

SANITATION COUNTRY PROFILE*

CANADA

Countries usually report on the issue of sanitation from a broader perspective than just basic sanitation (i.e. excreta disposal systems such as sewage, latrines etc.), to include disposal of other types of wastes such as solid, hazardous and radioactive wastes, the preparation of the Country Profile on sanitation has adopted this approach. Consequently, sanitation is viewed as an integral concept that involves the adequate management and disposal of different types of wastes with a view to minimizing harmful effects to human health and the environment. Different types of wastes include: a) water-borne wastes such as residual waters and discharge from point and non-point sources of pollution (e.g. disposal of urban sewage, run-off from industrial and agricultural processes into water courses and/or oceans); b) solid wastes such as garbage and scrap from domestic, industrial or agricultural sources; c) hazardous wastes, including chemical and biological wastes; and d) radioactive wastes resulting from nuclear plants, hospitals, laboratories or industrial processes. The Sanitation Country Profile covers these different types of wastes; however, radioactive wastes are beyond the scope of the current paper Please refer to the following website for info: <http://www.aecl.ca/index.asp>

SANITATION COUNTRY PROFILE

CANADA

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* This document is based on information submitted and reviewed by the Government of Canada.

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1. Decision-Making for Sustainable Development:

In Canada, sustainable development is the jurisdictional responsibility of all levels of government. In order to ensure that work toward sustainable development at all government levels is mutually supportive and has a common goal, various mechanisms have been implemented. One such mechanism is the Canadian Council of Ministers of the Environment (CCME). It plays a role in encouraging better information collection and brings together environment ministers from the federal, provincial, and territorial governments for discussion and joint action on environmental issues of national and international concern. At the local level, the Federation of Canadian Municipalities (FCM) promotes sustainable community development that support information sharing and networking among municipalities. Public consultation is a key element of the sustainable development strategies required of all federal departments. The federal minister of Finance receives advice in the form of pre-budget submissions from environmental groups, business, and other interested parties on various ways to integrate environmental considerations into the budget process. The National Round Table on the Environment and the Economy takes an impartial, inclusive approach, with open and free debate, to issues related to the environment and the economy. The Youth Round Table on the Environment gives Canadian youth, from a range of backgrounds, perspectives, and values.

Multilateral Environmental Agreements:

Within Canada the distribution of responsibility between federal, provincial and territorial governments for sustainable development issues is complex. While the federal government conducts international treaty negotiations on behalf of Canada, implementation of international agreements falls to the level of government that has constitutional jurisdiction over the subject matter. This necessitates the creation of consultative structures across all levels of government during both negotiations and the implementation phase. Within the federal government, each minister is responsible for sustainable development within his or her department, and for submitting updates of their sustainable development strategies every three years in accordance with the *Auditor General Act*. Apart from carrying out consultations across all levels of government, the federal government consults widely among civil society stakeholders (such as Aboriginal communities, youth, industry, non-governmental organizations) about the negotiation, ratification and implementation of international legal instruments relating to sustainable development and the environment. Further, Canadian delegations to international negotiations routinely include aboriginal, industry and NGO representatives, as well as provincial and territorial representatives. Where appropriate, youth delegates are also included.

Water Resources:

There is no single mechanism for coordinating federal and provincial government water resource management programs and policies in Canada. Mechanisms exist but are sector-specific (e.g., fisheries, oceans agriculture, environment, and health). Under the Canadian Council of Ministers of the Environment there is comprehensive action to protect the quality of drinking water from the source to the tap, using a multi-barrier approach. All jurisdictions emphasize the importance of strong drinking water standards based on the Guidelines for Canadian Drinking Water Quality. Co-ordination at a more local level is managed with the participation of

provincial and municipal governments. Municipalities implement respective provincial water strategies. To prevent or resolve water management issues across the Canada-United States boundary, federal and provincial officials participate in numerous international investigative and control boards for different drainage systems, mostly reporting to the International Joint Commission under the Boundary Waters Treaty.

Canada has approximately seven per cent of the world's renewable water resources. However, while about 60 per cent of Canada's freshwater drains north to the Arctic Oceans and the Hudson Bay, 85 per cent of the Canadian population lives in the south, where pollution and escalating demand are increasing pressure on water resources. Canada also has the longest marine coastline of any country, the second largest continental shelf in the world and a total offshore marine area equal to 40% of the Canadian land mass, with complex ecosystems that connect inland freshwater systems to near shore marine waters. However, the sources of water and its distribution and availability vary considerably across the country. Canada's Atlantic and Pacific coastal areas receive an average of between 1100 and 1400 millimetres of precipitation per year. The southern portions of western Canada's prairie provinces receive less than 500 millimetres per year. Those regions experience periodic droughts, while massive floods in other parts of Canada have affected tens of thousands of people.

The federal government has direct constitutional jurisdiction for the conservation and protection of oceans, fisheries and navigation, Aboriginal and other federal lands, and international relations, including those related to waters shared with the United States. In order to prevent pollution of water supplies, the federal government develops regulations under the Canadian Environmental Protection Act to control the release of toxic substances, and under the Fisheries Act to control the release of deleterious substances into water. Canadian provinces and territories have the primary jurisdiction over most areas of water management and protection. This includes some authority over shorelines to the low water mark and some marine areas. They may delegate some water resource management functions to local authorities that may be responsible for a particular area or river basin. Most major uses of water in Canada are permitted and or licensed under provincial water management authorities.

In practice, all orders of government, communities, the private sector and individual Canadians have responsibilities and make decisions every day that influence the health and sustainability of freshwater and coastal marine resources. There is a steady and increasing collaboration on water issues.

