

JOHANNESBURG SUMMIT 2002

CANADA



COUNTRY PROFILE



UNITED NATIONS

INTRODUCTION - 2002 COUNTRY PROFILES SERIES

Agenda 21, adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, underscored the important role that States play in the implementation of the Agenda at the national level. It recommended that States consider preparing national reports and communicating the information therein to the Commission on Sustainable Development (CSD) including, activities they undertake to implement Agenda 21, the obstacles and challenges they confront, and other environment and development issues they find relevant.

As a result, in 1993 governments began preparing national reports for submission to the CSD. After two years of following this practice, the CSD decided that a summarized version of national reports submitted thus far would be useful. Subsequently, the CSD Secretariat published the first Country Profiles series in 1997 on the occasion of the five-year review of the Earth Summit (Rio + 5). The series summarized, on a country-by-country basis, all the national reports submitted between 1994 and 1996. Each Profile covered the status of all Agenda 21 chapters.

The purpose of Country Profiles is to:

- Help countries monitor their own progress;
- Share experiences and information with others; and,
- Serve as institutional memory to track and record national actions undertaken to implement Agenda 21.

A second series of Country Profiles is being published on the occasion of the World Summit on Sustainable Development being held in Johannesburg from August 26 to September 4, 2002. Each profile covers all 40 chapters of Agenda 21, as well as those issues that have been separately addressed by the CSD since 1997, including trade, energy, transport, sustainable tourism and industry.

The 2002 Country Profiles series provides the most comprehensive overview to date of the status of implementation of Agenda 21 at the national level. Each Country Profile is based on information updated from that contained in the national reports submitted annually by governments.

Preparing national reports is often a challenging exercise. It can also be a productive and rewarding one in terms of taking stock of what has been achieved and by increasing communication, coordination and cooperation among a range of national agencies, institutions and groups. Hopefully, the information contained in this series of Country Profiles will serve as a useful tool for learning from the experience and knowledge gained by each country in its pursuit of sustainable development.

NOTE TO READERS

The 2002 Country Profiles Series provides information on the implementation of Agenda 21 on a country-by-country and chapter-by-chapter basis (with the exception of chapters 1 and 23, which are preambles). Since Rio 1992, the Commission on Sustainable Development has specifically addressed other topics not included as separate chapters in Agenda 21. These issues of trade, industry, energy, transport and sustainable tourism are, therefore, treated as distinct sections in the Country Profiles. In instances where several Agenda 21 chapters are closely related, for example, chapters 20 to 22 which cover environmentally sound management of hazardous, solid and radioactive wastes, and chapters 24 to 32 which refer to strengthening of major groups, the information appears under a single heading in the Country Profile Series. Lastly, chapters 16 and 34, which deal with environmentally sound management of biotechnology, and transfer of environmentally sound technology, cooperation, capacity-building respectively, are presented together under one heading in those Country Profiles where information is relatively scarce.

LIST OF COMMONLY USED ACRONYMS

ACS	Association of Caribbean States
AMCEN	Africa Ministerial Conference on the Environment
AMU	Arab Maghreb Union
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CARICOM	The Caribbean Community and Common Market
CBD	Convention on Biological Diversity
CIS	Commonwealth of Independent States
CGIAR	Consultative Group on International Agricultural Research
CILSS	Permanent Inter-State Committee for Drought Control in the Sahel
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMESA	Common Market for Eastern and Southern Africa
CSD	Commission on Sustainable Development of the United Nations
DESA	Department for Economic and Social Affairs
ECA	Economic Commission for Africa
ECCAS	Economic Community for Central African States
ECE	Economic Commission for Europe
ECLAC	Economic Commission for Latin America and the Caribbean
ECOWAS	Economic Community of West African States
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ESCAP	Economic and Social Commission for Asia and the Pacific
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FIDA	Foundation for International Development Assistance
GATT	General Agreement on Tariffs and Trade
GAW	Global Atmosphere Watch (WMO)
GEF	Global Environment Facility
GEMS	Global Environmental Monitoring System (UNEP)
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GHG	Greenhouse Gas
GIS	Geographical Information Systems
GLOBE	Global Legislators Organisation for a Balanced Environment
GOS	Global Observing System (WMO/WWW)
GRID	Global Resource Information Database
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
IAEA	International Atomic Energy Agency
ICSC	International Civil Service Commission
ICSU	International Council of Scientific Unions
ICT	Information and Communication Technology
ICTSD	International Centre for Trade and Sustainable Development
IEEA	Integrated Environmental and Economic Accounting
IFAD	International Fund for Agricultural Development

