thus far led toa significant reduction in sanitary pollution in more than 800 hectares of shellfish farming and sub-tidal growing areas. As a result, these coastal areas have been reopened for use by the local shellfish farming industry.

One measure of the effectiveness of this program is that no significant outbreaks of waterborne illness have been associated with the consumption of shellfish in Canada for nearly a decade. The program is under increasing strain, however, due to the growth in shellfish aquaculture and requests to harvest in previously unsurveyed areas. Aboriginal communities are also seeking access to safe harvesting areas in exercising their right to use the resource for food, social and ceremonial purposes.

More information on shellfish and water quality is available at
http://www.ns.ec.gc.ca/epb/factsheets/sfish_wq.html

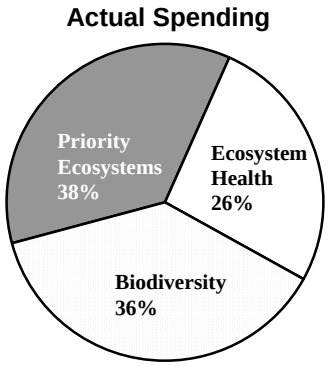
3.2 Nature Business Line

In the Nature business line, Environment Canada acts to conserve the biodiversity of healthy ecosystems. Through this business line, Environment Canada aims to achieve, in partnership with others, three long-term goals:

- conservation of biological diversity;
- understanding and reduction of human impacts on the health of ecosystems; and
- conservation and restoration of priority ecosystems.

Financial Information by Long-Term Goal

Conservation of biological diversity	$ 48,172,366 *$ 49,736,022* **$ 51,307,459**
Understanding and reduction of human impacts on the health of ecosystems	$ 43,016,002 *$ 48,625,632* **$ 37,980,610**
Conservation and restoration of priority ecosystems	$ 54,104,332 *$ 55,437,090* **$ 54,244,836**
1999-2000 Total Gross	$ 145,292,700 *$ 153,798,744* **$ 143,532,905**
Planned Spending *Total Authorities* **Actual Spending**	



Following are selected achievements for the Nature business line by long-term goal.

Long-Term Goal:

Conservation of biological diversity

National Strategy for Species at Risk

Canada's national strategy for species at risk is comprised of three components: cooperation and partnership with provincial and territorial governments through the Accord for the Protection of Species at Risk (the Accord); the proposed *Species at Risk Act*; and a complementary Habitat Stewardship Program to encourage voluntary action by landowners and land and resource managers.

In 1996, federal, provincial and territorial ministers responsible for wildlife committed to the Accord for the Protection of Species at Risk, a national approach to prevent species in Canada from becoming extinct as a consequence of human activity. To date, ten provinces and territories have signed the Accord thereby agreeing to coordinate activities and to establish complementary legislation and programs that provide effective protection for species at risk and their habitats. Bill C-33, the proposed federal *Species at Risk Act* was introduced in the House of Commons in April 2000. The proposed *Species at Risk Act* consists of five basic elements: science-based species assessments, a legal listing process, immediate species protection, recovery and management planning, and stewardship to secure cooperation. This Act also provides a safety net for species and habitats which are not effectively protected by voluntary measures such as stewardship or by existing provincial and territorial legislation.

A Habitat Stewardship Fund ($45 million over the next five years, as announced in the 2000 Federal Budget) was established to implement conservation agreements with non-government organizations, private landowners, conservation groups and local and municipal governments involved in species at risk recovery initiatives. To date, over $1.6 million has been devoted to priority areas across the country where numerous species at risk reside. These include the South Okanogan-Similkameen region of British Columbia home to 23 species at risk; a 23,000 square kilometer area of the Prairie Pothole region in Saskatchewan, home for the piping plover, the burrowing owl, the ferruginous hawk, the northern leopard frog and the monarch butterfly; and areas of Manitoba, Ontario and Quebec in support of recovery efforts for the endangered Eastern population of the loggerhead shrike.

Take a Walk on the Wild Site

Some of the most important wildlife and habitat research Environment Canada scientists in Ontario have conducted over the past 50 years is profiled on an interactive web site that enables users to explore species and spaces, particularly birds and their habitats, by combining thematic layers of information on digital maps. The dynamic new web site is the latest offshoot of Project *WILDSPACE*™, an effort launched by the Canadian Wildlife Service of Environment Canada in 1996 to pull its diverse data holdings together into an information management system. The site, which has been under development since 1998, enables users to learn about some of this research, and provides access to a wealth of information on wildlife. Visit *WILDSPACE*™ at http://wildspace.ec.gc.ca

In the May 2000 "Canadian Species at Risk" report published by the Committee on the Status of Endangered Wildlife in Canada, 353 species of wildlife were identified as being at risk in Canada. An important component of the Committee's work in 1999 was the reassessment of 123 species, using quantitative criteria (built on the global model used by the World Conservation Union) that estimate the risk of extinction. Most of the reassessed species remained within the

same risk category, however, 17 species including the woodland caribou (Gaspésie population) were reassigned to higher risk categories. Recovery efforts are currently focused on the 173 species that are found in the endangered and threatened categories.

Through effective partnerships with other government departments, provinces, and non-government organizations including zoos and universities, successful recovery efforts have resulted, to date, in the downlisting of the swift fox, wood bison, white pelican, trumpeter swan, ferruginous hawk, and the *anatum* peregrine falcon. Environment Canada and its partners have initiated recovery efforts for a further 72 species, including the burrowing owl, harlequin duck (eastern population), Henslow's sparrow, loggerhead shrike (prairie/eastern populations), marbled murrelet, piping plover and the roseate tern. The national recovery program has expanded under the Accord for the Protection of Species at Risk and the proposed Act. Once implemented, the *Species at Risk Act* will require the development and public posting of recovery strategies for all endangered species within one year of being listed, and within two years of being listed for all threatened species.

More information on Canada's species at risk and their recovery is available at http://www.cws-scf.ec.gc.ca/sara

Overabundant Snow Goose Populations

Arctic-breeding populations of lesser and greater snow geese are at record high levels. The mid-continental lesser snow goose population has tripled over the past two decades, and the eastern greater snow goose population has increased tenfold. A rich and plentiful diet of agricultural crops such as rice, corn and winter wheat along their migratory routes, combined with a decrease in harvest rates in Canada and the United States, boosted the birds' reproductive success.

Foraging by the overabundant geese is destroying breeding habitat for geese and other waterfowl species in the Arctic ecosystem and causing crop damage in areas along the migratory route when large numbers of birds stop during migration. Along the west coast of Hudson Bay, nearly one-third of the habitat has been destroyed, while another one-third has been seriously damaged. One stop-over area along the St. Lawrence River has expanded from 80 to approximately 400 kilometers of land. Damage to crops in Quebec and prairie farmland costs up to $4 million annually.

The international Arctic Goose Joint Venture, established under the auspices of the North American Waterfowl Management Plan, created a continent-wide scientific working group to investigate the problem of overabundant snow goose populations and to recommend solutions. The Joint Venture, a multi-stakeholder group comprised of federal, provincial, and state wildlife agencies together with non-government organizations, supported the scientific working group's recommendation to increase the snow goose harvest by implementing a spring conservation hunt and increasing harvest quotas. As a result, Canada, the United States and Mexico agreed to amend their regulations to allow the species to be controlled for conservation purposes.

In 1999, Environment Canada, in cooperation with provincial and territorial wildlife agencies, implemented the first spring conservation hunt of snow geese. The harvest target of 24% of the fall greater snow goose population was achieved. Results of the first harvest have already been noted through the reduction of some agricultural crop damage, including a 45% decrease in loss of hay crops over 1998, and a 38% reduction in the number of hectares affected in Quebec.

Harvest of the larger mid-continent lesser snow goose population has also been increased through

expanded opportunities in the fall and spring conservation hunt in a number of states and provinces. While the harvest has risen, continued measures in additional jurisdictions are required to further reduce this population to a level where it no longer degrades arctic habitats. Environment Canada continues to work with its partners to monitor snow goose populations, and continue ecological studies on their habitats.

Long-Term Goal:

Understanding and reduction of human impacts on the health of ecosystems

Ecosystem Science

To effectively deal with changes in the environment, Environment Canada must understand and communicate to Canadians the impacts of human activities on the overall health of ecosystems. The objectives of Environment Canada's research in this area are to identify: human activities that are having significant impacts on the environment, ecosystem components that are most vulnerable to impacts, and opportunities to minimize these impacts. This research is being used as a basis for policy development and management actions in a number of domestic priority areas. Examples of Environment Canada's research results during the reporting period include:

- Completion of a six-year study of contaminated sediments in the St. Lawrence River at Cornwall, in support of the development of a remedial action plan for this Area of Concern. This study has produced the information needed to determine the best remediation options, and has also provided mapping and monitoring techniques for general use in Great Lakes Areas of Concern. (see Great Lakes 2000 on page 34 below for explanation of Areas of Concern)
- Successful demonstration of the effectiveness of *in situ* capping of contaminated sediment at a one-hectare site in Hamilton Harbour, where 6,600 tonnes of sand were laid to produce a sand cap over an area contaminated with polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyl's (PCBs). Regular assessments are showing no upward migration of these contaminants, and that the risk of uptake by plants and animals is reduced.
- Environment Canada conducted research on the impacts of municipal wastewater discharges on the Athabasca and Bow Rivers in western Canada, and have advised Parks Canada Agency on methods for minimizing effects on water quality in national parks.
- At the request of Parks Canada Agency, Environment Canada conducted research at Point Pelee National Park to assess the extent of contamination by dichlorodiphenyltrichloroethane (DDT) of soil and groundwater and the environmental factors causing its long-term persistence. The information yielded by sampling, analysis and computer modeling is now being used to develop remediation plans for this national park.

The challenge of protecting biodiversity and aquatic ecosystems is beyond the scope of any one agency or government. As a result, research is conducted in collaboration with numerous partners at the national and international level. Examples of collaborative research efforts include:

- Students, members of environmental organizations, and other community volunteers in central British Columbia are helping scientists monitor the water quality of the Salmon River by collecting, identifying and counting insects, clams, crayfish, snails, leeches, worms and other

tiny aquatic invertebrates that make the river their home. This volunteer-based monitoring program, developed by scientists at Environment Canada in consultation with local groups and government agencies, enables people with little or no science background to take an active role in safeguarding their local environment by teaching them basic scientific sampling techniques. It also provides the scientific community with valuable information on how the river's ecosystem is changing over time.

- Waves caused by wind and passing ships, fluctuations in water level, ice and currents are eating away the banks of the St. Lawrence River, with some areas receding at a rate of up to three metres a year. Environment Canada scientists are working with the provincial government and non-government organizations to identify, stabilize and restore the most threatened areas before they disappear and, in the process, preserve vital bird and wildlife habitat along the river's edge.
- Researchers from Environment Canada are working with other experts in Canada and around the world under the Arctic Monitoring and Assessment Program to learn more about the presence and extent of contaminants in Arctic ecosystems. The research has focused on the scientific assessment of persistent organic pollutants (POPs) in the circumpolar Arctic. Scientists involved in northern contaminant research not only publish their work in scientific journals and reports, but also bring this information back to the North to share it with those who are directly affected by substances in their environment. Recently, scientists presented results from their work on POPs and metals in marine mammals and birds to several communities during a tour of hamlets in the Eastern Arctic, organized by Indian and Northern Affairs Canada and Inuit Tapirisat of Canada. These meetings provided information on wildlife health, the benefits of country foods, and methods to minimize exposure to substances.

Environmental Quality Guidelines

In addition to research, Environment Canada develops science-based benchmarks and tools (environmental indicators, guidelines, environmental effects monitoring guidance) to assess and measure the state of ecosystem health, provide science-based goals for management actions and mechanisms to verify progress of management actions in meeting environmental sustainability goals.

Environmental Quality Guidelines in Action

Environmental quality guidelines have been used by the British Columbia Ministry of Environment, Lands and Parks to assess water quality for aquatic life and wildlife, and for major uses including drinking water, recreation, irrigation and livestock watering. These assessments, together with a general description of major human activities influencing water quality, provide trend analyses necessary for identifying concerns and taking action to protect water resources.

Environmental quality guidelines were also used to assess and report on water quality as part of the Fraser River Action Plan. Levels of contaminants in water, sediment, fish, and wildlife were compared to Environmental quality guidelines to identify areas of potential concern.

Environment Canada, under the auspices of the Canadian Council of Ministers of the Environment, develops national environmental quality guidelines for water, soil, sediment and aquatic tissue residues, in order to protect and sustain aquatic and terrestrial ecosystems and their uses in Canada. These guidelines play an important role in the environmental legislative framework through the *Canadian Environmental Protection Act 1999*, which sets out the federal government's responsibilities with respect to monitoring activities, substance assessments, pollution prevention and control strategies, and regulatory activities.