Each of Canada's provincial governments has enacted legislation that governs the use of water within their boundaries. In order to prevent pollution of freshwater supplies, the federal government develops regulations under the Canadian Environmental Protection Act to control the release of toxic substances, and under the Fisheries Act to control the release of deleterious substances into water.

Local Authorities:

Canada views the role of local authorities as critical in achieving sustainable development, both nationally and internationally. Canadian municipalities have taken a leadership role in developing a high quality of community life that includes respect for the needs

of both economic development and environmental protection. Many municipalities in Canada have adopted environmental initiatives. Local authorities generally include environmental and social considerations in their official plans, planning by-laws, and general policies. Most of these local authorities involve representation of women and/or youth. It is not possible to accurately estimate the percentage of the population involved in the decision-making process, as most of main debates are discussed in public consultations. Governments generally support local *Agenda 21* initiatives.

Self-government and co-management agreements:

The Government of Canada recognizes the inherent right of self-government as an existing right within section 35 of the *Constitution Act, 1982*. Recognition of the inherent right is based on the view that the Aboriginal peoples of Canada have the right to govern themselves in relation to matters that are internal to their communities, integral to their unique cultures, identities, traditions, languages and institutions, and with respect to their land and resources. A number of co-management boards have been established, usually within the context of a land claim or self-government agreement, to facilitate the participation of Aboriginal communities in the stewardship of forests, water and wildlife resources such as caribou, whales, and fur-bearing animals. For instance, the *Nunavut Agreement* (1993) requires that communities nominate holders of traditional knowledge to make up fifty percent of the members of the wildlife co-management board.

Workers and Trade Unions:

Labour organizations are represented on Canada's National Roundtable on Environment and Economy, providing advice to the federal government and stakeholders across the country on sustainability issues. A recent initiative of the Roundtable is the development of sustainability indicators, intended to be used in a variety of activities, including the federal budgeting process. In Canada, labour groups take part in national *Agenda 21* discussions and implementation. Labour has focused attention on linking environmental issues to more traditional issues of workplace health and safety. Labour groups have played an important role in improving the environmentally sound management of chemicals in Canada, promoting the adoption of high national standards of environmental protection especially in pollution prevention. Canadian unions have also worked for the establishment of environmental rights such as joint labour-management environment committees in workplaces, the legal right to refuse to pollute and "whistle-blower protection" for workers reporting environmental violations.

Business and Industry:

Business organizations play a key role on Canada's National Roundtable on Environment and Economy, providing advice to the Federal Government and stakeholders across the country on sustainability issues. Federal policies encourage increasing the efficiency of resource use, including reuse, recycling, and reduction of waste per unit of economic output. The *Accelerated Reduction/Elimination of Toxics (ARET)* is an example. Under this program, 316 facilities from companies and government organizations reduced their emissions of 117 toxic substances by 67 per cent of 1993 levels. A second program will aim to echo the success.

A. Basic Sanitation: *For aspects related to Water, refer to the Country Profile on Water.*

B. Solid Wastes: No available information.

C. Hazardous Wastes:

Control of hazardous waste and hazardous recyclable material within Canada is a shared responsibility. The federal government regulates international and inter-provincial/territorial movements, while provincial/territorial governments regulate intra-provincial movements of hazardous waste and hazardous recyclable material. Environment Canada is responsible for implementing terms of international agreements, while the provinces and territories are responsible for the establishment of controls for licensing hazardous waste generators, carriers and treatment facilities within their jurisdiction. Cooperation on setting a national definition and standards for hazardous wastes, as well as promoting a national approach to Environmentally Sound Management in Canada, is through the Canadian Council of Ministers of the Environment (CCME).

The *Canadian Environmental Protection Act 1999 (CEPA 99)* promotes waste prevention and minimization through implementation of waste reduction plans for exports. The requirement for these plans is included in the proposed Export and Import of Hazardous Wastes and Hazardous Recyclable Material Regulations (EIHWR). These Regulations implement Canada's international obligations to protect the environment of other countries from uncontrolled hazardous waste exports from Canada. These obligations stem from the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989* (ratified by Canada in 1992); the *OECD Decision of Council on the control of transboundary movements of wastes destined for recovery operations, C(2001)107, May 2001*; and the *Canada-U.S.A. Agreement on the Transboundary Movement of Hazardous Wastes, 1986* (amended in 1992).

CEPA is designed to ensure that potential risks from chemical substances, biotechnology products, industrial emissions, effluents and wastes are scientifically assessed. It provides for strict controls of substances judged to be "toxic" and specifies time frames for developing and implementing measures for controlling or eliminating their use. It promotes cooperation/partnership with industry, environmental non-government organizations, Aboriginal peoples, educational institutions, municipalities, public health NGOs and provinces/territories. CEPA 1999 is also a tool for risk management.

The Stockholm Convention on Persistent Organic Pollutants (POPs) has been a major environmental foreign policy priority for Canada in view of the threats toxic substances pose to human health and the environment, particularly in Canada's north. Canada has been an active participant in international negotiations and was the first country to sign and ratify the Convention in May 2003.