IFCS	Intergovernmental Forum on Chemical Safety
IGADD	Intergovernmental Authority on Drought and Development
ILO	International Labour Organisation
IMF	International Monetary Fund
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission
IPCC	Intergovernmental Panel on Climate Change
IPCS	International Programme on Chemical Safety
IPM	Integrated Pest Management
IRPTC	International Register of Potentially Toxic Chemicals
ISDR	International Strategy for Disaster Reduction
ISO	International Organization for Standardization
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature and Natural Resources
LA21	Local Agenda 21
LDCs	Least Developed Countries
MARPOL	International Convention for the Prevention of Pollution from Ships
MEAs	Multilateral Environmental Agreements
NEAP	National Environmental Action Plan
NEPAD	New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
NSDS	National Sustainable Development Strategies
OAS	Organization of American States
OAU	Organization for African Unity
ODA	Official Development Assistance/Overseas Development Assistance
OECD	Organisation for Economic Co-operation and Development
PPP	Public-Private Partnership
PRSP	Poverty Reduction Strategy Papers
SACEP	South Asian Cooperative Environment Programme
SADC	Southern African Development Community
SARD	Sustainable Agriculture and Rural Development
SIDS	Small Island Developing States
SPREP	South Pacific Regional Environment Programme
UN	United Nations
UNAIDS	United Nations Programme on HIV/AIDS
UNCED	United Nations Conference on Environment and Development
UNCCD	United Nations Convention to Combat Desertification
UNCHS	United Nations Centre for Human Settlements (Habitat)
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNDRO	Office of the United Nations Disaster Relief Coordinator
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UNFPA	United Nations Population Fund

UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNIFEM	United Nations Development Fund for Women
UNU	United Nations University
WFC	World Food Council
WHO	World Health Organization
WMO	World Meteorological Organization
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization
WWF	World Wildlife Fund
WWW	World Weather Watch (WMO)

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Chapter 2A: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES – INTERNATIONAL COOPERATION

Decision-Making: The federal government develops its policies on international cooperation through consultations with Canadian civil society and major groups, regional development banks, international financial institutions, multilateral institutions, other donors, and recipient countries.

Though federal responsibility for Canada's foreign aid program is shared by a number of organizations, the key partners are the Canadian International Development Agency (CIDA), the Department of Finance, and the Department of Foreign Affairs and International Trade (DFAIT).

CIDA is the main agency responsible for formulating Canada's development policy, and the Minister for International Cooperation is accountable for the management of the International Assistance Envelope (IAE). CIDA also directly manages approximately 80 per cent of Canada's IAE through both *Official Development Assistance* (ODA) and other international assistance activities.

Canada's foreign policy statement says: "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 2001-2003: An Agenda for Change* outlines the Agency's goals and objectives, as well as the strategies and priority actions needed to meet development challenges in the 21st century (See <http://www.acdi-cida.gc.ca/sds>). This structure is updated annually in CIDA's business plan; the Report on Plans and Priorities (RPP).

Approximately four per cent of Canada's ODA is administered by the International Development Research Centre (IDRC). The Centre helps developing countries draw on available science and knowledge to develop practical, long-term solutions to their social, economic, and environmental problems. Complementing CIDA's work, IDRC promotes the goal of achieving sustainable and equitable development.

Programs and Projects: Canada supports projects in more than 120 countries, working with developing countries and countries in transition to help them develop tools to meet their needs.