Provinces and territories use these guidelines to establish their own regulations, and to develop site assessments. Environment Canada's Canadian Water Quality Guidelines are distributed by the United Nations Environment Program and the World Health Organization around the world, and are used in 45 countries. These guidelines are routinely revised and expanded to include new substances. In 1999-2000, the Canadian Council of Ministers of the Environment approved water quality guidelines developed by Environment Canada for free chlorine, antisapstains and phenols; tissue residue guidelines for protection of wildlife for mercury, toxaphene, PCBs and DDT; and soil quality guidelines for PCBs and DDT. These guidelines, which represent more than a decade of science, formed part of a compendium of all Canadian environmental quality guidelines, released in September 1999 by the Canadian Council of Ministers of the Environment, the world's first integrated document of its kind.

More information on Canada's environmental quality guidelines is available at http://www.ec.gc.ca/ceqg-rcqe

Long-Term Goal:

Conservation and restoration of priority ecosystems

Strategy to Prohibit Bulk Water Removal

Proposals for large-scale or "bulk" removal of water from Canada's freshwater basins using ocean tankers, canals, pipelines, or other means to supply water-short areas have been of concern to Canadians for some time. The removal of water in large volumes from lakes, rivers or underground aquifers, whether for domestic or export markets, can have serious impacts on both the ecology and the economy of communities that are dependent on these waters. In February 1999, the federal government announced a strategy on bulk water removal to address both the national and bi-national (Canada - United States) dimensions necessary to protect Canada's fresh water. Elements of the strategy include: a study on present and future Great Lakes water uses by the International Joint Commission as a basis for developing a common position and consistent approach with the United States in protecting these shared waters; amendments to the *International Boundary Waters Treaty Act* to prohibit bulk water removals from boundary waters, principally the Great Lakes; and a Canada-wide accord for the prohibition of bulk water removal of ground and surface waters from major drainage basins.

In response to the federal strategy, the International Joint Commission released an interim report in August 1999 recommending an immediate moratorium on bulk water removal from the Great Lakes. The final report, released in March 2000, is consistent with and reinforces the federal strategy, including recognition of the environmental basis for action, the need for intergovernmental cooperation in protecting water, and the trade consistency of the federal approach. In November 1999, the federal government tabled amendments to the *International Boundary Waters Treaty Act* to prohibit bulk water removals, as proposed in the strategy. Also in November 1999, the Government of Canada joined with eight provincial and territorial governments to endorse a Canada-wide accord on prohibiting bulk water removals from major Canadian drainage basins. The overall intent of the strategy to prohibit bulk water removal has largely been achieved, as all jurisdictions agree with the common objective and have put in place, or are developing, legislation or regulations prohibiting bulk water removal.

More information on Canada's actions to protect its water resources is available at http://www.ec.gc.ca/water

Ecosystem Initiatives

Ecosystem initiatives are cooperative efforts on targeted ecosystems to address and solve complex environmental issues as identified and agreed upon by stakeholders. Ecosystem initiatives help Canadians achieve environmental results through partnerships, pooling resources, focusing science, coordinating effort, sharing information and experiences, and generating a broad basis of support. Moreover, they help build the capacity of all the players involved to make better decisions and to effect change. Environment Canada is currently engaged in six ecosystem initiatives across Canada (Figure 6), namely, the Georgia Basin Ecosystem Initiative, the Northern Rivers Ecosystem Initiative, the Northern Ecosystem Initiative, the St. Lawrence Vision 2000, the Atlantic Coastal Action Program and Great Lakes 2000. Performance from the latter two initiatives is reported below.

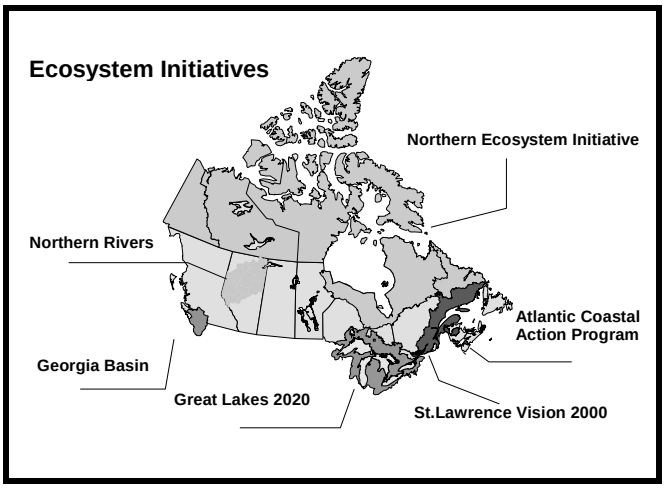


Figure 6

(Source: Environmental Conservation Service, Environment Canada)

More information on Environment Canada's ecosystems initiatives is available at http://www.ec.gc.ca/ecosyst/

Atlantic Coastal Action Program

Improvements and upgrades in waste water treatment have improved water quality and contributed to restoration of shellfish and recreational fishing industries. The Atlantic Coastal Action Program was initiated as a community-based, multi-stakeholder initiative in 1991 for the restoration of coastal environments, protection and remediation of wildlife habitat, and the reduction of toxic substances. Through the Atlantic Coastal Action Program, Environment Canada partners directly with, and in support of, ecosystem-based coalitions at the individual watershed or estuary level (shown in Figure 7), as well as at a broader ecosystem scale throughout the region. In the eight years since these ecosystem groups were initiated, the process has allowed communities to develop a vision of their future, set objectives and establish strategies according to their needs and resources, and implement actions to achieve their objectives.

Atlantic Coastal Action Program Community Results

Adoption of best practices in farming and forestry is reducing the amount of silt, nutrients and pesticides entering streams and coastal waters.

Creation of artificial wetlands is contributing to improved water quality, enhanced biodiversity, and species recovery.

Improvements and upgrades in waste water treatment have improved water quality and contributed to restoration of shellfish and recreational fishing industries.

While Environment Canada provides some funding and human resources for results-based projects identified in community-developed Comprehensive Environmental Management Plans, other resource contributions come from a variety of volunteers, businesses and academic institutions as well as other government partners. In 1999-2000, Environment

Canada contributed $780,000 towards 87 projects in support of the program. With contributions from community stakeholders, these projects grew in value to $4.8 million.

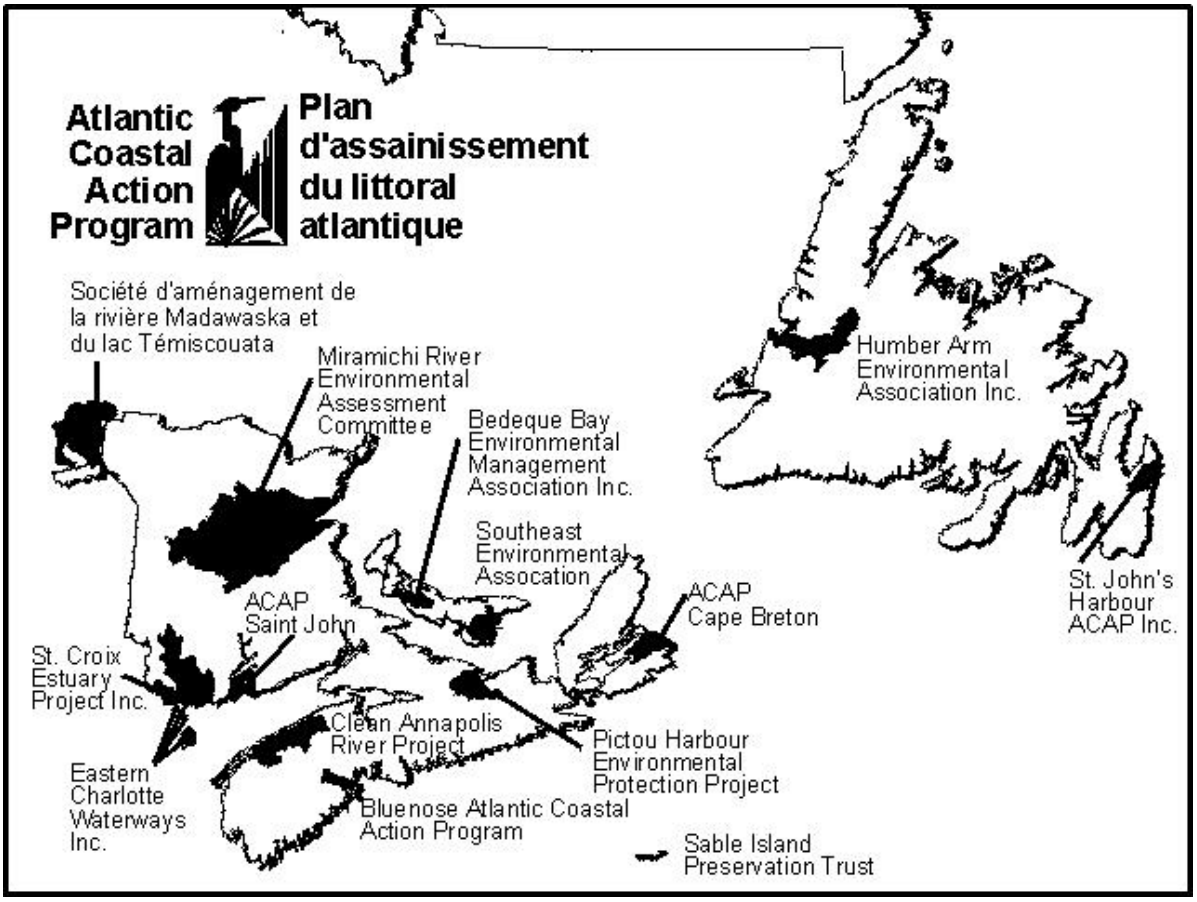


Figure 7

(Source: Corporate Affairs, Environment Canada - Atlantic Region)

More than 700 projects have been carried out to date. Substantial improvements in key areas such as water quality, the quantity and quality of wildlife habitats, reduction in toxic substances, and adaptation to climate change, have been realized by building local capacity through education and partnerships. Additionally, a number of the Atlantic Coastal Action Program organizations have established community resource centres providing the public, students, businesses and educators with sustainability information and responding to various inquiries and concerns. The program has established working partnerships with 35 other government departments on sustainable communities in Nova Scotia, participating in larger initiatives such as the Southern Gulf of St. Lawrence, the Bay of Fundy, the Gulf of Maine and Labrador.

More information on Atlantic Coastal Action Program activities is available at http://www.ns.ec.gc.ca/community/acap

Great Lakes Program

The Great Lakes Program was initiated in 1989, and together with the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem signed in 1994, established a results-oriented approach to a healthy and sustainable basin. The Program identified 50 targets to be achieved by 2000, focusing on three main objectives: restoration of degraded areas, pollution prevention and control, and conservation and protection of human and ecosystem health. The Great Lakes Program provided valuable lessons as a pioneer program in the application of an ecosystem approach to science and management, community involvement, and commitment to virtual elimination for persistent toxic bioaccumulative substances.

Great Lakes on the Internet

The web site "Our Great Lakes" contributes to awareness and education on the state of the lakes and efforts to conserve and protect them. More information on the Great Lakes 2000 Program achievements is available at:

http://www.on.ec.gc.ca/glimr

This website was also used in an interactive way to solicit public comment on the next phase of Great Lakes efforts, the "Great Lakes 2020" Program. The site received over 780 visits during one month of the consultation period.

Efforts to date through the development of effective partnerships with individuals, communities, industries and provincial and federal government departments have resulted in the Great Lakes being cleaner today with respect to toxic substances than they have been for 50 years. Voluntary pollution prevention agreements with industry in the Great Lakes Basin have reduced toxic and hazardous waste releases into the environment by over 390,000 tonnes. An aggressive 90% target had been set for the reduction in seven priority toxic substances and an overall reduction in

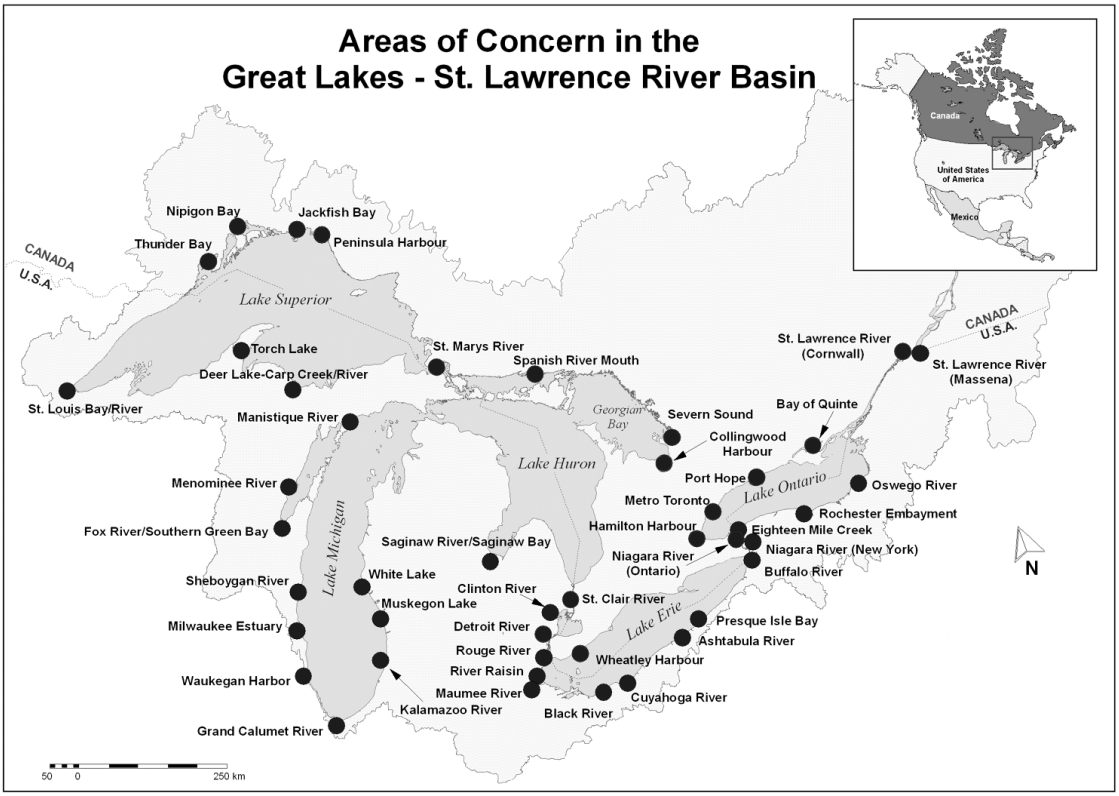


Figure 8

(Source: Meteorological Service of Canada, Environment Canada - Ontario Region)

71% in the use, generation and release in seven priority toxins has been achieved. There has been a reduction in the levels of persistent, toxic and bioaccumulative substances in the environment and in human tissues including a reduction in DDT in breast milk from 182 parts per billion in 1967 to 6 parts per billion today. Achieving the ultimate goal of virtual elimination will require continued efforts of all stakeholders, progressively ambitious agreements with industry, continued regulation and enforcement and action regionally, nationally and internationally.