Radioactive Wastes: Beyond the scope of the current paper Please refer to the following website for info: <http://www.aec.ca/index.asp>

2. Programs and Projects:

The Canadian Environmental Protection Act (CEPA), 1999

The Canadian Environmental Protection Act (CEPA - 1999) implements Canada's international obligations under the London Convention and its 1996 Protocol to control the disposal of wastes at sea. Similar legislation is in place in 80 countries to control disposal at sea. Federal legislation has prohibited disposal at sea without a permit since 1975, under the former *Ocean Dumping Control Act*. This is a risk assessment and risk management program that implements on a national basis the precautionary principle and the Canadian waste management goals of pollution prevention, sustainable development and user pay. Permits may only be granted for the six types of waste or other matter listed in Schedule 5 and only following an environmental assessment which must be conducted according to Schedule 6. It evaluates materials by waste type and requires the restriction of contaminants within those wastes that cause toxicity, persistence or bioaccumulation. It also requires an evaluation of alternatives to disposal and means to reduce the waste or divert it to a beneficial use. Permits are issued throughout the year as needed, when it is the environmentally preferred and practical solution to the waste disposal issue. About 100 permits are issued per year mostly for dredged material.

Protecting Canada's Coastal and Marine Environments The major threats to the health, productivity and biodiversity of the marine environment result from human activities on land – in coastal areas and further inland. It is estimated that approximately 80 percent of the pollution load in oceans, emanates from land-based activities which includes municipal, industrial and agricultural wastes and run-off, as well as atmospheric deposition. This pollution affects the most productive areas of the marine environment, including estuaries and near shore coastal waters. These areas are likewise threatened by physical alteration of the coastal environment, including destruction of habitats of vital importance for ecosystem health. In addition, contaminants which pose risks to human and environmental health can be transported long distances by watercourses, ocean currents and atmospheric processes.

In 1995, the United Nations Environment Programme (UNEP) *Global Programme for Action for the Protection of the Marine Environment from Land-based Activities (GPA)* was adopted to assist nations in protecting human health, and preventing, reducing and controlling land-based activities which threaten the health, productivity and biodiversity of their marine and coastal environments and associated freshwater systems. . Developed in response to Agenda 21, the GPA is an international non-legally binding agreement to assist national and regional authorities to prevent, reduce and control marine degradation from land-based activities. It calls on countries to develop national and regional programmes of action .

Canada's National Programme of Action (NPA)

Recognizing that marine pollution from land-based sources is a significant threat to Canada's coastal and marine environments, and the merits of an integrated and co-ordinated approach, Canada was the first country to develop a National Programme of Action (NPA) in response to the GPA. *Canada's National Programme for Action for the Protection of the Marine Environment from Land-based Activities (NPA)* was released in June 2000 as a partnership among federal, provincial and territorial governments aimed at preventing marine pollution from land-based activities and protecting habitat in coastal zones of Canada.

Implementation of the NPA involves using sustainable and integrated environmental management, as well as other approaches such as the harmonization of integrated coastal management, river basin management and land-use planning.

The NPA provides the national framework and plan for protecting coastal and marine environments in Canada, an assessment of the state of the marine and coastal environments across Canada and the management objectives and strategies and priority actions that need to be implemented. It focuses on addressing problems within 14 categories under the 2 broad themes of contaminants and physical alteration and destruction of habitat. At the national level, high priority for action is currently assigned to sewage, persistent organic pollutants, shoreline construction and alteration, and wetland and salt marsh alteration. Since the release of the NPA in 2000 and as part of the NPA Action Plan (2002-06), Canada is also re-examining its priority ranking on nutrients, given increased domestic and international level attention to the human and environmental impacts from nutrient inputs to the freshwater and marine environments.

- A. Basic Sanitation: *For aspects related to water, refer to the Country Profile on water.*
- B. Solid Wastes: Refer to info above on Canada's National Programme of Action.

Across Canada, a high proportion of the population is served by wastewater collection and treatment systems. However, wastewater receives various levels of treatment to remove pollutants prior to discharge, ranging from no treatment (as in raw sewage discharge) to very sophisticated and thorough treatments. Wastewater effluent is released to a wide variety of receiving environments: lakes, ponds, streams, rivers, estuaries and coastal ocean environments. The 2001 report "The State of Municipal Wastewater Effluents in Canada"⁵ outlines the sources and the nature of contaminants entering municipal sewer systems, the degree of municipal wastewater treatment across Canada, the wide variety of impacts that municipal wastewater effluents can have on water quality and on plant and animal life, and the implication of these impacts for human health and beneficial water uses, such as shellfish harvesting and recreation.

Environmental and health impacts of wastewater effluents have been clearly established in the scientific literature. A Canadian review suggests that actions need to be taken to address the direct harmful impact of wastewater effluent on the environment. Harmful impacts include negative effects on fish and wildlife populations, oxygen depletion, beach closures and other restrictions on recreational water use, restrictions on fish and shellfish harvesting and consumption and restrictions on drinking water consumption. Assessment Reports on ammonia in the aquatic environment and inorganic chloramines, published in 2001, point to municipal wastewater treatment plants as the most important source of entry of these substances into the environment that must be targeted in risk management. A similar conclusion was reached earlier in the assessment report on chlorinated wastewater effluents. Emerging science indicates that other substances such as some pharmaceutical and personal care products, primarily entering the environment in wastewater effluents, may also pose threats to human health, aquatic life and wildlife.

In Canada, all levels of government share responsibility for managing the collection and treatment of wastewater, the performance of wastewater facilities and the control of environmental and health impacts of wastewater.

Hazardous Wastes:

Through CCME, work is underway on the development of a national environmentally sound management (ESM) regime for hazardous wastes and hazardous recyclable materials. The proposed ESM program harmonizes hazardous waste management standards between Canada and the US, and will address Canada's international obligations. Canada is also actively involved in work under the Organization for Economic Cooperation and Development on ESM for recycling. Canada obtained agreement with Mexico and the United States for the development of a North American action plan on environmentally sound management at the June 2001 meeting of the NAFTA Commission on Environmental Cooperation (CEC). In addition, consultations have been initiated on planned amendments to the *Export and Import of Hazardous Wastes Regulations* on criteria for ESM to assess notices for proposed imports and exports, require reduction plans for exports for final disposal and incorporate other changes designed to improve the effectiveness of these regulations. New controls on the import of PCB wastes are also being developed.