CIDA's strategic outcomes are delivered in four core areas: economic well-being; social development; environmental sustainability and regeneration; and governance. CIDA's program and project initiatives include:

- Providing direct assistance for programs and projects agreed upon with developing countries and relevant institutions;
- Funding activities through international development organizations;
- Supporting projects proposed by Canadian partners;
- Developing, presenting and advocating policy options to developing countries and other donors, and in international fora; and
- In 2000-2005, strengthening its programming in four areas of social development: health and nutrition; basic education; HIV/AIDS; and child protection.

Under policy direction from DFAIT, CIDA also delivers programs in Central and Eastern Europe to support democratic development and economic liberalization. These are mainly non-ODA programs which account for approximately 5 per cent of the International Assistance Envelope.

Capacity-Building, Education, Training and Awareness Raising: Helping the recipients of Canada's aid develop the ability to meet their own needs is essential to ensuring that benefits are sustained beyond the life of

individual projects. For this reason, programs and projects supported by CIDA and IDRC are evaluated for their ability to promote capacity-building.

CIDA's Communications Branch works to improve public awareness of, and support for, international cooperation initiatives. The Branch's Development Information Program uses television, radio, print and other forms of media to inform Canadians about international development.

Information: Information on Canada's numerous international cooperation efforts may be obtained at the following web sites:

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

<http://www.dfait-maeci.gc.ca/foreignp/menu-e.asp>

http://www.fin.gc.ca/access/int_iss_e.html

<http://www.idrc.ca>

Research and Technologies: Priority research areas for IDRC are determined in consultation with recipient countries, focusing on new technology and policy options, and using innovative networks. Support is directed toward developing an indigenous research capacity to sustain the policies and technologies that recipients require to build healthier societies that are more equitable and prosperous. To ensure that research results are policy relevant, IDRC promotes links among researchers and decision-makers at all levels, and encourages widespread discussion of the results.

Financing: Canada's International Assistance Envelope (IAE) is financed through the national budget. CIDA is responsible for advising the Minister of International Cooperation on the management of the IAE allocation.

Detailed information is not available since public expenditure accounting is not organized for *Agenda 21* reporting.

Cooperation: Canada recognizes that international cooperation is essential to helping developing countries meet their commitments under *Agenda 21*. Given the link between sustainable development and poverty, the flow of financial assistance from the developed to the developing world should supplement the mobilization of developing countries' own financial, technical, and human resources. Canada's bilateral development assistance programming is complemented by support for relevant international financial institutions.

Canada strongly supports efforts to strengthen the ability of international organizations to promote global sustainable development, and takes a leading role in UNEP to strengthen capacity-building mechanisms within the framework of multilateral environmental agreements. More recently, in the preparation of environmental education tools, CIDA developed a primer on Multilateral Environmental Agreements for its project officers. Canada is also working closely with key organizations to better coordinate donor activity in support of sustainable development in the developing world.

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Chapter 2B: INTERNATIONAL COOPERATION TO ACCELERATE SUSTAINABLE DEVELOPMENT IN DEVELOPING COUNTRIES AND RELATED DOMESTIC POLICIES - TRADE

Decision-Making: The federal government develops its trade policies through consultations with provincial and territorial governments, municipal associations, community-based organizations, civil society, business and Aboriginal groups, advisory bodies, academia and the public.

Since part of Canada's overall approach to trade policy is driven by commitments to provide developing countries with trade related capacity-building assistance, developing countries are also consulted in both multilateral (e.g. WTO and FTAA negotiations) and bilateral discussions regarding specific assistance needs. These consultations are also designed to ensure capacity-building assistance is part of the mainstream within overall national development plans or poverty reduction strategies.

The Department of Foreign Affairs and International Trade (DFAIT) is the main department responsible for developing Canada's trade policy, and for negotiating bilateral, regional and multilateral trade agreements. The provinces have or share jurisdiction over several economic and non-economic areas affected by trade policy, and are consulted regularly in the development of trade policy and the management of trade agreements. The House of Commons has a Standing Committee on Foreign Affairs and International Trade that consults with Canadians across the country on a regular basis, and provides advice to the Government on trade policy. The Senate Standing Committee on Foreign Affairs examines legislation and matters relating to foreign and Commonwealth relations. DFAIT manages Canada's trading relations with other countries in consultation with other federal departments and agencies, and provincial and territorial governments.