Results in Great Lakes Areas of Concern

- Improvements on treating combined sewage outflows are resulting in beaches remaining open for longer periods of time in Toronto, Hamilton, and other lakefront communities.
- Development of innovative technology for sewage treatment plants has resulted in savings to communities (for example, $33 million for Windsor).
- 9,500 hectares of wetlands have been protected and 12,750 hectares rehabilitated.
- Increasing numbers of sentinel species in the basin such as the bald eagle, osprey and lake trout are providing signs of ecosystem recovery. For example, the Peregrine falcon has returned to nest in southern Ontario for the first time in 40 years.

Forty-three Areas of Concern in the Great Lakes Basin were identified where pollution problems were particularly pronounced, and beneficial uses of these Areas were impaired (Figure 8). Seventeen of these Areas are in Canada or in boundary waters. With the signing of the 1987 Great Lakes Water Quality Agreement, Canada and the United States agreed to clean up these sites through the development and implementation of Remedial Action Plans. Through the Remedial Action Plan process, government and community participants identify, and then implement the actions necessary to restore environmental quality.

Collingwood Harbour remains the only Area of Concern to be fully restored. In addition, all remedial actions have been completed in Spanish Harbour and it is now in a stage of natural recovery. Overall, more than 60% of the actions necessary to restore the remaining areas have been implemented, and 35% of the impaired beneficial uses of the environment across Canada's 17 Areas of Concern have been restored.

While considerable progress has been made in all Areas of Concern, to reach targets, continued commitment of all levels of government and stakeholders within the remaining 16 Areas of Concern will be required. In July, Minister Anderson announced the third phase of the Great Lakes Program, Great Lakes Basin 2020, accompanied by an additional investment of $40 million in the form of the Great Lakes Sustainability Fund to complete federal implementation actions in 13 of 16 Areas of Concern and make significant progress in the remaining three (Toronto, Hamilton and Port Hope Harbours).

3.3 Weather and Environmental Predictions Business Line

In the Weather and Environmental Predictions business line, Environment Canada works to help Canadians adapt to the influences and impacts of weather and weather related hazards, and subsequent environmental conditions, on human health and safety, economic prosperity and environmental quality. Through this business line, Environment Canada aims to achieve two long-term goals:

Volunteer Observers

There are some 6,200 volunteer severe weather watchers and 1,200 climate observers helping keep watch over Canada's weather

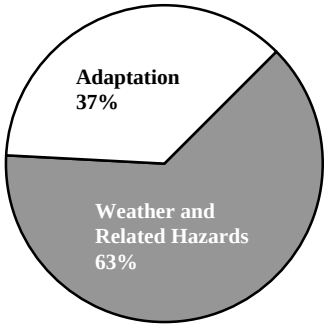
- reduced impact of weather and related hazards on health, safety and the economy; and
- adaptation to day-to-day and longer term changes in atmospheric, hydrological and ice conditions.

In December 1999, the Meteorological Service of Canada (formerly the Atmospheric Environment Program) was created as a Departmental Service Organization with a clarified mandate. This change was the result of a consultation process with stakeholders and staff conducted over two years.

Financial Information by Long-Term Goal

Reduced impact of weather and related hazards on health, safety and the economy.	$ 160,743,251 *$ 199,803,257* **$ 195,288,908**
Adaptation to day-to-day and longer-term changes in atmospheric, hydrological and ice conditions.	$ 63,946,749 *$ 116,774,760* **$ 113,001,755**
1999-2000 Total Gross	$ 224,690,000 *$ 316,578,017* **$ 308,290,663**
Planned Spending *Total Authorities* **Actual Spending**	

Actual Spending



The $83.6 million increase in 1999-2000 actual spending over planned spending is mainly due to:

- a Grant to the Canadian Meteorological and Oceanographic Society to create a fund for atmospheric and climate change science ($60 million);
- an increase in funding for ice forecasting equipment and facilities;
- work to make Departmental systems Year 2000 compliant;
- unspent funds carried forward from 1998-1999; and
- compensation for salary increases related to the new collective agreements.

* Details provided in Table 1.

Following are selected achievements for the Weather and Environmental Predictions business line by long-term goal.

Long-Term Goal:

Reduced impact of weather and related hazards on health, safety and the economy

Year 2000 - Beat the Clock

In preparation for Year 2000, the weather forecasting system of the Meteorological Service of Canada was identified as a Government-Wide Mission-Critical System, that is, one that directly supports the delivery of government services essential to the safety and well-being of Canadians. This was the only program so recognized within Environment Canada.

The effort that was put into addressing Year 2000 issues resulted in no degradation in the Meteorological Service of Canada's ability to provide essential services on January 1, 2000 to its clients such as the CBC, Canadian Press and Broadcast News, NAV Canada, the Weather Network (Pelmorex), and the National Weather Service of the United States. Test results clearly indicated many systems would have totally failed if Year 2000 upgrades were not performed. The failure of systems for the dissemination of information would have affected the delivery of forecasts and weather warnings, and seriously compromised the safety and security of Canadians, maritime navigation, Department of Fisheries and Oceans search and rescue operations, aviation, and commercial clients.

Weather Information Use

- 1.2 million weather forecasts delivered per year
- 14,000 weather warnings delivered per year
- 70 million weather forecasts accessed via the Internet (http://www.msc-smc.ec.gc.ca)
- 40 million calls received per year, 110,000 per day

Doppler Radar

Doppler radar is an important tool in detecting severe weather such as thunderstorms and tornadoes. While regular radar detects rain and the overall direction of the storm, Doppler provides vital information on the motion of precipitation and wind in a storm. This is important because, for example, rotating winds are a precursor of a tornado. The information from Doppler radar allows forecasters to improve lead times for severe weather warnings.

The National Radar Project, a project to modernize the network, was finalized in 1996 and implementation began in 1997-1998. The plan calls for upgrading 19 existing sites across Canada and installing new radar equipment at ten sites.

Hurricanes Gathering Force

There has been a dramatic increase in the number of hurricanes in the Atlantic Ocean since 1995. Between 1995 and 1999, 41 hurricanes occurred – the most active five consecutive years of tropical storms on record.

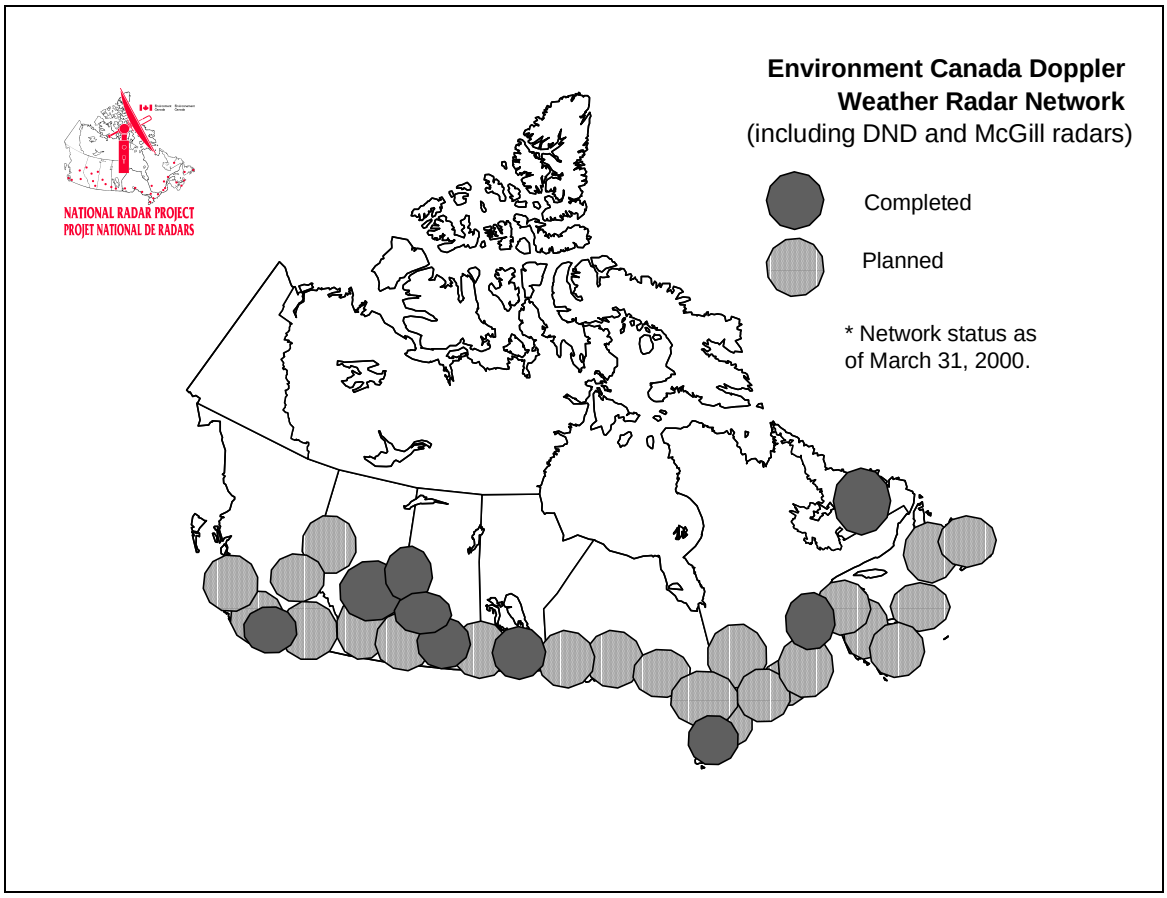


Figure 9

(Source: Meteorological Service of Canada, Environment Canada)

In the past year, two new Doppler radar sites were installed at Woodlands, Manitoba, and Exeter, Ontario, and three sites were upgraded at Radisson, Saskatchewan, and Carvel and Jimmy Lake, Alberta (the latter site was funded by the Department of National Defence) (see Figure 9). This brings the total number of radar sites installed or upgraded by the project to eight. Completion of the plan, subject to funding availability, is scheduled for 2003-2004, and along with the Department of National Defence and McGill University sites, will result in a network of 31 Doppler weather radars across the site. In determining the location of weather radars, several factors were taken into consideration, including population density and frequency of severe weather. When the network is completed in the next few years, the majority of Canadians will be served by Doppler radar.

More information on Doppler Radar is available at http://www.ec.gc.ca/science/new/ weather_e.html

Revitalizing Human Resources

As recognized by the Council of Science and Technology Advisors, declining federal science capacity is threatening the government's ability to deliver on some of its mandates, and limiting its ability to respond to new challenges and opportunities[2]. The Weather and Environmental Predictions business line is one example where challenges are being faced, although equal challenges are faced in the Nature and Clean Environment business lines.

Facts behind the Meteorological Service of Canada Human Resource Capacity

- A 25% reduction in research and support scientists, from 316 to 238 has occurred over the last 4 years.
- The attrition rate for meteorologists has increased from a historical rate of 2% to 3.7%.
- The first competition held in 5 years for 20 meteorologists resulted in 19 qualified candidates from 175 applicants, with 6 candidates refusing the job offers.

The Weather and Environmental Predictions business line is science-based and relies heavily on highly skilled people using the latest sophisticated equipment. Recruitment has been minimal in recent years and one-third of employees are expected to retire over the next ten years. Program uncertainties and non-competitive salaries, benefits, and working conditions have caused the non-retirement attrition rate to increase sharply, as high-technology companies and other countries compete in the same resource pool. The Science and Technology occupational groups particularly affected are: research scientists and managers, meteorologists, and meteorology and hydrology technologists.