Canada continues to work domestically and internationally on the virtual elimination of substances under the federal *Toxics Substances Management Policy*. The *Policy* calls for the virtual elimination of toxic substances that are persistent and bioaccumulative, and that are present in the environment mostly from human activity. The Policy Framework for Environmental Performance Agreements is a program that requires non-regulatory initiatives to respect four essential principles: credibility, accountability, results and cost-effectiveness. It calls for eight required elements: clear objectives and measurable results, clearly defined roles and responsibilities, public participation, verification of results, incentives and consequences, continuous improvements, regulatory backstop and public reporting. Pollution prevention plans are often required for those using, releasing or producing a toxic substance. The Accelerated Reduction/Elimination of Toxics (ARET) program is voluntary and non-regulatory, targeting 117 toxic substances (including the virtual elimination of 30 that persist in the environment and may accumulate in living organisms).

The Domestic Substances List enables categorization of substances used in Canada and then, if required, to conduct screening level risk assessments. Under CEPA 1999, all domestic substances must be categorized by 2006. As well, various toxic substances including substances in commerce, industrial emissions, effluents and wastes have been put on a Priority Substances List. In-depth scientific assessments are conducted within five years because of the apparent potential for serious harm to human health and the environment. Since 1998, the Government has identified 69 priority substances. As of June 2001, 34 of these were determined to be toxic.

Radioactive Wastes: *Beyond the scope of the current paper Please refer to the following website for info: <http://www.aecl.ca/index.asp>*

C.

Water Resources: Canada has approximately seven per cent of the world's renewable water resources. However, while about 60 per cent of Canada's freshwater drains north, 85 per cent of the Canadian population lives in the south, where pollution and escalating demand are increasing pressure on freshwater resources.

A. Basic Sanitation: *For aspects related to freshwater, refer to the Country Profile on Freshwater.*

Approximately 1, 000, 000 m³ of wastewater is treated per day. As the result of inquiries into water safety raised by incidents in Ontario and Saskatchewan, most provinces in Canada are revising legislation that governs the supply of potable water. Revisions include more stringent water quality regulations, and more frequent monitoring and reporting. Another development is the requirement to have all treatment plant operators licensed, and to have periodic evaluations of the potable water supply infrastructure and operations by a qualified professional.

B. Solid Wastes: No available information.

C. Hazardous Wastes: In the area of ESM, Canada is establishing development tools such as general criteria, national standards on waste management processes, national standards on waste types of concern and other resources. Once these tools have been developed, they will be implemented and will apply to both imported and domestically generated hazardous wastes. Significant work is required for the development and implementation of criteria for ESM criteria for the review of export and import notices under Canadian legislation. To strengthen existing rules and ensure that the import controls for PCB wastes are as stringent as current export controls, Environment Canada is amending the *PCB Waste Export Regulations*.

Consistent with Canada's international obligations, Environment Canada is developing a regulatory framework for the export and import of prescribed non-hazardous wastes destined for final disposal. Two rounds of national multistakeholder consultations have been held. From the second, a report titled *National Stakeholder Consultations on the Federal Export and Import of Prescribed Non-Hazardous Wastes Destined for Final Disposal* was prepared. New regulations are being developed on the inter-provincial transport of hazardous wastes and hazardous recyclable materials to protect the environment from risks posed by uncontrolled inter-provincial movements. These Regulations will ensure that wastes are transported to, and received only, at authorized facilities for final disposal and recycling operations. Regulations have been ed for the control and management of hazardous wastes within the "federal house" of federal departments, agencies, Crown Corporations, Aboriginal land and federal works and undertakings (previously un-regulated). Information gathering has begun on the liability and compensation project (Basel Liability and Compensation Protocol) in anticipation of potential future accession to the Protocol.

Radioactive Wastes: Beyond the scope of the current paper Please refer to the following website for info: <http://www.aecl.ca/index.asp>

D.

3. Capacity-Building, Education, Training and Awareness-Raising:

Public Participation and Involvement:

One of the key non-governmental organizations that supports public consultation and participation in environmental management is the Canadian Environmental Network (CEN). The CEN is a national network of over 700 community-based, national and regional environmental organizations, and provides an effective consultation mechanism for effective capacity-building within the broader environmental community. National and provincial roundtables are another example of coalition-building institutions that identify, explain and promote the principles and practices of sustainable development. The National Round Table on the Environment and Economy is an independent agency of the federal government, committed to providing decision makers and opinion leaders with reliable information and objective views on the current state of the debate on the environment and the economy. Members are Canadians representing a broad range of regions and sectors. A 1998 Consultations Directive requires federal departments to identify in each Memorandum to Cabinet the key stakeholders consulted, the consultation process employed, the outcomes, and any follow-up consultations planned as part of the implementation of a policy. The federal document *Policy Statement and Guidelines on Consulting and Engaging Canadians* recognizes that in order to serve Canadians, a “citizen focus” must be built into all its activities, programs and services. An integral component of this service is providing information to citizens, and consulting and engaging citizens in the policy development process. The policy statement and guidelines explore new ways in which governments will be able to consult and engage Canadians. Other non-governmental structures also play a key role in Canada’s environmental management regime.