The Canadian International Development Agency (CIDA) is the main federal department responsible for delivering Canada's trade related capacity-building assistance to developing countries. As reflected in CIDA's *Policy Statement on Strengthening Aid Effectiveness* (<http://www.acdi-cida.gc.ca/aideffectiveness>), released in September 2002, CIDA has also been mandated to collaborate with DFAIT and other federal departments to ensure Canada's trade policy is coherent with the government's overall development policy.

One goal of *Agenda 2003: A Sustainable Development Strategy for the Department of Foreign Affairs and International Trade* is to strengthen the links between trade promotion and the protection of the environment. A method used to help achieve this goal is the environmental assessment of trade agreements. This requirement stems from the *1999 Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*. The process and analytic methodology for undertaking the environmental assessment of trade negotiations is described in the *2001 Framework for Conducting Environmental Assessments of Trade Negotiations*, supplemented by the *2002 Handbook for Conducting Environmental Assessments of Trade Negotiations*. (<http://www.dfait-maeci.gc.ca/tna-nac/social-en.asp#environment>>.)

Programs and Projects: Canada retains a fundamental interest in the continued expansion and modernization of an open, transparent rules-based trading system. Canada maintains that the new round of WTO negotiations (also called the *Doha Development Agenda*) holds promise for strong gains for all members. Canada believes that increased market access for goods and services, substantial agricultural reform, and strengthened rules promote the active participation of all members in the multilateral trading system. This, in turn, contributes to economic growth, poverty reduction, and enhanced security and quality of life. Canada is actively engaged in the current round of WTO negotiations that includes certain aspects of trade and environment.

In December 2002, Canada announced details of its LDC Market Access Initiative to encourage economic development in LDCs through duty-free and quota-free access to the Canadian market for exports, excluding certain supply-managed agricultural products (dairy, poultry and egg products).

Complementing efforts to liberalize trade with developing countries, Canada will further untie its bilateral aid in accordance with an OECD-DAC agreement endorsed at the 2001 G-8 Summit. The Agreement, however, does not apply to food aid.

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, the FTAA complements the Summit objectives of strengthening democracy, promoting human rights and reducing inequalities and poverty. The FTAA will 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.

Canada is committed to addressing environmental and social considerations in the context of these trade negotiations, and has negotiated parallel environmental and labour cooperation agreements in several instances, such as with its NAFTA partners (United States and Mexico), Chile, and Costa Rica. (<http://www.dfait-maeci.gc.ca/tna-nac/reg-en.asp>)

Status: Progress reports on the Department of Foreign Affairs and International Trade's Sustainable Development Strategy can be found at <http://www.dfait-maeci.gc.ca/sustain/menu-en.asp>

Capacity-Building, Education, Training and Awareness-Raising: Canada is working with developing countries and other WTO Members, both bilaterally and through multilateral fora, to enhance their ability to more fully participate in the global trading system, and to use trade as a means to reduce poverty. Since 1991, it has provided over \$500 million through the Canadian International Development Agency to developing countries in trade-related technical assistance and capacity-building programs. Support has been extended to all regions through programs such as the Integrated Framework; Joint Integrated Training Assistance Programme in Africa (JITAP); APEC's WTO Capacity Building Initiative; the Commonwealth Trade and Investment Access Facility and the Caribbean regional trade policy fund. At the recent G8 Summit in June 2002, Canada announced an additional \$20 million for trade-related capacity-building in Africa, to be provided through JITAP, the International Trade Centre in partnership with the Trade Facilitation Office of Canada, and the Economic Commission for Africa.

Canada also supports and is prepared to contribute to capacity-building and technical assistance programs being coordinated through the new WTO Technical Cooperation division. In advocating the need for trade to be mainstreamed into national development strategies, and in pursuing this objective through the World Bank, regional development organizations and UN agencies, Canada and other Members have promoted the Integrated Framework. This new program coordinates and integrates the trade-related technical assistance and capacity-building activities of the World Bank, the International Monetary Fund, the WTO, the International Trade Centre, the United Nations Conference on Trade and Development and United Nations Development Program. Canada has contributed over \$1 million to the Integrated Framework.