Expert Advice Saves Life

The July/August 2000 edition of Canadian Geographic magazine featured an article on lightning in which Environment Canada meteorologists provided expert advice on how to avoid being struck. A Prince Edward Island cyclist credited this story with saving his life. When caught in a severe lightning storm, he recalled the article and crouched down in the lowest spot available covering his head. Although surrounded by lightning strikes, the cyclist escaped unharmed.

Expertise in the research community of the Meteorological Service of Canada is fragile because specialized knowledge rests with only a few key individuals who will retire shortly. This is particularly worrisome as a lead time of five to ten years after the completion of education is required to acquire training and experience enough to become fully functional, and to provide for transfer of expert knowledge.

A recruitment program for the meteorology occupational group was instituted in 1999-2000. Recruitment and training efforts will continue; however, the number of potential recruits currently in the academic system falls short of projected needs. To address training advancement needs within the service, a Meteorology Occupational Training Plan was developed and implemented to ensure national consistency during the development and promotion of staff.

National working groups have also been established to create recruitment, training, and development options for air and water (hydrological) engineering and scientific technical staff.

Finally, numerous projects have been established under an umbrella workforce renewal plan for the business line. Of key importance among these are the outreach projects to encourage students to take physical sciences by providing tools for teachers, and influencing the science curriculum.

[2] Council of Science and Technology Advisors, *Building Excellence in Science and Technology: The Federal Roles in Performing Science and Technology*. December 1999. (http://www.csta-cest.gc.ca/)

Long-Term Goal:

Adaptation to day-to-day and longer-term changes in atmospheric, hydrological and ice conditions

Road Weather Information Systems - Making Canada's Roads Safer

In Canada, more than 90% of all passenger travel and over 70% of all freight shipments, by revenue, are handled by roads. During winter, much of the country experiences snow and icy conditions that can make driving treacherous. To improve road safety, maintenance crews use some 4.7 million tonnes of road salt each year.

Road Weather Information Systems Reduce Salt

Studies in the United States, Europe and Canada have registered salt reductions of 20% to 30% using Road Weather Information Systems, weather services, and anti-icing maintenance techniques.

Several Meteorological Service of Canada weather service centres collect data from automated weather stations with special sensors embedded in and below the roadway, called Road Weather Information Systems. This information allows weather forecasters to predict icing conditions before they occur. Road maintenance crews can use this information to make better decisions about if and when to treat roads, and how much and what types of chemicals to use. This proactive approach to winter maintenance is called “anti-icing” and it leads to improved road safety, reduced maintenance costs, and reduced environmental impact. Tests in Kamloops, British Columbia and anecdotal evidence from Ottawa, Ontario, have confirmed as much as a 30% reduction in salt use is possible.

In conjunction with Road Weather Information Systems, the Meteorological Service of Canada has developed a heat-balance model named METRo (Modèle de l'État/Environnement et de la Température des Routes). Using the model, Environment Canada meteorologists can predict the temperature of the road surface over the next 24 hours. The model has proven very successful and advanced the science of pavement condition forecasting. Currently METRo is for a single point forecast, but the future possibility of producing pavement forecasts for entire road lengths exists. This has the potential to further reduce the amount of salt used on Canadian roads beyond what can be achieved by a single point forecast. This translates into fewer environmental impacts and improved water quality.

Several studies have shown that Road Weather Information Systems with pavement forecasts generate sufficient direct savings in terms of labour, equipment and fuel to pay for themselves several times over. Indirect benefits in reduced accidents and legal fees, reduced salt damage to roads, structures and the environment, and more efficient use of roads are generally estimated at more than 11 times the total costs of the system. The value in Canada could be even greater. The Meteorological Service of Canada is working to increase the use and coverage of this technology in Canada.

More information on Road Weather Information Systems is available at http://www.msc-smc.ec.gc.ca/cd/zephyr/spring2000/pg12.html

Climate Change Action Fund - Science

Environment Canada and Natural Resources Canada lead the science, impacts, and adaptation component of the Climate Change Action Fund. Environment Canada has the lead for the science sub-component, in particular.

Under the science sub-component, a series of workshops were held over the past 2 years to clarify knowledge gaps in key areas of monitoring, modelling, climate processes, and assessments. Most recently, in May and October of 1999, the Meteorological Service of Canada held 2 national workshops on climate change scenarios and climate extremes.

As a result of the workshops, calls were issued for scientific research proposals in 6 key areas: climate model improvements; climate monitoring; greenhouse gas sources and sinks; Arctic climate system research and monitoring; sectoral climate change scenarios; and extreme climate and weather events.

Project leaders in 12 universities and 5 government departments received funding for 55 projects which went through a peer-review and approval process led by Environment Canada. For the first year of these two-year projects, the Climate Change Action Fund provided $2.8 million which leveraged $1.3 million from universities and the private sector and $4.4 million from other federal government organizations.

The Climate Change Action Fund science sub-component has been successful in engaging its partners in the development of a climate science strategy which is helping build capacity, both inside and outside the federal government, to deliver the climate system science program in future years. This is a major step towards the emergence of a national integrated science program to address climate change science, impacts and adaptation issues.

3.4 Management, Administration and Policy Business Line

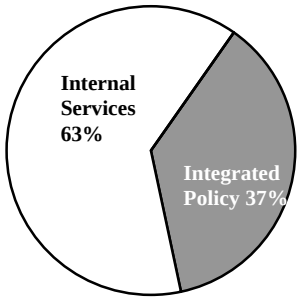
In the Management, Administration and Policy business line Environment Canada develops the Department's integrated management and policy agenda – specifically, its strategic medium and long-term agenda, leadership skills, partnerships, innovative means to inform and engage citizens – and provides efficient and innovative support services. Through this business line, Environment Canada aims to achieve two long-term goals:

- strategic and integrated policy priorities and plans; and
- a well-performing organization supported by efficient and innovative support services.

Financial Information by Long-Term Goal

Strategic and integrated policy priorities and plans	$ 55,283,814 *$ 60,423,191* **$ 41,873,368**
A well-performing organization supported by efficient and innovative services	$ 39,014,083 *$ 48,512,425* **$ 71,179,880**
1999-2000 Total Gross	$ 94,297,897 *$108,935,616* **$ 113,053,248**
Planned Spending *Total Authorities* **Actual Spending**	

Actual Spending



The $18.8 million increase in 1999-2000 actual spending over planned spending is mainly due to:

- unspent funds carried forward from 1998-1999; and
- compensation for salary increases related to the new collective agreements.

* Details provided in Table 1.

Following are selected achievements for the Management, Administration and Policy business line by long-term goal.

Long-Term Goal:

Strategic and integrated policy priorities and plans

Environmental Economics

Value of Nature-Related Activities

An Environment Canada report, *The Importance of Nature to Canadians: The Report on Economic Significance of Nature-Related Activities* was released in June 2000. It found that Canadian and American visitors spent $11.7 billion taking part in nature-related activities such as camping, hiking, wildlife viewing or fishing. These activities helped support 215,000 jobs in Canada.

Environmental economics plays an important role in ensuring that Environment Canada and its partners have the knowledge necessary to make informed decisions on new federal policies such as those on clean air and water. One newly-emerging field in environmental economics is environmental valuation, which assigns dollar values to environmental resources. This helps policy makers understand the value that Canadians place on environmental improvements.

In this field, Environment Canada has developed the Air Quality Valuation Model which provides estimates of the dollar value benefits of controlling air pollution. It has been used for numerous federal air quality initiatives such as regulations for benzene, sulfur, acid rain and particulate matter.

Environment Canada, along with Statistics Canada, has led a 3-year project to track Canada's natural capital in the National Accounts. A Framework for Monitoring the Value of Natural Capital Water has been completed and serves as a guide for valuing all forms of natural capital: air, soil, water, wildlife and plant biodiversity.

Surveys of the uses and values of environmental resources are another tool to help policy makers. Environment Canada, in collaboration with federal, provincial and territorial departments and agencies, has conducted three Canada-wide surveys, one on nature, and two on water. The Survey of the Importance of Nature to Canadians assessed the social and economic value of nature-based tourism and recreation to the country. The Survey was used to estimate nature-related tourism and recreational activities in areas near metal mine sites, and resulted in a better understanding of the benefits of proposed changes to the Metal Mining Liquid Effluent Regulations under the *Fisheries Act*. The Municipal Water Use Survey showed that municipalities with meters and volume pricing use significantly less water than those without. Municipal decision makers use this information to support sustainable water management.

More information on the Municipal Water Use survey is available at http://www.ec.gc.ca/water/en/manage/data/e_mud.htm

More information on the Nature Survey is available at http://www.ec.gc.ca/nature/survey.htm

More information on the Environmental Valuation Reference Inventory is available at http://www.evri.ec.gc.ca/evri/

Engaging Aboriginal Peoples

Under Gathering Strength: Canada's Aboriginal Action Plan, the federal government committed to strengthening partnerships with Aboriginal peoples, a commitment that was reiterated in the October 1999 Speech from the Throne. As part of that commitment, the National Advisory Committee established under the *Canadian Environmental Protection Act 1999* provides for six representatives of Aboriginal governments. Currently, two Aboriginal governments are on this Committee, one representing Quebec, the other representing British Columbia and the Yukon. Environment Canada has also significantly strengthened and expanded its partnerships with Aboriginal communities in Labrador in programs such as the Sea Duck Joint Venture, community harvest surveys, monitoring of waterfowl in areas where there is low-level flying activity and cooperation on developing a research agenda to address Inuit priorities on toxic substances.

Environment Canada has also increased its efforts to understand and make use of Aboriginal traditional ecological knowledge in carrying out environmental activities that historically have been based on western scientific knowledge. The importance of using this knowledge is recognized in both the *Canadian Environmental Protection Act 1999* and Bill C-33, the proposed *Species at Risk Act*. In October 1999, Environment Canada held a round table that brought together elders and scientists to discuss how to bridge the gaps between traditional ecological knowledge and western science.

Ashkui Project

In Labrador, the Innu Nation, the Gorsebrook Institute and Environment Canada have been working together to develop a new approach to combine science and Innu knowledge as the basis for generating new knowledge about the ecology of Labrador. The feasibility of this approach is being tested through a case study of ashkui, which are areas of early or permanent open water on lakes rivers, and estuaries that are used extensively by the Innu.

Recognizing the need to build the capacity of Aboriginal peoples to deal with environmental issues, and to help develop a pool of specialized candidates for future employment in the scientific and technical categories, the Department is making a number of investments. The Department provides funding to the National Aboriginal Achievement Foundation to support its Blueprint for the Future Career Fairs for Aboriginal students and the National Aboriginal Achievement Awards. Environment Canada, along with Human Resources Development Canada and Indian and Northern Affairs Canada, is making a significant investment in the Centre for Indigenous Environmental Resources, a national, First Nations environmental organization. Environment Canada is providing $225,000 over three years to the Centre's Environmental Education and Training Program. This innovative program, started in 1997, provides access for Indigenous youth to traditional and contemporary holistic knowledge of their people and relevant western knowledge and techniques. Eighty-nine per cent of the graduates of this program are either employed in environmental positions with First Nation governments or organizations, federal departments, private consulting firms, or are enrolled in post-secondary institutions, the majority in science-based university degree programs.

More information on the Centre for Indigenous Environmental Resources is available at http://www.cier.mb.ca/

Youth Round Table on the Environment

Science Horizon Program

A student in Environment Canada's Science Horizon Program developed the Western Newfoundland Model Forest CD "Exploring our Forest". This CD-ROM focuses on forestry issues and uses pictures, sounds, videos and 3-dimensional terrain modeling to create a new and interesting learning environment that will be used by teachers. It is geared to students at all levels and is being incorporated into the Newfoundland school curriculum as a resource tool.

The 1999 Speech from the Throne recognized the talents and skills of young Canadians and their potential for future contributions as active and engaged citizens. The Youth Round Table on the Environment is an advisory body to the Minister of the Environment. It gives young Canadians an opportunity to learn about environmental issues, participate in the development of environmental policies and programs and to advise the Department on ways to make these programs more accessible to youth. In 1999-2000, members of the Round Table provided strategic input to the Minister and the Department on a number of key issues such as climate change, endangered species, Environment Canada's Sustainable Development Strategy, biotechnology, and pollution prevention.

Youth at The Biosphere

The Biosphere wants to be a leader and partner in providing youth with all the tools necessary for them to become well informed, responsible citizens. Each year, over 20,000 school children take part in educational workshops developed by the Biosphere which teach them about the importance of protecting and conserving water resources. Over 2,800 children participated in the Biosphere's ObservAction Network in 1999-2000. As members of this Network, children are involved in environmental action activities such as observing, collecting information, and organizing projects examining factors affecting the Great Lakes and the St. Lawrence River from their communities' perspective.