- A. Basic Sanitation: For aspects related to Water refer to the Country Profile on water.
- B. Solid Wastes: No available information.
- C. Hazardous Wastes: Federal and provincial partners have resources for the development, management, compliance and enforcement of instruments (regulations) for the protection of the environment and human health through the control of movements of hazardous wastes, hazardous recyclable materials and prescribed non-hazardous wastes destined for final disposal. Canada has provided support to capacity-building through assistance directed to Basel Convention Regional Training Centers. The role of these centers is to help countries implement the Basel Convention, as well as to encourage the introduction of cleaner production technologies and the use of environmentally sound waste management practices. Important activities include providing guidance on technical and technological issues as well as advice on enforcement aspects of the Convention. There are also opportunities for students to gain experience and understanding of issues related to management of hazardous wastes through on-going cooperative programs with universities and colleges. In-house and on-site training to industry stakeholders has been provided on understanding of the application of hazardous waste regulations and procedures for reporting.
- D. Radioactive Wastes: Beyond the scope of the current paper. Please refer to the following website for info: <http://www.aec.ca/index.asp>

Information:

The *National Pollutant Release Inventory*, established in 1993, is a legislated, nationwide, publicly accessible inventory of pollutants being released to the environment from

facilities located in their communities. It tracks on-site releases of pollutants to air, water and land. The data is used for research, formulating environmental objectives and codes of practice, issuing guidelines, or reporting on the state of the environment. The NPRI is published annually and available online.

The *Canadian Pollution Prevention Information Clearinghouse* is a comprehensive Internet tool that links Canadians with the information they need to practice or support pollution prevention. It includes over 1,200 pollution prevention references under 40 different industrial sectors (www.ec.gc.ca/cppic).

National Programme of Action Clearing-House

- An important tool for promoting NPA awareness and understanding is the NPA Clearing House mechanism, a Web-based public information system. The clearing house provides practical advice and links to NPA contacts and other experts, and responds to most commonly asked questions related to NPA issue areas. The NPA document and the NPA First National Report document can also be accessed. The Web Site address for the clearing house is: **www.npa-pan.ca**
Basic Sanitation: For aspects related to Water, refer to the Country Profile on Water.

A. Solid Wastes: No available information.

B. Hazardous Wastes: Environment Canada maintains a web site for the public education with respect to developments and movements of hazardous wastes. See: <http://www.ec.gc.ca/tmd/tmdhp.htm>. The newsletter *Resilog* describes status and events regarding the transboundary movement of hazardous wastes. See: <http://www.ec.gc.ca/resilog/resinews.htm>.

D. Radioactive Wastes: Beyond the scope of the current paper. Please refer to the following website for info: <http://www.aecl.ca/index.asp>

4. Science for Sustainable Development: Research and Technologies:

Science for Sustainable Development: The federal government uses inclusive “science advisory bodies” to gain science input into its decision-making. *Science and Technology for the New Century: A Federal Strategy*, was adopted in 1996. It involves a committee of Assistant Deputy Ministers to coordinate government-wide approaches to managing S&T and to ensure that departmental initiatives and priorities are shared across the federal science and technology community. The *Advisory Council on Science and Technology*, with eminent representatives from industry and academia, reviews the nation's performance in S&T and provides the Prime Minister with expert, non-partisan advice on national science and technology goals and policies and their application to the Canadian economy. The *Council of Science and Technology Advisors* (CSTA) provides the federal government with expert advice on science and technology issues requiring strategic attention.

A. Basic Sanitation: *For aspects related to Water, refer to the Country Profile on Water.*

B. Solid Wastes: No available information.

C. Hazardous Wastes: Launched in 1998, the Toxic Substances Research Initiative is managed by Health Canada and Environment Canada. The key objective was to enhance the knowledge base needed to define and reduce the risk and adverse effects of toxic substances on Canadians and their environment. A significant amount of research is underway on hormone disrupting substances, particularly to identify substances that are not highly persistent, but are still widespread in the environment.

D. Radioactive Wastes: No available information.

Financing: *For aspects related to cooperation or assistance to other countries, please refer to the section on Cooperation (infra).*

A. Basic Sanitation: *For aspects related to Water, refer to the Country Profile on Water.* No available information.

B. Solid Wastes: No available information.

C. Hazardous Wastes: Activities for the environmentally sound management of toxic chemicals are financed from federal and provincial/territorial government budgets.

D. Radioactive Wastes: Beyond the scope of the current paper. Please refer to the following website for info: <http://www.aec.ca/index.asp>

6. International Cooperation: *For aspects related to funding from domestic sources, please refer to the section on Financing (supra).*

The purpose of Canada's ODA is to support sustainable development in developing countries in order to reduce poverty and to contribute to a more secure, equitable and prosperous world. CIDA's *Sustainable Development Strategy 2004-2006: Enabling Change* was released to the Canadian parliament on February 16, 2004.. The Sustainable Development Strategy sets out a number of key directions for the Agency for the next three years, which will be refined under CIDA's transformation exercise as part of the Government of Canada's current [International Policy Review](#). These directions include the following:

- greater alignment of aid with the plans and priorities of partner countries;
- sharpened focus on poverty reduction (including greater concentration of resources on the poorest countries);
- improved coherence between aid and non-aid policies;
- greater emphasis on security and development;
- strengthened effectiveness of institutional partners; and
- renewed efforts to engage Canadians.

The new Strategy brings together and builds upon many of the changes that the Agency has made since [Sustainable Development Strategy 2001-2003: An Agenda for Change](#). In particular, it will facilitate the implementation of the 2002 [Canada Making a Difference in the World: A](#)

[Policy Statement on Strengthening Aid Effectiveness](#), which outlines CIDA's commitments to implement the internationally agreed-upon principles of aid effectiveness through new programming approaches and better focus of effort.