As part of the Government of Canada's \$500 million fund to support the G-8 *Africa Action Plan* and the *New Partnership for Africa's Development (NEPAD)*, Canada has committed \$20 over five years in three initiatives to assist African countries to better pursue their interests through international trade. These include additional contributions to JITAP, the Trade Facilitation Office of Canada to enhance the capacity of the African private

sector to do business internationally and promote their exports, and to develop a Trade Policy Expertise Centre in Africa in partnership with the Economic Commission for Africa.

Information: Information on Canada's trade policies, agreements and other trade-related issues is posted on the Department's website at <http://www.dfait-maeci.gc.ca/trade/menu-en.asp>

Cooperation: (See Programs and Projects) The implementation of Chapter 2 of *Agenda 21*, promoting sustainable development through trade, is being pursued through a combination of Canadian trade initiatives and policies.

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Chapter 3: COMBATING POVERTY

Decision-Making: Responsibility for Canada's domestic poverty alleviation initiatives is shared by the federal and provincial/territorial governments. In developing policies and programs, consultations are held with advocacy groups, research organizations and other stakeholders.

A recent example of Canada's poverty alleviation efforts, the *National Child Benefit* provides benefits to low-income families with children (http://www.socialunion.gc.ca/ncb_e.html). A lesser-known initiative is *Gathering Strength -- Canada's Aboriginal Action Plan* (http://www.ainc-inac.gc.ca/gs/index_e.html). The *Plan* is a long-term, broad-based approach to improving the quality of life for Aboriginal peoples and promoting greater self-sufficiency.

Canada also supports poverty alleviation initiatives in developing countries and countries in transition through its Official Development Assistance (ODA) program. The program is administered primarily by the Canadian International Development Agency (CIDA). CIDA's *Policy on Poverty Reduction* highlights the need to address the root causes of poverty, and indicates that poverty reduction activities should promote long-term sustainability, build self-reliance and avoid fostering relationships of dependence. Complementing its other work, CIDA's *Sustainable Development Strategy 2001-2003* (<http://www.acdi-cida.gc.ca/sds>) is designed to improve programming approaches to poverty reduction.

Programs and Projects: As part of a multifaceted approach to tackling poverty, the federal government provides the following:

- Direct income support programs (e.g., the *National Child Benefit*);
- Pensions for senior citizens (*Canada Pension Plan*, *Old Age Security* and *Guaranteed Income Supplement*);
- Temporary assistance for the unemployed (*Employment Insurance*);
- Tax credits for low-income Canadians; and
- Poverty prevention projects (e.g., the *Early Childhood Development Program*, designed to provide the services that will help ensure children receive the best possible start in life).

In addition, funds are transferred from the federal government to the provinces and territories for social services, health care and post-secondary education. For their part, provincial and territorial governments are responsible for providing social assistance payments, an array of social services, and both elementary and secondary education.

To combat homelessness, the federal, provincial and territorial Ministers Responsible for Housing have agreed to work together to develop an affordable housing program. The federal government also tackles homelessness by investing in the Youth Employment Strategy, the Supporting Communities Partnership Initiative, and the Urban Aboriginal Strategy.

Specifically addressing poverty in Aboriginal communities, the federal government has prioritized increased investments in health, education, housing and infrastructure.

Status: 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.

Capacity-Building, Education, Training and Awareness-raising : Capacity-building, education, training and awareness-raising are important elements of the Government of Canada's efforts to combat poverty and achieve sustainable development.

Some of the most important domestic projects are spearheaded by Indian and Northern Affairs Canada (INAC). INAC works with Aboriginal and northern communities to strengthen their capacities for self-governance and fiscal accountability. INAC also works to raise public awareness of Aboriginal issues.