Examples of other Environment Canada youth initiatives include the Atlantic Youth Working Group, the Aboriginal Student Apprenticeship Program, Science Horizons and the International Environmental Youth Corps Program. These initiatives provide youth with valuable capacity building opportunities, assist in bringing environmental benefits to local, national and international organizations, and help create and maintain a voice for youth within Environment Canada.

More information on the Youth Round Table on the Environment is available at http://www.ec.gc.ca/youth/yrt/yrte_e.htm

More information on the Biosphere is available at http://biosphere.ec.gc.ca

International Efforts: Environmental Cooperation with China

Environment Canada works closely with key regional and international organizations like the United Nations Environment Program, the World Meteorological Organization, the Organization for Economic Cooperation and Development, and the Commission on Environmental Cooperation to identify global problems and work towards solving them. Being active in these institutions gives Canada a chance to shape international agreements, programs and policies. For example, through the North American Agreement on Environmental Cooperation, Environment Canada has influenced the work program of the Commission for Environmental Cooperation to better reflect Canadian environmental priorities.

In addition to our work with international agencies, Environment Canada deals directly with foreign governments on issues of common concern. Not surprisingly, our closest international

working relationship is with the United States. Environment Canada is also involved in selected bilateral projects, such as its current work with China, to help countries improve their own capacity to do environmental work. This is one important way to help protect Canadians and the Canadian environment from foreign sources of pollution and other environmental threats. It is also key to finding solutions to global environmental problems like climate change.

In 1998, Canada and China signed the "Framework Statement for Cooperation on Environment into the 21st Century". The Framework was an umbrella for existing agreements but also paved the way for an Action Plan to address priority areas. The Canada-China Action Plan for 1999-2000 provided an opportunity for Canada and China to work jointly in such areas as energy efficiency and conservation, alternative fuels, transportation and clean energy, flood prevention and management of water resources, strengthening linkages between researchers and helping to build environmental institutions in China.

Globe 2000 Biannual International Conference and Trade Show

More than 10,000 people from 78 countries traveled to Vancouver in March to attend Globe 2000. This conference focused on climate change, clean air and water. Key note speaker Minister Anderson unveiled his new architecture for environmental management. The trade show provided access to international markets, brought together companies, governments and key international buyers and was expected to generate over $460 million worth of business in the sales of environmental goods and services.

Environment Canada's recent activities with China include workshops, training in Canadian institutions, mentoring of senior scientists, and exchanges of information. Environment Canada also developed, in consultation with other federal departments, a China Strategy to further guide Canada's bilateral activities with China. This strategy is one of several strategies that Environment Canada is developing to ensure that it gets the maximum environmental results from its work with other countries and international institutions.

Long-Term Goal:

A well-performing organization supported by efficient and innovative services

Year 2000 Challenge

Environment Canada's response to the Year 2000 challenge was, in many respects, one of the largest projects in its history. The Department developed contingency plans to ensure that those services critical to the health and safety of Canadians such as weather and aviation forecasting (see section on Weather and Environmental Predictions business line) and environmental emergency response would be uninterrupted even if significant problems arose inside or outside the organization. In support of the National Contingency Planning Group, led by National Defense, Environment Canada monitored Year 2000-related work being done on hazardous materials, water purification and sewage treatment systems across the country. In addition, the Department had to examine its own computer, laboratory and building systems to ensure their Year 2000 compliance.

The Department invested approximately $51 million and more than 600 employees to ensure that its operations would continue uninterrupted during and following the Year 2000 rollover. This exercise had a number of significant impacts on Environment Canada. First, the work

undertaken highlighted the Department's heavy dependence upon its aging infrastructure. While all systems are now functional, the timelines and existing resource constraints obliged staff to focus upon maintaining older technology rather than modernizing their systems. This affected many financial, laboratory and weather applications. Second, due to the resources invested in Year 2000-related work, progress was delayed on a number of Environment Canada priorities related to Departmental information management / information technology and services provided by the Meteorological Service of Canada.

Human Resources Management

Human resources management during 1999-2000 was dominated by a number of wide reaching issues including La Relève-related initiatives, the Universal Classification Standard, Employment Equity and Diversity, and the response to the Public Service Employee Survey. The Department is focusing on rebuilding the organization and regaining the trust of its employees and has put in place the essential frameworks and strategies for dealing with these issues.

Adaptive Computer Technology

In 1991, Environment Canada developed the Adaptive Computer Technology Program to help integrate persons with disabilities into the workplace. After a decade of accumulating experience and expertise, Environment Canada, in partnership with Treasury Board Secretariat, opened the Adaptive Computer Technology Training Centre to train federal informatics technicians from across Canada to implement and support adaptive computer technology within their departments. Since the creation of the program, over ten departments have benefited and 200 employees have been integrated into the workforce.

As part of its workforce renewal effort, Environment Canada has put in place recruitment and management development initiatives to improve the quality of management, build policy capacity, overcome the decline in research capacity, augment the enforcement capability related to pollution and wildlife, and replace skilled and knowledgeable workers who have left the Department through retirement or deployment.

A comprehensive Employment Equity and Diversity Management Plan for the next three years has been developed with firm targets for the hiring of persons from under-represented groups. It also includes an action plan with measures for dealing with systemic barriers to the recruitment and retention of designated group members. In addition, the Department has developed action plans in response to the Public Service Employee Survey which are focused on the critical issues of leadership, workload, internal communications, employee satisfaction and career development as a means to address workforce retention and to facilitate the Department becoming a workplace of choice.

Modern Management Agenda

In September 1999, Environment Canada became one of the twelve pilot departments for Modern Comptrollership, a management reform initiative in the federal government. The essentials of this initiative can be described as: strategic leadership, motivated people, shared values and ethics to guide decision making, integrated performance information, a mature approach to risk management, rigorous stewardship, and improved accountabilities.

Environment Canada created a Modern Management Office to engage the Department in the delivery of its Modern Management Agenda and several projects were initiated in 1999-2000. With financial support from the Modern Comptrollership Innovation Fund, the Meteorological Service of Canada completed a pilot project on Activity Based Costing in November 1999. This

pilot demonstrated how this costing method is an appropriate means for obtaining more accurate information on the cost of activities, products and services, and other results achieved. Implementation of Activity Based Costing in the Meteorological Service of Canada will be phased in over the next three years. Departmental action plans to address the findings of the 1999 Public Service Employee Survey are being implemented. A values and ethics initiative has been launched to increase dialogue on values and ethical decision-making. A plan for the implementation of the federal government's Financial Information Strategy, fundamental to integrated performance information, stewardship and accountability, was approved in December 1999, and Environment Canada is on schedule to meet the government-wide implementation date of April 2001.

Section 4: Consolidated Reporting

4.1 Transfer Payments

The following is a list of Environment Canada's major transfer payments for the 1999-2000 fiscal year.

TRANSFER PAYMENTS OVER $5 MILLION

1999-2000

		(million of $)	
Classes	**Planned Spending**	**Authority**	**Actuals**
Contributions to support environmental research and development	4.6	5.3	5.3
Contributions to support environmental and sustainable development projects	7.7	8.9	8.9
Contributions to increase awareness and understanding of environmental and sustainable development issues	14.8	9.9	9.6
Others			
Contributions under the Action 21 Program to help Canadians take individual and collective actions in their communities in support of a greener society	5.1	5.9	5.6
Grant to the Federation of Canadian Municipalities to create the Green Municipal Investment Fund	-	50.0	50.0
Grant to the Federation of Canadian Municipalities to create the Green Municipal Enabling Fund	-	12.5	12.5
Grant to the Canadian Meteorological and Oceanographic Society to establish the Canadian Fund for Climate and Atmospheric Science	-	60.0	60.0

4.2 Sustainable Development Strategy

During the past year, progress was made in advancing the four goals from Environment Canada's 1997 Sustainable Development Strategy which are:

- strengthening Environment Canada's ability to meet sustainable development goals;
- being a more effective advocate of sustainable development;
- giving Canadians the tools to make sound decisions in a changing environment; and
- setting a good example in the greening of government operations.

Examples of Environment Canada's overall progress in advancing sustainable development can be measured through the Department's recent legislative and regulatory initiatives which embrace the principles of sustainable development, such as the renewed *Canadian Environmental Protection Act*, and the proposed *Species At Risk Act*. For example, *Canadian Environmental Protection Act* has expanded the toolkit for increased use of fiscal instruments in the future. Environment Canada has also been working with key sectors, such as health non-governmental organizations, to develop strategies and approaches to addressing environment and health issues. Government-wide policy research through the Policy Research Initiative has helped the department to gain a better understanding of the barriers and opportunities with respect to sustainable development, and will help inform future policy decisions. By building upon its ecosystems initiatives, which address complex environmental issues and advance social and economic considerations, Environment Canada has been helping to operationalize sustainable development in Canadian communities. Environment Canada has also been engaging communities to take action on sustainable development through its EcoAction funding program and through its Millennium Eco-Communities Initiative, which links communities across Canada and provides a forum for information exchange and sharing of best practices.

Nova Scotia Sustainable Communities Initiative

Facilitated by the efforts of Environment Canada, Atlantic Region, a community-focused, cross-government Sustainable Communities Initiative in Nova Scotia is well underway. Of note are two partner communities, the ecosystems that comprise the Bras d'Or Lakes in Cape Breton and the Annapolis/Fundy region in Southwest Nova Scotia. The Sustainable Communities Initiative is breaking down traditional sectoral silos; integrating environmental, social and economic agendas; and building the foundation for realizing sustainable development both within government and at the community level.

In addition to overall progress towards its 1997 Sustainable Development Strategy commitments, Environment Canada made a concerted effort on advocating sustainable development across government to lay the groundwork for a more coherent and coordinated federal sustainable development agenda. Environment Canada also devoted its attention to launching the process to renew its Sustainable Development Strategy, which is to be tabled in Parliament by the end of December 2000. The following paragraphs outline progress in these two key areas of focus:

Advocating Sustainable Development Across the Federal Government

Environment Canada played an instrumental role in raising the profile of sustainable development across the federal government, and in helping to position sustainable development as a government-wide priority. Environment Canada also promoted the integration of social,

economic and environmental considerations in decision-making processes. For example, Environment Canada led several senior-level interdepartmental committees on sustainable development; co-championed government-wide policy research on sustainable development; and oversaw a sustainable development policy planning process. The commitments to sustainable development in the Government's 1999 Speech from the Throne are an indicator that Environment Canada's efforts to influence the federal agenda were a success. The Speech commits the government to placing a greater emphasis on sustainable development in its decision-making; making itself a model of excellence in its own operations; building stronger communities; and reporting regularly on the results achieved in addressing top environmental concerns of Canadians. Budget 2000 allocated new resources to carry out the Government's Speech from the Throne commitments.

Emerging out of an inter-departmental policy planning process in the summer of 1999, eight horizontal sustainable development priority issues were identified and endorsed at the Deputy Minister level in November 1999 as areas in which departments should pursue coordinated planning and action on sustainable development. Environment Canada has co-lead responsibilities in three of the eight issue areas.

In the spring, Environment Canada coordinated preparations for a national meeting of federal government and non-government leaders to generate advice to federal departments on the formulation of Sustainable Development Strategies, and to seek feedback on the eight cross-cutting sustainable development themes. The results from the Leaders Forum on Sustainable Development, which took place in Ottawa in April 2000, will help to further shape the Government's sustainable development plans and strategies.

For details, please refer to: http://www.ec.gc.ca/sd-dd_consult/PDF/DiscussiondocMar17_e.pdf.

Renewing Environment Canada's Sustainable Development Strategy

For continual improvement through a renewed strategy, an internal management review of the 1997 Sustainable Development Strategy and its implementation was undertaken in the summer of 1999. A Sustainable Development Strategy Working Group with representatives from across the Department was established in the fall of 1999, and its first task was to undertake an issue scan to identify key areas where the Department has had an impact on sustainable development, and to build on opportunities for making progress on sustainable development. Based on the results of the internal management review and the issue scan, a draft discussion paper was prepared. Consultations were undertaken on the discussion paper across the country in May/early June 2000, and the feedback has helped to shape the draft strategy. A second round of consultations will inform the final strategy, to be tabled in December 2000.