The Strategy is based on the four interconnected dimensions of sustainable development for CIDA: economic well-being, social development, environmental sustainability and good governance. These dimensions are reflected in the Key Agency Results (KARs), which are in turn linked to the global Millennium Development Goals. The KARs have been refined and updated in the Strategy and now include outcomes, targets and indicators.

Canada's International Assistance Envelope provides Official Development Assistance (ODA), delivered through a broad range of programs and policies. Most ODA is directed at low-income countries through the Canadian International Development Agency (CIDA). CIDA's bilateral development assistance programming is complemented by support for relevant international financial institutions and other multilateral organizations, particularly those of the UN system.

ODA has been identified as the main source of external funding to assist developing countries in the implementation of *Agenda 21*. Canada remains committed to the long-term goal of setting ODA at 0.7 per cent of gross national product as the fiscal situation permits. In 2002, Canada committed to increase its development assistance by eight per cent annually, resulting in doubling by the end of the decade, with 50% of new resources to be directed to Africa.

Through the Global Environment Facility Canada contributes to international funding for capacity-building, technology transfer and adaptation activities in the areas of climate change, biodiversity, international waters, ozone depletion, persistent organic pollutants and land degradation. Canada also established at the World Bank the C\$20 million Canada Persistent Organic Pollutant (POPS) Fund to help build the capacity of developing countries to manage persistent organic pollutants. Canada also contributes to other multilateral organizations that work on water including the World Health Organization, UNICEF, UNEP, etc.

From 1986/87 to 2001/02, CIDA's total disbursements on water-related programming, including sanitation, totaled \$600 million, or 2.5% of CIDA budgets for the same period. CIDA's programming approach combines work on water, sanitation and hygiene. As such, it is difficult to determine an exact figure for investments in sanitation alone. The main focus of CIDA's support to water and sanitation-related programming has been on strengthening institutions and building capacity of local and national institutions to deliver adequate water and sanitation-related services.

Through the Canada Fund for Africa, Canada has committed \$50 million to water-related investments, including: \$15 million to UN Habitat's Water and Sanitation Trust Fund; \$10 million to the Global Water Partnership to fund the development of IWRM plans in selected African countries; \$20 million to support the African Water Facility; and, \$5 million to the African Development Bank to strengthen capacity in water-related activities.

Debt Relief: Canada has forgiven more than C\$1.3 billion in ODA debt since 1978, including all ODA debts of Heavily Indebted Poor Countries (HIPC), except Myanmar. Canada has also contributed C\$315 million to the HIPC Trust Funds at the International Monetary Fund and the World Bank. Canada has provided ODA on a grant-only basis since 1986 and regularly participates in debt rescheduling exercises through the Paris Club group of creditors. These exercises sometimes include debt forgiveness for countries with debt repayment difficulties, including middle -income countries. Through this mechanism, Canada has provided more than \$2 billion in debt forgiveness on commercial sovereign loans.

Trade with developing countries: The most visible element of Canada's hemispheric commitment to sustainable development is the Free Trade Area of the Americas (FTAA). Created out of the Summit of the Americas process, some FTAA commitments might support the Summit objectives of strengthening democracy, promoting human rights and reducing inequalities and poverty. The FTAA may help countries in the Americas achieve these objectives. Canada is engaged in other regional and bilateral free trade initiatives, including ongoing negotiations with Singapore and with the Central America Four countries (El Salvador, Guatemala, Honduras and Nicaragua). Canada is also involved in exploratory discussions on the possible scope of proposed free trade agreements with the Caribbean Community and Common Market (CARICOM), the Andean Community countries (Bolivia, Colombia, Ecuador, Peru and Venezuela) and the Dominican Republic. Canada seeks to take due account of the development disparities among the parties involved in these initiatives.

Multilateral Environmental Agreements:

International legal instruments relating to wastes that have come into force for Canada, or which have been ratified or acceded to, since 1997, include: the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter; 1992 Protocol to the International Convention on Civil Liability for Oil Pollution Damage; LRTAP Protocol Concerning Heavy Metals; LRTAP Protocol concerning Persistent Organic Pollutants; OECD Decision C (2001) 107 concerning the Revision of Decision C(92)39/FINAL on the Control of Transboundary Movements of Wastes Destined for Recovery Operations; International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances; and the Basel Protocol on Liability and Compensation (open for signature) and the Protocol on Environmental Protection to the Antarctic Treaty.

Arctic Council's Regional Programme of Action

At the international regional level, Canada also plays an important leadership role in the development of the Arctic Council's *Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities (RPA)*, which was adopted by Arctic Council Ministers in 1998. The RPA was prepared by the Arctic Council Working Group for the Protection of the Arctic Marine Environment (PAME). PAME members include representatives from 8 Arctic Council states: Canada, Denmark / Greenland, Finland, Iceland, Norway, Russian Federation, Sweden and United States. PAME focuses on addressing policy and non-emergency response measures that protect the marine environment from land- and sea- based activities; and to coordinate action programs and guidelines that complement existing international arrangements. Its current activities include the development of an Arctic Marine Strategic Plan (AMSP), with Iceland and Canada as lead countries, which will guide Arctic

Council activities related to the protection of the arctic seas. The objective of the strategy is to promote an integrated and strategic approach to address the challenges of the Arctic coastal and marine environment.