Internationally, CIDA's main capacity-building activities are focused on developing countries. CIDA's *Sustainable Development Strategy 2001-2003* recognizes capacity development as a condition for sustainable development. The Strategy seeks to increase CIDA's capacity to contribute to equitable and environmentally sustainable growth in developing countries and countries in transition that strengthens the economic, political and socio-cultural capabilities of women and men, girls and boys. It also targets two areas for special effort: the development of capacity-development mechanisms for implementing multilateral environmental agreements, and capacity-building for trade facilitation.

Information: Information on the federal government's efforts to combat poverty is available via its Web sites. The main site may be accessed at <http://canada.gc.ca>.

Research and Technologies: Through research activities, the International Development Research Centre (IDRC) helps developing countries find long-term solutions to the social, economic, and environmental challenges they face. IDRC is a public corporation. Social and Economic Equity is one of IDRC's main programming areas. An example of IDRC's work in this area is its *Micro Impacts of Macroeconomic and Adjustment Policies* program. The program supports research to better understand the human costs of both economic policies and economic shocks. The research results are intended to help produce more effective policies and poverty alleviation programs.

An explicit focus of IDRC's activities is strengthening capacity in the South. The IDRC website may be accessed at <http://www.idrc.ca>.

Financing:

- Direct income support programs are financed through the national budget;
- The federal government transfers money to the provinces for health care, social services and post-secondary education through the *Canada Health and Social Transfer*;
- Territories receive federal funding for a range of public services through the *Territorial Formula Financing* transfer; and
- Canada's ODA funding is financed through the national budget.

More detailed information is not available since public expenditure accounting is not organized for *Agenda 21* reporting.

Cooperation: Canada's foreign policy statement, *Canada in the World*, states that "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."

Reflecting this statement, poverty reduction is a key element in each of Canada's ODA program priorities (basic human needs; gender equality; infrastructure services; human rights, democracy and good governance; private-sector development, and environment). To fulfill this mandate, CIDA works with a variety of partners and relies on a number of programming approaches, including funding Canadian non-governmental organizations that work with grassroots partners in developing countries. Programs and projects supported by CIDA are designed and implemented in close association with local communities, and much emphasis is placed on capacity-building.

CIDA works closely with other development agencies through multilateral organizations and fora. For example, CIDA collaborates with the OECD's Informal Network on Poverty Reduction (POVNET) to develop more effective approaches to reducing poverty. CIDA strives to increased donor coordination to facilitate the management and implementation of ODA.

Canada has committed to the internationally agreed upon goal to reduce by half the proportion of people living in extreme poverty by the year 2015.

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Chapter 4A: CHANGING CONSUMPTION PATTERNS

Decision Making: There is no current over-arching regulatory or policy framework that deals with sustainable consumption in Canada. There is considerable activity, though, that contributes to the goals of reaching higher levels of sustainable consumption and production.

Pollution prevention is a response to sustainable consumption and production, and one of the decision-making tools is the *Canadian Environmental Protection Act, 1999 (CEPA 99)*. It provides the federal government with powers and tools to protect the environment and human health, and to contribute to sustainable development through pollution prevention. Part 4 of the *Act* gives the Minister of Environment the authority to require the preparation and implementation of pollution prevention plans for *CEPA* toxic substances.

Programs and Projects: The Government of Canada has a federal policy on pollution prevention: *Pollution Prevention: A Federal Strategy for Action*. Its annual report highlights projects and details measurable environmental results.

The Accelerated Reduction/Elimination of Toxics program is a voluntary non-regulatory program that targets 117 substances, including 30 that persist in the environment and may accumulate in organisms.

A *Policy Framework for Environmental Performance Agreements* was published in June 2001. The *Framework* sets out the design criteria essential to partnerships, Memoranda of Understanding, and other agreements that lead to environmental improvements.

The National Packaging Protocol was adopted by the Canadian Council of Ministers of the Environment in 1990 and set targets and policies for the reduction of packaging waste to contribute to an overall reduction in waste generation by the year 2000. The major achievement of the Protocol was reaching its overall goal four years ahead of schedule. Packaging waste was reduced by 51.2 per cent between 1988 and 1996.