For more details on the strategy updating process, or for a more detailed summary of last year's progress against Environment Canada's 1997 Sustainable Development Strategy, please refer to: http://www.ec.gc.ca/sd-dd_consult/index_e.cfm

4.3 Major Legislative and Regulatory Initiatives

Purpose of legislative or regulatory initiative **[Enabling legislation in brackets]**	**Expected results**	**Performance measurement criteria**	**Date of publication in the Canada Gazette, Part II**
Federal Halocarbon Regulations for Federal Facilities [CEPA, 1999] To prevent and eliminate releases to the environment of ozone depleting substances from federal operations.	Management of ozone depleting substances in federal operations consistent with current provincial regulatory requirements applicable to the private sector.		June 23rd, 1999.
Gasoline and Gasoline Blend Dispensing Flow Rate Regulations [CEPA, 1999] To reduce emissions of benzene and other volatile organic compounds (VOCs) into the environment.	Reduced vapour emissions caused by spitback of fuel during the vehicle refueling process.	Compliance with regulations	February 16th, 2000. (Regulations come into force on February 1st, 2001)
Tributyltetradecylphosphonium Chloride (TTPC) Regulations [CEPA, 1999] To prevent the release of TTPC, a toxic substance, into the Canadian environment.	Elimination of the use, processing, offer for sale, sale and importation into Canada of TTPC, and conditions on its manufacture.	Compliance with regulations	March 15th, 2000.
Canadian Environmental Protection Act, 1999 (CEPA, 1999) Repeals and replaces the *Canadian Environmental Protection Act.* To contribute to sustainable development through pollution prevention.	More effective and timely management of toxic substances, virtual elimination of the worst toxics, expanded control of a broader ranger of pollutants, expanded public participation and effective use of new enforcement tools & powers.		March 29th, 2000 (Came into force on March 31st, 2000.)
Export Control List Notification Regulations [CEPA, 1999] Replaces the *Toxic Substances Export Notification Regulations.* To implement the export notification provisions of *CEPA, 1999* and to implement provisions of the *Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.*	Improved tracking and reporting to the Canadian public on trade in toxic substances.		March 29th, 2000.
Persistence and Bioaccumulation Regulations [CEPA, 1999] To prescribe the scientific criteria for persistence, bioaccumulation and other relevant properties or characteristics of substances to be used to administer sections 73-77 (Priority substances & other substances) of *CEPA, 1999.* These regulations are required under section 67(1) of the Act.	Early identification of substances which are persistent, bioaccumulative and inherently toxic so that appropriate measures can be taken.		March 29th, 2000.

4.4 Statutory Annual Reports

International River Improvements Act

Purpose: This Act received assent on July 11, 1955. It provides for licensing international river improvements to ensure that Canada's water resources are developed and utilized in the best national interest. The Act does not apply to international river improvements built 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 those 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. 1987-1943, dated September 17, 1987, and P.C. 1993-764 dated April 20, 1993. The Department of the Environment has administered this Act since June 1971.

Activity: During 1999, no licences were issued under the Regulations of the International River Improvements Act.

In August 1996, a licence application was made to the Minister of the Environment from the Minister of Natural Resources of Manitoba for a dam to be constructed at the outlet of Rock Lake on the Pembina River. A screening level review was required under the Canadian Environmental Assessment Act. Comments from federal agencies, including Environment Canada, have been transmitted to Manitoba.

Departmental officers reviewed aspects of a project to upgrade the generating equipment at the Brilliant power plant on the lower Kootnay River near Castlegar. Formal notification as a case for exception or licensing under the Act is expected in early 2000.

Environment Canada’s regional office in Vancouver received notification that British Columbia Gas intends to construct the Southern Crossing Pipeline to transport natural gas across southern British Columbia A number of stream crossings are to be built and Departmental officials have reviewed preliminary project documentation for potential effects on international rivers. The proponent was given advice on methods of pipeline construction over stream crossings and whether the Act would apply to the various methods.

Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (WAPPRIITA)

Purpose: This Act and Regulations came into effect in May, 1996. WAPPRIITA implements Canada's international obligations under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Canada was one of the original Parties to the Convention, which had been adopted by 146 countries by the end of 1999.

As well as implementing trade controls under CITES, WAPPRIITA protects Canadian and foreign species of animals and plants by making it an offense to transport illegally obtained wildlife between provinces or between Canada and other countries. It also safeguards Canadian ecosystems by controlling importation of certain harmful species.

Administration: Environment Canada coordinates and administers WAPPRIITA through national CITES management and scientific authorities. CITES authorities are also located in the Department of Fisheries and Oceans for fish and marine mammals, and in each province and territory (except Alberta), which issue export permits for other species. The Canadian Food Inspection Agency helps Environment Canada process CITES documentation for the export of artificially propagated plants.

CITES Permits issued in Canada in 1999

Jurisdiction	Import	Export	Temporary Export/import	Scientific
Canada	190	9169	247	37
Alberta[1]		N/A		
British Columbia		2386		
Manitoba		1958		
New Brunswick		1699		
Newfoundland		143*		
N.W.T.		153		
Nova Scotia		58		
Ontario		3490		
P.E.I		3		
Quebec		2612		
Saskatchewan[2]		923		
Yukon		225		
Nunavut		3*		
TOTAL	190	22,822	247	37

[1]Alberta does not issue CITES export permits.
[2]Saskatchewan ceased issuing CITES export permits for black bear in 1997.
*Estimate.

Agreements with the Provinces and Territories: Section 5 of WAPPRIITA provides for the establishment of agreements with the provinces and territories to promote cooperative management and administration of the Act. Six such agreements, or Memoranda of Understanding, have been reached. Two, with the Province of Saskatchewan and the Yukon Territory, were signed in 1997. Three, with the provinces of Alberta and Manitoba and the Northwest Territories, were signed in 1998. An agreement with British Columbia was signed in 1999. Similar Memoranda of Understanding are being negotiated with most of the remaining jurisdictions.

Agreements have been signed by the Department of Justice with Prince Edward Island in 1997 and with Manitoba in 1998 to permit ticketing for WAPPRIITA offences under the *Contravention's Act*. Ticketing agreements with other provinces are being negotiated by the Department of Justice.

Enforcement: Enforcement of WAPPRIITA is coordinated by Environment Canada and carried out by five regional offices (Pacific and Yukon, Prairie and Northern, Ontario, Quebec, and Atlantic), in cooperation with Revenue Canada, the Royal Canadian Mounted Police, the Department of Fisheries and Oceans and provincial and territorial wildlife agencies.

In 1999 Environment Canada conducted more than 800 investigations under provisions of applicable federal, provincial/territorial, or foreign legislation into poaching or trafficking incidents involving international or interprovincial movement of wildlife. Most of these investigations concluded with the confiscation of goods or issuance of a ticket. Nine cases were prosecuted successfully in 1999 and fines imposed.

Environment Canada and its partners continued efforts during 1999 to promote awareness and compliance with WAPPRIITA by providing information to travelers, the import-export community, industry, outfitters and the general public. Public awareness activities carried out included publication of newspaper articles, press releases, advertisements and media interviews; placement of CITES displays in airports, zoos, and other public buildings; public information sessions; and attendance at trade shows, conferences and special events.

A new enforcement tool has been put in place. The National Enforcement Management Information System and Intelligence System (NEMISIS) tracks and manages national enforcement activities for the environmental and wildlife legislation enforced by Environment Canada officers. The system provides accurate and timely statistical information and detailed reports on enforcement efforts. A CITES permit database has been developed within NEMISIS that will be used to issue CITES permits. The CITES database component became operational in late 1999.

New Regulations: Consultations were initiated in late 1997 on proposed amendments to the *Wild Animal and Plant Trade Regulations* to reduce administrative burden on government and the public, and to improve enforcement capacity for WAPPRIITA. In December 1999, these amendments to the *Regulations* were approved by the federal government. The amendments include exemptions from CITES permit requirements for most types of personal and household effects; authority to prosecute based on claims made on species information provided on shipment labels, marks or accompanying documents as to package contents; and the content of removal orders and extension of the period before automatic forfeiture to the Crown.

International Cooperation: Every two to three years, the Parties to CITES meet to propose species for addition to, deletion from, or transfer from one Appendix to another. Prior to each Conference of the Parties (COP), Environment Canada and other federal departments consult widely with the public on proposals to be brought forward by Canada and by other Parties to the Convention.

The next COP, the Eleventh meeting of the Conference of the Parties (COP 11), is scheduled to be held in Nairobi, Kenya, in April 2000. In May 1999, in preparation for COP 11, Environment Canada contacted approximately 200 federal and provincial government agencies, non-governmental organizations and the general public on its CITES consultation list through a series of mailings. The mailouts requested proposals to add new species to CITES, and described the proposals that had been submitted by Parties for consideration. Public meetings were scheduled to follow in 2000 before COP 11 to receive additional information on the proposals, and to discuss the proposed Canadian positions.

Through the North American Wildlife Enforcement Group (NAWEG), Canada (Environment Canada) works with the United States (U.S. Fish and Wildlife Service) and Mexico (Procuraduria Federal de Protección del Ambiente) to promote wildlife enforcement. NAWEG acts as the North American representative to Interpol and is the enforcement contact for the Trilateral Committee for Conservation and Management of Wildlife and Ecosystems. In Canada NAWEG is the link between the foreign agencies and the federal and provincial chiefs responsible for natural resources law enforcement. Environment Canada personnel attend regular NAWEG meetings to discuss national positions and to develop a North American approach to present to CITES, Interpol, and the Trilateral Committee.

In 1999 Canada's international cooperation included participation in a seminar on wildlife forensics in Cheyenne, Wyoming; publication of the CITES information guide on turtles and tortoises; and an agreement among many forensic specialists to standardize techniques and coordinate laboratory efforts to optimize usefulness to enforcement officers.

Other Statutory and Departmental Reports:

- *Canadian Environmental Protection Act* (CEPA) - http://www.ec.gc.ca/cepa/index_e.html
- *Canada Water Act* - http://www.ec.gc.ca/water/index.htm
- *Access to Information Act*
- *Privacy Act*

Section 5: Financial Performance

5.1 Financial Performance Overview

This Section contains a summary of the financial performance of Environment Canada for the fiscal year 1999/2000.

The Department was authorized to spend an additional $181.3 million over the planned spending identified in the Report on Plans and Priorities. The major increases were related to two grants announced in the federal budget for the establishment of two endowment funds:

- $62.5 million to the Federation of Canadian Municipalities to endow the Green Municipal Investment Fund and the Green Municipal Enabling Fund; and
- $60.0 million to the Canadian Meteorological and Oceanographic Society (CMOS) to create a fund for atmospheric and climate change science.

The Department's Authorized Spending was also increased by the following one time infusion of resources:

- $19.4 million carry forward of unused funds from 1998-1999;
- $10.6 million in funding for acquisition of equipment for ice forecasting and air quality and new facilities; and
- $8.8 million for remediation of systems to make them Year 2000 compliant.

Other significant increases were:

- $9.8 million to compensate for salary increases related to new collective agreements; and
- $7.0 million to begin the environmental clean-up of the Sydney Tar Ponds contaminated site.

5.2 Financial Summary Tables

The financial tables presented in this Performance Report are based on the Planning, Reporting and Accountability Structure (PRAS) which was approved in 1998-1999. Financial information for 1997-1998 is not available under this structure and is estimated for 1998-1999.

Summary financial data, such as the information presented in Table 1, are displayed using three separate headings. For clarity, these headings are defined as:

- *Planned Spending* - Amounts shown in the Report on Plans and Priorities in 1999-2000;
- *Total Authorities* - Planned spending plus any additional amounts Parliament has approved for departments to reflect changing priorities and unforeseen events; and
- *1999-2000 Actual Spending* - The amounts actually spent for the fiscal year.

Table 1: Financial Requirements by Authority ($ millions)

Vote		1999 - 2000 Planned Spending	Total Authorities	Actual
	Environment Program			
1	Operating expenditures	430.2	462.0	**456.4**
5	Capital expenditures	24.8	42.6	**39.3**
10	Grants and contributions	44.5	168.5	**167.8**
(S)	Minister of the Environment - Salary and motor car allowance	0.0	0.1	**0.1**
(S)	Contributions to employee benefit plans	48.9	56.2	**56.2**
(S)	Spendings of proceeds from the disposal of surplus Crown assets	0	0.3	**0.2**
	Total Department	**548.4**	**729.7**	**720.0**

Explanation of change:

The $171.6 million increase is mainly due to the following:

Increases reflected in the Actual Expenditure but not in the Planned Spending	**$ Millions**
Environmental clean-up of the Sydney Tar Ponds (C).	2.6
To make departmental systems Year 2000 compliant (W)	8.8
Compensation for salary increases for new collective agreements (C:$1.3M, N:$2.1M, W:$3.7M, M:$2.7M)	9.8
Increase funding for ice forecasting / air quality equipment and facilities (C:$3.3M, W:$7.3M)	10.6
Unspent funds carried forward from 1998-1999 (C:$1.4M, N:$3.4M, W:$2.8M, M:$11.8M)	19.4
An endowment to the Canadian Meteorological and Oceanographic Society to create a fund for atmospheric and climate change science (W)	60.0
An endowment to the Federation of Canadian Municipalities for Green Municipal Investment and Enabling Funds (C)	62.5
Decreases reflected in the Actual Expenditure but not in the Planned Spending	
Funds moved to subsequent years for Climate Change.	2.5

Legend

C: Clean Environment Business Line

N: Nature Business Line

W: Weather and Environmental Predictions Business Line

M: Management, Administration and Policy Business Line

Table 2: Departmental Planned versus Actual Spending by Business Line ($ millions)