A. Basic Sanitation: *For aspects related to freshwater, refer to the Country Profile on Freshwater.*

B. Solid Wastes: No available information.

C. Hazardous Wastes: There is close cooperation with the United States Environmental Protection Agency, since most of Canada's exports and imports of hazardous wastes and hazardous recyclable materials are to and from the United States. In addition, there is regular participation in international fora to discuss and negotiate legally binding agreements and protocols dealing with transboundary movements of hazardous wastes and hazardous recyclable materials. There are also cooperative initiatives through bilateral involvement using memoranda of understanding including infrastructure for training and technology transfer for the environmentally sound management of hazardous wastes with India, Chile and China. Environment Canada, together with the International Development Research Center, has provided \$70,000 Canadian as seed money to initiate the activities of the Regional Training Center in Montevideo, to support the implementation of the Basel Convention and the environmentally sound management of hazardous wastes. Environment Canada is also managing the implementation of India Environmental Institutional Strengthening Project funded by CIDA under bilateral assistance project with the Indian Ministry of Environment and Forests. The project focuses on building institutional capacity in India for improved air quality and sound management of hazardous wastes and toxic chemicals. One of the major outputs under the project is the establishment of a Regional Training Center for the Sound Management of Hazardous Wastes under the Basel Convention, in collaboration with the United Nations Asian and Pacific Center for Technology Transfer in Delhi.

Internationally, Canada has long been involved in developing the science and demonstrating the need for international action on Persistent Organic Pollutants (POPs). Canada was the first country to commit specific funding to aid developing countries, and those with economies in transition, to build their capacity to deal with POPs. The Government of Canada, through CIDA, provided \$20 million to the Canada POPs building initiatives such as awareness-raising, supporting the development of inventories of POPs and national plans, and the development of innovative pilot projects.

D. Radioactive Wastes: Beyond the scope of the current paper Please refer to the following website for info: <http://www.aecl.ca/index.asp>

Annex 1

Status

Population: The total population in Canada is 32,207,113. The birth rate is 10.99 births/1,000 population; the death rate is 7.65 deaths/1,000 population; the infant mortality rate is 4.88 deaths/1,000 live births; the life expectancy at birth is 79.83 years and the fertility rate is 1.61 children born per woman. In Canada, the age structure of population was influenced in the second half of the 20th century by the baby boom during 1946 to 1966, increased life expectancy, and declining birth rates that have remained below the replacement level since 1972. As a consequence, Canada's population, like that of other industrialized nations, is aging. This demographic reality presents new challenges for Canadian society. In light of the evolving make-up and age structure of Canadian society, demographic considerations are critical to ensuring that government policies and programs remain responsive to the changing needs and circumstances of the population. Within Canada, immigration now accounts for about 60 per cent of the country's total population growth. In the present context of low fertility and possible negative natural increase by 2024, immigration becomes the major factor in Canada's population growth. The settlement patterns of immigrants and refugees mean that the impact of population growth in Canada is highly concentrated in the largest urban centers. The number and proportion of the elderly population have been increasing, as people live longer and healthier lives. The population 65 years and over was 12.6 per cent in 2000. By 2050, this segment of the population will account for about 25 per cent of the total Canadian population.

Canada's primary objectives domestically include the promotion of a better understanding of the impact of population dynamics on progress towards sustainable development, and the development of informed policies and strategies aimed at addressing the pressures of population on sustainable development. Canada has set out policies, programs, and legislation at various levels that address population-related issues such as employment, immigration, health, income security and social welfare. These policies reflect demographic considerations, the public's changing needs, and the goals of enhancing full inclusion and participation by vulnerable groups of the population, including youth, seniors, and persons with disabilities, recent immigrants, single parents and Aboriginal people.

Economy: As an affluent, high-tech industrial society, Canada today closely resembles the US in its market-oriented economic system, patterns of production and high living standards. The 1989 US-Canada Free Trade Agreement (FTA) and the 1994 North American Free Trade Agreement (NAFTA) (which includes Mexico) touched off a dramatic increase in trade and economic integration with the US. The GDP is US\$ 923 billion and GDP per capita is \$US 29,400.

Poverty: Canada has made notable progress on reducing the incidence of poverty domestically. By the late 1990s, the percentage of Canadians considered to be low-income had dropped to 11.5 per cent. Although Aboriginal peoples play an increasingly important role in the social and economic development of Canada, the standard of living gap between Aboriginal and non-Aboriginal peoples remains wide. The ongoing resolution of land claims is helping to build political and economic stability in Aboriginal communities.

Human Settlements: Canada is one of the most urbanized countries in the world, with 80 per cent of its population living in urban areas. Approximately 23% of Canadians live in coastal areas with populations on the Pacific coast rapidly expanding, and the populations on the East coast expanding at a slower rate. This growth places demands and pressures on the health, quality, productivity and biodiversity of inland and coastal waters. The Canadian standard of living is high, as measured by gross domestic product. The vast majority of Canadians live in comfortable accommodation that contributes to quality of life. Canadian cities face complex, interrelated challenges that are having adverse effects on quality of life and long-term sustainability. These include urban sprawl in turn leading to rising energy consumption, greenhouse gas emissions and the loss of prime agricultural land; pollution to air, water and land; and the related health issues that affect vulnerable populations such as the young, the elderly, and the sick. Canadian communities also face the challenges of access to affordable housing, homelessness, inadequate infrastructure, immigration to urban areas and the downturn of traditional industries and the shift in the skills required for a knowledge-based economy. In order to develop efficient tools and enhance approaches, the Canadian federal, provincial and local governments partner with communities in urban task forces and urban sustainability programs.