The Environmental Choice Program was established by the Government of Canada in 1988 and is the second oldest national eco-labeling program in the world. It is a voluntary market-based pollution prevention instrument whose purpose is to harness market demand for environmentally superior products and services. The program continues to be a success with over 175 companies now licensed and over 2,800 brand name products now bearing the program's trademark EcoLogo.

Natural Resources Canada/CANMET Energy Technology Centre cooperates with the Intergovernmental Panel on Climate Change on carbon capture and storage, exploring the application of this technology as a mitigation option for climate change, and an option for increasing the sustainability of consumption and production of oil and natural gas.

The Vehicle Efficiency Targets Initiative encourages manufacturers to produce vehicles that meet voluntary average fuel consumption targets for new cars, vans and light-duty trucks. The Personal Vehicle Program is an information program that encourages motorists to buy, drive and maintain their vehicles in ways that reduce fuel consumption, save money and benefit the environment.

Recent discussions between the federal government and the provinces and territories at the annual Council of Energy Ministers' meeting have included renewable portfolio standards. Several provinces, including British Columbia and Manitoba, have begun to pursue renewable portfolio standards in their own energy policy.

Natural Resources Canada provides support to emerging renewable energy through the Renewable Energy Deployment Initiative (RGDI). Recent discussions between the federal government and the provinces and territories at the annual Council of Energy Ministers' meeting have included renewable portfolio standards. Several provinces, including British Columbia and Manitoba, have begun to pursue renewable portfolio standards in their own energy policy.

Capacity-Building, Education, Training and Awareness-raising: Canada hosted the International Pollution Prevention Summit in October 2000, bringing together leading practitioners and decision-makers from around the world to strengthen partnerships and take concrete steps to advance pollution prevention implementation world-wide.

Canada has been actively involved in promoting pollution prevention at the international level, in particular through work with the OECD.

The Government of Canada and related agencies such as the National Round Table on the Environment and the Economy have been working to improve the environmental performance of Canadian business, and to develop corporate sustainable development strategies.

In the interests of increased productivity, competitiveness and environmental performance, an increasing number of Canadian companies are adopting such tools as ISO 14,000 standards, and weaving sustainable development strategies into core business operations. A guide to eco-efficiency indicators has been developed that allows routine tracking of energy, waste, and water consumption and performance. The standardization of definitions and decision rules for such indicators will help companies set measurable eco-efficiency targets and facilitate comparisons between companies and business sectors.

Extended Producer Responsibility (EPR) programs are being widely adopted in Canada. There are over 25 national and provincial EPR programs currently operational. EPR programs change the traditional balance of responsibilities among manufacturers, distributors, consumers, and governments. With this shifting of responsibility, a producer adopts the primary role in the collection, recycling and disposal of the product in question.

Information: Statistics Canada surveys the business and government sectors of the waste management industry to generate national data on waste disposal. The flow fall and stabilization of waste disposal tonnages is partially attributable to an increase in the tonnages of recycle waste.

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Chapter 4B: INTERNATIONAL COOPERATION ON ENERGY

Decision Making: Under Canada's constitution, jurisdiction over energy is divided between the federal governments and those of provinces and territories. Federal powers involve the interprovincial and international movement of energy and energy-using equipment, and policies and regulations on interprovincial and international trade, pipelines, and power lines. The federal government is also responsible for the management of oil and gas resources in Canada's frontier lands and has a leading role in areas such as energy, science, technology and energy-efficiency research. Provincial/territorial governments have responsibility for energy resources and policy management within their borders.

Energy regulatory policy strives to meet the constitutional division of powers and objectives of 14 jurisdictions. There are also efforts to incorporate the views of all stakeholders in energy issues, including the nine groups identified in *Agenda 21*. Public participation is encouraged at all levels of decision making, from legislative committees to regulatory and judicial hearings and environmental assessment processes.

Programs and Projects: Canada's energy policies include sustainable development, energy diversification and improving efficiency in production and use.

One program area involves slowing the growth in greenhouse gas emissions. In the mid-1990s Canada's emissions were increasing at a rate of about 2.5 per cent per year. In 1998, the last year for which complete data is available, the increase had slowed to 1.4 per cent per year. Key elements include improved energy efficiency and use of alternative transportation fuels and renewable energy sources.