Business Lines	FTEs	Operating*	Capital	Voted Grants & Contributions	Subtotal: Gross Voted Expenditures	Statutory Grants & Contributions	Total: Gross Expenditures	Less: Respendable Revenues**	Total Net Expenditures
Clean Environment	953	125.3	4.7	24.0	154.0	-	154.0	(5.8)	148.2
	-	*134.0*	*8.6*	*82.7*	*225.3*	-	*225.3*	(5.9)	*219.4*
	1,077	**135.7**	**9.7**	**82.1**	**227.5**	**-**	**227.5**	**(5.6)**	**221.9**
Nature	993	129.1	2.7	13.4	145.2	-	145.2	(7.6)	137.6
	-	*134.0*	*2.7*	*17.0*	*153.7*	-	*153.7*	(6.2)	*147.5*
	1,082	**123.3**	**3.2**	**17.0**	**143.5**	**-**	**143.5**	**(5.4)**	**138.1**
Weather and Environmental Predictions	1,530	203.4	16.0	5.3	224.7	-	224.7	(56.5)	168.2
	-	*220.9*	*29.5*	*66.3*	*316.7*	-	*316.7*	(62.1)	*255.6*
	1,672	**216.7**	**25.3**	**66.3**	**308.3**	**-**	**308.3**	**(60.6)**	**247.7**
Management, Administration and Policy	910	91.2	1.4	1.8	94.4	-	94.4	(0.0)	94.4
	-	*104.6*	*1.8*	*2.5*	*108.9*	-	*108.9*	(0.7)	*108.2*
	1,016	**109.6**	**1.0**	**2.4**	**113.0**	**-**	**113.0**	**(0.7)**	**112.3**
Total	4,386	549.0	24.8	44.5	618.3	-	618.3	(69.9)	548.4
	-	*593.5*	*42.6*	*168.5*	*804.6*	-	*804.6*	*(74.9)*	*729.7*
	4.847	**585.3**	**39.2**	**167.8**	**792.3**	**-**	**792.3**	**(72.3)**	**720.0**
Other Revenues and Expenditures									
Non-Respendable Revenues * **									(7.4)
									(7.4)
									(10.6)
Cost of services provided by other departments									
									44.5
									44.5
									45.7
Net Cost of the Program									585.5
									766.8
									755.1

* Operating includes contributions to employee benefit plans, minister's allowances and the disposal of crown assets.
** These revenues were formerly called "Revenues Credited to the Vote".
*** These revenues were formerly called "Revenues Credited to the Consolidated Revenue Fund".

Note: Normal font: 1999-2000 Planned Spending
Italic font: 1999-2000 Total Authorities
Bold font: 1999-2000 Actual Spending

Explanation of change:

The $171.6 million increase is mainly due to the following:	**$ Millions**
Operating:	36.3
Compensation for salary increases for new collective agreements	
Remediation of systems to make them Year 2000 compliant	
Unspend funds carried forward from 1998-1999	
Capital:	14.5
Remediation of systems to make them Year 2000 compliant	
Increased funding for ice forecasting and air quality equipment and facilities	
Grants and Contributions:	123.3
Grant to the Canadian Meteorological and Oceanographic Society to create a fund for atmospheric and climate change science	
Grant to the Federation of Canadian Municipalities to endow Green Municipal Investment and Enabling Funds	
Environmental clean-up of the Sydney Tar Ponds contaminated site.	
Respendable Revenues:	(2.4)
Increase in Respendable Revenues	

Table 3: Historical Comparison of Departmental Planned versus Actual Spending by Business Line ($ millions)

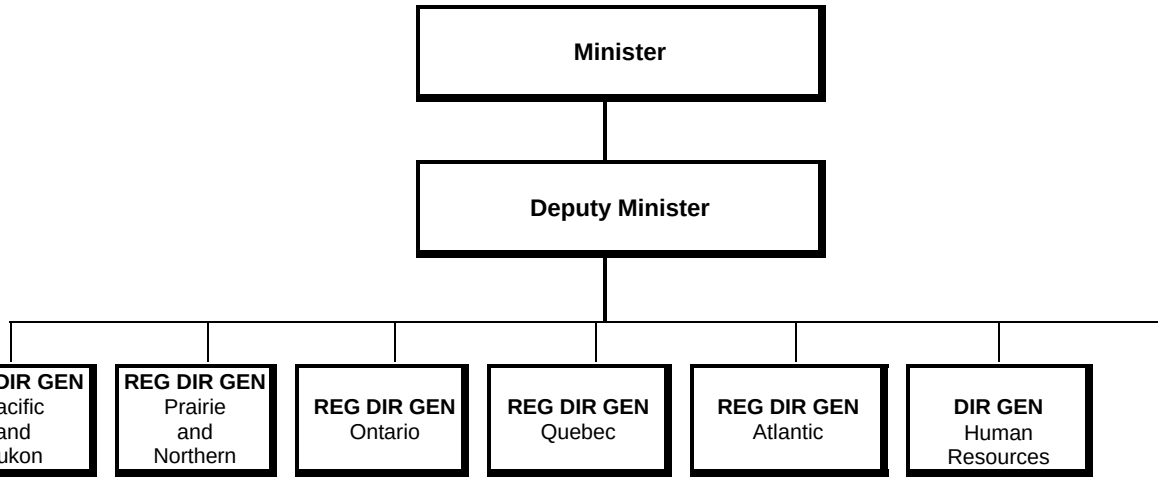
Business Lines	Actual* 1997-1998	Actual 1998-1999	1999-2000 Planned Spending	1999-2000 Total Authorities	1999-2000 Actual
Clean Environment	-	130.4	148.2	219.4	**221.9**
Nature	-	140.3	137.6	147.5	**138.1**
Weather and Environmental Predictions	-	180.7	168.2	254.6	**247.7**
Management, Administration and Policy	-	113.2	94.4	108.2	**112.3**
Total	**548.1**	**564.6**	**548.4**	**729.7**	**720.0**

* The information is not available under the new business Line structure approved in 1998-1999.

Explanation of change:
The $171.6 million increase in 1999-2000 Actual Expenditures over the 1999-2000 Planned Spending is mainly due to the followings:

	$ Millions
Clean Environment	**73.6**
Environmental clean-up of the Sydney Tar Ponds	
Increased funding to air quality	
Grant to Federation of Canadian Municipalities to endow Green Investment and Enabling Fund	
Unspend funds carried forward from 1998-1999	
Compensation for salary increases for new collective agreements	
Weather and Environmental Predictions	**79.5**
Remediation of systems to make them Year 2000 compliant	
Increased funding for ice forecasting equipment and facilities	
Unspend funds carried forward from 1998-1999	
Compensation for salary increases for new collective agreements	
Grant to the Canadian Meteorological and Oceanographic Society to create a fund for atmospheric and climate change science	
Management, Administration and Policy	**17.9**
Unspend funds carried forward from 1998-1999	
Compensation for salary increases for new collective agreements	

Table 4: Comparison of 1999-2000 Planned Spending to Actual Expenditures by Organization and Business Line ($ millions)



	REG DIR GEN Pacific and Yukon	**REG DIR GEN** Prairie and Northern	**REG DIR GEN** Ontario	**REG DIR GEN** Quebec	**REG DIR GEN** Atlantic	**DIR GEN** Human Resources
Clean Environment	8.8 **10.3**	8.2 **8.3**	8.6 **9.3**	6.3 **9.3**	8.4 **12.4**	- **-**
Nature	17.0 **14.0**	14.4 **15.3**	20.6 **18.8**	20.7 **20.5**	8.2 **9.6**	- **-**
Weather and Environmental Predictions	14.2 **16.1**	29.2 **32.4**	11.5 **13.9**	10.7 **11.3**	10.2 **9.9**	- **-**
Management, Administration and Policy	4.1 **11.4**	7.9 **7.8**	9.9 **10.8**	5.5 **5.7**	5.4 **6.8**	6.7 **6.2**
Total-$ Millions	44.1 **51.8**	59.7 **63.8**	50.6 **52.8**	43.2 **46.8**	32.2 **38.6**	6.7 **6.2**

Note: Normal font: 1999-2000 Planned Spending
Bold font: 1999-2000 Actual Spending

REG DIR GEN = Regional Director General
ADM = Assistant Deputy Minister

**** These figures do not include Respendable Revenues**
(Respendable Revenues total $69.9 million for Planned Spending and $72.3 million for Actual Spending)

ADM Policy and Communications	Corporate Offices	**ADM** Corporate Services	**ADM** Meteorological Service of Canada	**ADM** Environmental Protection Service	**ADM** Environmental Conservation Service	**Total**	**% of Total**
17.7	-	0.2	5.9	77.0	7.2	148.3	
18.0	**-**	**-**	**5.7**	**140.9**	**7.6**	**221.8**	**30.8%**
-	-	2.1	-	1.5	53.2	137.7	
-	**-**	**-**	**0.8**	**0.9**	**58.3**	**138.2**	**19.2%**
-	-	0.5	91.4	-	0.4	168.1	
-	**-**	**0.1**	**163.6**	**-**	**0.4**	**247.7**	**34.4%**
20.8	6.4	24.9	0.7	1.6	0.5	94.4	
21.5	**6.2**	**33.1**	**0.6**	**1.7**	**0.5**	**112.3**	**15.6%**
38.5	6.4	27.7	98.1	80.1	61.3	548.4	
39.5	**6.2**	**33.2**	**170.8**	**143.5**	**66.8**	**720.0**	**100.0%**

Table 5: Respendable Revenues by Business Line ($ millions)

Business Lines	Actual** 1997-1998	Actual 1998-1999	1999-2000 Planned Revenues	1999-2000 Total Authorities	1999-2000 Actual
Clean Environment	-	6.1	5.8	5.9	**5.6**
Nature	-	6.1	7.6	6.2	**5.4**
Weather and Environmental Predictions	-	58.7	56.5	62.1	**60.6**
Management, Administration and Policy	-	-	0.0	0.7	**0.7**
Total Respendable Revenues *	**70.6**	**70.9**	**69.9**	**74.9**	**72.3**

* These revenues were formerly called "Revenues Credited to the Vote"

** This information is not available for the new business line structure which was approved in 1998-1999.

Explanation of change:

The $2.2 million decrease in Nature in the 1999-2000 Actual Revenues over the 1999-2000 Planned Revenues is primarily due to a business line shift from Nature ($-0.7M) to Management, Administration and Policy ($0.7M) and to less revenue collected related to the activities of the Canadian Centre for Inland Waters.

The $4.1 million increase in Weather and Environmental Predictions in the 1999-2000 Actual Revenues over the 1999-2000 Planned Revenues is mainly due to an increase in revenues from the provision of weather services primarily to other government departments.

Table 6: Non-Respendable Revenues by Business Line ($ millions)

Business Lines	Actual** 1997-1998	Actual 1998-1999	1999-2000 Planned Revenues	1999-2000 Total Authorities	1999-2000 Actual
Clean Environment	-	0.3	0.2	0.2	**0.2**
Nature	-	4.0	2.8	2.8	**4.7**
Weather and Environmental Predictions	-	4.0	4.4	4.4	**4.4**
Management, Administration and Policy	-	-	-	-	**1.3**
Sub-total	-	8.3	7.4	7.4	**10.6**
Unplanned	-	-	-	-	**-**
Total Non-Respendable Revenues *	**9.5**	**8.3**	**7.4**	**7.4**	**10.6**

* These revenues were formerly called "Revenues Credited to the Consolidated Revenue Fund"

** The information is not available for the new business line structure approved in 1998-1999.

Explanation of change:

The $1.9 million increase, in Nature, in the 1999-2000 Actual Revenues over the 1999-2000 Planned Revenues is primarily due to higher than anticipated sales of Migratory Bird Hunting Permits.

The $1.3 million increase in Management, Administration and Policy in the 1999-2000 Actual Revenues over the 1999-2000 Planned Revenues is related to adjustments to prior years accounting records, proceeds from sale of surplus assets, etc.

Table 7: Transfer Payments by Business Line ($ millions)

Business Lines	Actual* 1997-1998	Actual 1998-1999	1999-2000 Planned Spending	1999-2000 Total Authorities	1999-2000 Actual
GRANTS					
Clean Environment	-	1.2	2.0	64.5	63.8
Nature	-	0.2	0.0	-	0.0
Weather and Environmental Predictions	-	0.4	0.9	60.9	60.4
Management, Administration and Policy	-	0.2	0.2	0.2	0.2
Total Grants	**4.2**	**2.0**	**3.1**	**125.6**	**124.4**
CONTRIBUTIONS					
Clean Environment	-	13.7	22.0	18.2	18.3
Nature	-	16.5	13.4	17.0	17.0
Weather and Environmental Predictions	-	4.9	4.4	5.4	5.9
Management, Administration and Policy	-	1.7	1.6	2.3	2.2
Total Contributions	**38.1**	**36.8**	**41.4**	**42.9**	**43.4**
Total Transfer Payments	**42.3**	**38.8**	**44.5**	**168.5**	**167.8**

* The information is not available for the new business line structure approved in 1998-1999.