Water Resources: Canada has approximately seven per cent of the world's renewable water resources. However, while about 60 per cent of Canada's freshwater drains north toward the Arctic Ocean and Hudson Bay. Approximately 85 per cent of the Canadian population lives in the south, where pollution and escalating demand are increasing pressure on water resources. Canada also has the longest marine coastline of any country, the second largest continental shelf in the world and a total offshore marine area equal to 40% of the Canadian land mass, with complex ecosystems that connect inland freshwater systems to near shore marine waters. However, the sources of water and its distribution and availability vary considerably across the country. Canada's Atlantic and Pacific coastal areas receive an average of between 1100 and 1400 millimeters of precipitation per year. The southern portions of western Canada's prairie provinces receive less than 500 millimeters per year. Those regions experience periodic droughts, while massive floods in other parts of Canada have affected tens of thousands of people.

Despite significant pollution control progress, challenges remain. Many basins are affected by industrial and municipal pollution, urban and agricultural runoff, and airborne pollutants. Degradation is also evident in populated coastal areas, with approximately 3,200 square kilometers of coastline closed to shellfish harvesting as a result of bacterial contamination, often due to inadequate wastewater treatment. Some estuaries and near shore regions, particularly near urban centres and major industrial operations, are degraded by chemical contamination and physical or biological disruption with impacts on other uses of these waters and on the species in those environments. Beaches along Canadian inland and marine coastlines continue to be forced to close due to high bacterial counts in waters.

Approximately 1 000 000 m³ of wastewater is treated per day. As the result of inquiries into water safety raised by incidents in Ontario and Saskatchewan, most provinces in Canada are revising legislation that governs the supply of potable water. Revisions include more stringent water quality regulations, and more frequent monitoring and reporting. Another development is

the requirement to have all treatment plant operators licensed, and to have periodic evaluations of the potable water supply infrastructure and operations by a qualified professional.

Annex II – Relevant websites on Water and Sanitation

Federal Websites

Environment Canada

http://www.ec.gc.ca/water/e_main.html

Environment Canada - Municipal Wastewater Effluent Division
www.ec.gc.ca/etad/)

National Water Research Institute

<http://www.nwri.ca>

Sustaining the Environment and Resources for Canadians

<http://www.environmentandresources.gc.ca>

Canadian Waters

http://www.dfo-mpo.gc.ca/canwaters-eauxcan/oceans/index_e.asp

Health Canada

<http://www.hc-sc.gc.ca/waterquality>

The National Programme of Action for the Protection of the Marine Environment from Land-based Activities

<http://www.npa-pan.ca>

Provincial Websites

Alberta

<http://www3.gov.ab.ca/env/water/index.cfm>

British Columbia

<http://www.gov.bc.ca/wlap/>

Manitoba

<http://www.gov.mb.ca/conservation/watres/index.html>

New Brunswick

<http://www.gnb.ca/0009/0003-e.asp>

Newfoundland and Labrador

http://www.gov.nf.ca/env/Env/water_resources.asp

Northwest Territories

<http://www.pws.gov.nt.ca/waterandsanitation/index.htm>

Nova Scotia

<http://www.gov.ns.ca/enla/water/>

Nunavut

<http://www.gov.nu.ca/sd.htm>

Ontario

<http://www.ene.gov.on.ca/water.htm>

Prince Edward Island

http://www.gov.pe.ca/infopei/Government/GovInfo/Environment_and_Land/

Quebec

http://www.menv.gouv.qc.ca/ministere/inter_en.htm

Saskatchewan

<http://www.se.gov.sk.ca/environment/protection/water/water.asp>

Yukon

<http://www.environmentyukon.gov.yk.ca/epa/waterqual.shtml>

International Websites

Canadian International Development Agency

<http://www.acdi-cida.gc.ca/index-e.htm>

International Development Research Centre

http://www.idrc.ca/water/index_e.html

International Joint Commission

<http://www.ijc.org>

Protection of the Arctic Marine Environment

<http://www.pame.is/>

United States Environmental Protection Service

<http://www.epa.gov/ebtpages/watewastewater.html>

Additional Information

Canadian Council of Ministers of the Environment

<http://www.ccme.ca>

Government of British Columbia, Water Resource Information

<http://wlapwww.gov.bc.ca/wat/wtrhome.html>

CCME, Source to Tap, Newfoundland and Labrador

http://sourcetotap.ccme.ca/eng/map_eng.php?view_id=1&jurisdiction_id=6

Council of Atlantic Premiers

<http://www.cmp.ca/en-main1.html>

Council of Great Lakes Governors

<http://www.cglg.org/index.asp>

Environment Canada, Water Policy and Legislation

http://www.ec.gc.ca/water/en/policy/e_policy.htm

Environnement Québec, Quebec Water Policy

<http://www.menv.gouv.qc.ca/eau/politique/index-en.htm>

Fisheries and Oceans Canada, Acts, Orders and Regulations http://www.dfo-mpo.gc.ca/communic/policydownload_e.htm#Canada%20Shipping%20Act

Great Lakes Commission
<http://www.glc.org>

Lake Champlain Basin Program
<http://www.lcbp.org>

Mackenzie GEWEX Study (MAGS)
http://www.usask.ca/geography/MAGS/index_e.htm

Manitoba Conservation, Water: A Proposed Strategic Plan for Manitoba
http://www.gov.mb.ca/conservation/watres/water_strategy_index.html

Nova Scotia Environment and Labour, Drinking Water Strategy for Nova Scotia
<http://www.gov.ns.ca/enla/rmep/h2ostrat.pdf>

Ontario Ministry of the Environment, Safe Drinking Water Act, 2002
<http://www.ene.gov.on.ca/envision/water/sdwa/index.htm>

Prairie Farm Rehabilitation Administration
<http://www.agr.gc.ca/pfra>

Saskatchewan Environment, Water Management Framework
<http://www.se.gov.sk.ca/ecosystem/water/framework>

The Atomic Energy Council of Canada, Ltd.,
<http://www.aecl.ca/index.asp>