Explanation of change:	**$ Millions**
The $123.3 million increase is mainly due to the following:	
Clean Environment	
Grant to Federation of Canadian Municipalities to endow Green Municipal Investment and Enabling Funds	62.5
Contribution to the remediation of the Sydney Tar Ponds and Coke Ovens Site	2.6
Weather and Environmental Predictions	
Canadian Meteorological and Oceanographic Society to create a fund for atmospheric and climate change science	60.0

Table 8: Capital Spending by Business Line ($ millions)

Business Lines	Actual* 1997-1998	Actual 1998-1999	1999-2000 Planned Spending	1999-2000 Total Authorities	1999-2000 Actual
Clean Environment	-	4.9	4.7	8.6	**9.7**
Nature	-	2.7	2.7	2.7	**3.2**
Weather and Environmental Predictions	-	20.4	16.0	29.5	**25.3**
Management, Administration and Policy	-	1.6	1.4	1.8	**1.0**
Total Capital Spending	**36.2**	**29.6**	**24.8**	**42.6**	**39.2**

* The information is not available for the new business line structure approved in 1998-1999.

Explanation of change:

The $14.4 million increase in the 1999-2000 Actual Expenditures over the 1999-2000 Planned Spending is mainly due to:

Clean Environment	
Increased funding for air quality equipment and facilities	3.3
Weather and Environmental Predictions	
Increased funding for ice forecasting equipment & facilities	6.5
Remediation of systems to make them Year 2000 compliant	8.8
Carry forward of unspent Funds related to delayed projects in the North	(2.7)

Table 9: Capital Projects by Business Line ($ millions)

Business Lines	Current Estimated Total Cost	Actual 1997-98	Actual 1998-1999	1999-2000 Planned Spending	1999-2000 Total Authorities	1999-2000 Actual
Nature						
Revitalization of laboratories - National Water Research Institute	4.8	0.8	-	-	-	-
Weather and Environmental Predictions						
Doppler upgrade - Radar Network Modernization	39.2	2.6	5.1	5.7	5.7	**7.0**
Modernization of the Climate Observing Program	8.6	0.2	0.1	-	-	**0.8**
Ice Integration and Analysis System	5.1	0.2	-	-	-	-
Weather station construction Eureka N.W.T.	4.1	0.3	0.1	0.2	0.2	**0.2**
Weather Warning Delivery System	3.8	0.1	0.2	0.1	0.1	**0.9**
Mercury manometer replacement program	3.8	0.5	0.5	0.5	0.5	**1.1**
Automation and real-time access to discharge data-hydrology	3.3	0.3	0.4	-	-	**0.2**
Data processing upgrades for Ice forecasting equipment and facilities	2.7	0.2	-	-	-	-
Upper Air Network Modernization Phase III	2.5	1.1	0.4	-	-	**0.1**
Regional Infrastructure Renewal	0.5	0.5	-	-	-	-

Table 10: Contingent Liabilities ($ millions)

There are currently 21 claims against the Department on various grounds including breach of contract, damage to property, and physical damage.

As of March 31, 2000 the contingent liabilities associated with these claims were estimated at $136 million.

Section 6: Other Information

6.1 Contacts for Further Information

Headquarters Directors of Communications	Regional Managers of Communications
Mark Colpitts Environmental Protection Service **Clean Environment Business Line** 351 St. Joseph Boulevard 12th floor Hull, Quebec K1A 0H3 Telephone: (819) 953-6603 Fax: (819) 953-8125 E-mail: Mark.Colpitts@ec.gc.ca	**Wayne Eliuk** Atlantic Region Environment Canada 45 Alderney Drive Dartmouth, Nova Scotia B2Y 2N6 Telephone: (902) 426-1930 Fax: (902) 426-5340 E-mail: Wayne.Eliuk@ec.gc.ca
Catherine Schellenberg Environmental Conservation Service **Nature Business Line** 351 St. Joseph Boulevard 9th floor Hull, Quebec K1A 0H3 Telephone: (819) 994-6079 Fax: (819) 994-0196 E- mail: Catherine.Schellenberg@ec.gc.ca	**Clément Dugas** Quebec Region Environment Canada 1141 Route de l'Église Sainte-Foy (Quebec) G1V 4H5 Telephone: (418) 648-5777 Fax: (418) 648-3859 E-mail: Clement.Dugas@ec.gc.ca
Norman Naylor Meteorological Service of Canada **Weather and Environmental Predictions Business Line** 10 Wellington Street 4th floor Hull, Quebec K1A 0H3 Telephone: (819) 997-0458 Fax: (819) 953-5888 E-mail: Norman.Naylor@ec.gc.ca	**Maureen Martinuk** Ontario Region Environment Canada 4905 Dufferin Street Downsview, Ontario M3H 5T4 Telephone: (416) 739-4787 Fax: (416) 739-4776 E-mail: Maureen.Martinuk@ec.gc.ca
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Michel Cléroux Ministerial Communications Services 10 Wellington 25th floor Hull, Quebec K1A 0H3 Telephone: (819) 953-9738 Fax: (819) 953-6789 E-mail: Michel.Cléroux@ec.gc.ca	**Anne-Marie Clancy** Pacific and Yukon Region Environment Canada 700-1200 West 23rd Avenue Vancouver, British Columbia V6P 6H9 Telephone (604) 713-9807 Fax: (604) 713-9517 E-mail: ClancyA@ec.gc.ca

6.2 Glossary

Antisapstains	Group of industrial chemicals used in wood processing to prevent sapstaining (fungal black stain) and for wood-preservation; examples are DDAC (Didecyl dimethyl ammonium chloride) and IPBC (3-Iodo-2-propynyl butyl carbamate). When released in the environment, their moderate environmental mobility, but high toxicity can cause local environmental concerns.
Benzene	A toxic substance (a known human carcinogen) present in gasoline.
Biodiversity / biological diversity	The variability among living organisms, including diversity within species, between species and of ecosystems.
Biotoxins	Toxins produced naturally by living organisms.
Bulk water removals	Bulk water removals are the withdrawal and transfer of water out of its drainage basin (or watershed) in quantities which individually or cumulatively could result in damage to the ecological integrity of the system. It is generally understood that bulk removal could include interbasin diversions, pipeline and tanker removals, but not smaller scale removals such as water packaged in small portage containers.
Carbon monoxide	A product of incomplete combustion, carbon monoxide is an odourless, colourless gas which is heavier then air and can affect the functioning of the nervous system.
Dichlorodiphenyl trichloroethane (DDT)	Synthetic, chlorinated, organic pesticide. Although no longer registered for use domestically, it may still enter the Canadian environment through long-range atmospheric transport or release from contaminated sites.
Dioxins and furans	Popular names for two classes of chlorinated organic compounds, formed either as by-products during some types of chemical production that involve chlorine and high temperatures, or during combustion where a source of chlorine is present.
EcoAction 2000	A departmental funding program that helps Canadians take action in support of a healthy environment. It provides financial assistance to non-profit Canadian groups that wish to undertake local environmental projects.
Ecosystem	An integrated and stable association of living and non-living resources functioning within a defined physical location.
Endangered species	A species facing imminent extirpation or extinction.
Endocrine-disruptive substances	Pollutants that mimic the effects of natural hormones, and can affect growth, development and reproduction of fish, wildlife and human.
Environmental management system (EMS)	A systematic approach for organizations to bring environmental considerations into decision making and day-to-day operations. It also establishes a framework for tracking, evaluating and communicating environmental performance. An EMS helps ensure that major environmental risks and liabilities are identified, minimized and managed.
Environmental performance agreements	Agreements with stakeholders to ensure that non-legislative initiatives will provide a credible, effective, consistent and predictable method of meeting environmental objectives.
Greenhouse gases (GHGs)	Gases in the atmosphere that trap the sun's energy and thereby contribute to rising surface temperatures. The main greenhouse gas that contributes to climate change is carbon dioxide (CO_2), a byproduct of burning fossil fuels. Other greenhouse gases include methane (from agricultural sources) and nitrous oxide (from industrial sources).
Green Lane	Environment Canada's World Wide Web site
Ground-level ozone	Ozone (O_3) that occurs near the surface of the earth and is injurious to health. Its toxic effects make this pollutant a major component of smog.
Kyoto Protocol	An international agreement under the United Nations Framework Convention on Climate Change and signed by Canada in April 1998 that establishes binding targets for reducing emissions of greenhouse gases.
Mercury	A heavy metal which is naturally present in the environment and is also emitted into the environment by human activities.
Net cost of program	Amount that reflects the addition of any planned non-budgetary spending and services provided without charge by other departments and agencies and offset by revenues credited to the Consolidated Revenue Fund.

Net planned spending	Amount that is planned budgetary spending net of any revenue credited to the vote.
Nitrogen oxides (NOx)	One of the main components of smog. Nitrogen oxides are produced by the burning of fossil fuels and react in sunlight to produce a brown haze in the atmosphere.
Non-respendable revenue	The equivalent to revenue credited to the Consolidated Revenue Fund (CRF). The term Non-Respendable Revenue better explains the type of revenue it is as opposed to where the revenues will go.
Particulate matter (PM_{10}), ($PM_{2.5}$)	Microscopic solid and liquid particles, of human and natural origin, that remain suspended in the air for some time. PM_{10} refers to particulate matter which is smaller then ten microns in diameter; $PM_{2.5}$ is particulate matter which is smaller then 2.5 microns. Both PM_{10} and $PM_{2.5}$ have been assessed to be a major threat to human health and the environment.
Persistent, bioaccumulative toxic substances	Substances which remain in their toxic form for such an extended period of time that they can be absorbed by living organisms and increase in concentration to more toxic levels as they proceed up the food chain.
Persistent organic pollutants (POPs)	Organic substances that do not break down quickly in the environment and are readily taken in by living organisms through contaminated food, water or air. These pollutants include some pesticides (e.g. DDT, Chlordane, Endrin); industrial chemicals (e.g. PCBs) or byproducts and contaminants (e.g. dioxins and furans).
Petroleum hydrocarbons	A group of fossil fuel compounds that is particularly problematic as a soil contaminant.
Phenols	Large group of aromatic alcohols (*e.g.*, xylenols and catechol) both man-made (*e.g.*, resins, paints, disinfectants) and naturally occurring (decomposing leaves). The major anthropogenic sources are industrial effluents and domestic sewage. Their environmental fate, behaviour, and toxicology varies with their structure.
Pollution prevention	The use of processes, practices, materials, products, substances or energy that avoid or minimize the creation of pollutants and waste and reduce the overall risk to the environment or human health.
Polychlorinated biphenyls (PCBs)	This group of isomers was originally used for its flame-retardant attributes. Used since 1929 in the production of electrical transformers and lubricating oils, PCBs became regulated in Canada in 1977. The importation of all electrical equipment containing PCBs was banned in 1980.
Polycyclic aromatic hydrocarbons (PAHs)	Polycyclic Aromatic Hydrocarbons (PAHs), a very large group of organic substances, both man-made (petroleum products) and naturally occurring (forest fires); examples are benzo*(a)*pyrene and napththalene. Their chemistry, environmental fate, behaviour and toxicology varies with their structure.
Priority Substances List (PSL)	Two lists (list 1 and 2) of priority substances for assessment of toxic under CEPA. The first list 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 being assessed.
Report on Plans and Priorities	A department's primary strategic level planning document, intended for parliamentary and public scrutiny. It portrays the department's mandate, plans and priorities and sets out strategies for achieving expected key results.
Respendable revenue	The equivalent to revenue credited to the vote. The term Respendable Revenue better explains the type of revenue as opposed to where the revenues go.
Species at risk	General term for species that are endangered, threatened or vulnerable.
Stratospheric ozone	The layer of the earth's atmosphere, extending from 15 to 35 kilometers above the earth, that protects life on the planet by absorbing harmful ultraviolet rays.
Sulphur dioxide, SO_2, wet sulphate	A substance present in emissions from combustion of fossil fuels that enters the atmosphere and returns to earth with precipitation as acid rain.
Sustainable development (SD)	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Threatened species	A species likely to become endangered if limiting factors are not reversed.
Toxaphene	Common name for a complex mixture of chlorinated camphene and bornane derivatives with high persistence, high bioaccumulation potential, and high toxicity, extensively used in the past as pesticides (insecticide in cotton plantations), nowadays banned in many industrialized countries, including Canada and U.S.A., but still in limited use elsewhere.

	Due to high persistence and long-range atmospheric transport, toxaphene is ubiquitously present in the environment.
Toxic substance	According to the *Canadian Environmental Protection Act* definition: A substance that is entering or may enter the environment in a quantity or a concentration or under conditions: • having or that may have an immediate or long-term harmful effect on the environment, or • constituting or that may constitute a danger to the environment on which human life depends, or • constituting or that may constitute a danger in Canada to human life or health.
Transfer payments	A payment authorized by a budgetary appropriation for which no goods or services are received in exchange, and that neither gives rise to financial claim nor represents the liquidation of financial obligations.
Virtual elimination	The ultimate reduction of the quantity or concentration of a substance released into the environment as a result of human activity to the lowest concentration that can be accurately measured using sensitive, but routine sampling and analytical methods.
Volatile organic compounds (VOC)	One of the main components of smog. Human activities contributing volatile organic compounds to the environment include the incomplete combustion of fossil fuels and the evaporation of liquid fuels, solvents and organic chemicals such as paints and cleaners.
Vote	A request to Parliament for appropriation. A vote becomes an appropriation only when the Appropriations Act in which it is contained receives royal assent.

6.3 Index