The Climate Change Action Fund allocated \$30 million over its first three years to the Public Education and Outreach Program (www.climatechange.gc.ca). Canadians are educated about the environmental impact of energy use and encouraged to adopt energy-efficient practices and alternative forms of energy. EcoAction 2000 provides financial assistance and advice to non-profit Canadian groups that want to undertake local environmental projects. The Moving on Sustainable Transportation program supports projects that produce education, awareness and analytical tools on sustainable transportation.

On December 17, 2002, the Government of Canada announced its ratification of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. Ratification is an important milestone in Canada's contribution to addressing climate change. The Climate Change Plan for Canada provides the framework for action. The Plan proposes a national goal for Canadians to become "the most sophisticated and efficient consumers and producers of energy in the world and leaders in the development of new, cleaner technologies."

Federal and provincial governments have programs in place to reduce vehicle emissions. The most recent include vehicle inspection and maintenance, vapour pressure limits for gasoline, implementation of new national vehicle emission standards, and federal regulations to reduce sulphur content in diesel fuel and levels of sulphur and benzene in gasoline. New Canada-wide Standards for Particulate Matter and Ozone and other air quality-related Canada-wide standards have been adopted, or are in the process of adoption. For further information, consult: <http://www.ccme.ca>

Status: Canada is a world leader in the development and use of renewable energy sources. About 18 per cent of energy supply is from these sources, compared to an average of six per cent found in member countries of the International Energy Agency. Most of Canada's success is attributable to hydroelectricity. Data on energy use is published in an annual review of trends and related greenhouse gas emissions. Detailed information is available in *Energy in Canada* – located at <http://www.nrcan.gc.ca/es/ener2000/>

Capacity-Building, Education, Training, and Awareness-Raising: Canada has identified the need to improve technological capabilities on cleaner fuels, and the application of these capabilities to improve performance. It is working with other countries facing similar challenges. In addition, there are research and development initiatives to improve market penetration and energy efficiency.

Education is a provincial/territorial mandate, with each jurisdiction designing its own curriculum. Science, environment, and geography curricula typically include units on energy, transportation, and climate change. In general, the private sector is the main communicator with teaching institutions regarding training programs.

Information: For more information energy-related legislation, please visit: http://canada.justice.gc.ca/bireg/index_en.html

For information on programs, publications and data development, please consult: <http://oe.nrcan.gc.ca>

For information on Canada's Climate Change Plan, please visit: <http://www.climatechange.gc.ca>

The National Energy Use Database (NEUD) Initiative Database is at: <http://oe1.nrcan.gc.ca/dpa>

The Sustainable Cities Initiative makes geographical data available to Canadians through the Internet at: <http://www.sustainable.org>.

Research and Technologies: Because fossil fuels will continue to contribute significantly to the total global energy mix for the foreseeable future and the demand for these fuels will increase, Canada works on promotion, transfer, research and development, and use of advanced and cleaner fossil fuel technologies.

Research and development in hydroelectricity focuses mainly on small-scale hydroelectric projects with a capacity of 20 megawatts or less. Several different biomass technologies have been developed and demonstrated in Canada. Work is underway on new coal conversion technologies to increase both the competitiveness and environmental acceptability of coal through increased overall thermal efficiency and reduced emissions. Other areas of clean production include the Microwave Assisted Process™, liquid-phase extraction, gas-phase extraction and chemical synthesis.

Financing: In 1998, investment in the Canadian energy sector exceeded \$28 billion. Energy projects or companies must compete for financing with other investments in capital markets. Governments foster energy sector development with a stable and predictable regulatory and fiscal framework. The Government of Canada has allocated \$1.1 billion over the next five years to reduce greenhouse gas emissions in Canada, much of which will be used to promote clean energy and energy efficiency.

Cooperation: Canada achieves international technology transfer through strategic partnerships, training opportunities, joint pilot projects, and the identification of opportunities in emerging markets. There is also collaboration in both multilateral and bilateral energy research and development. Most of the government-led multilateral collaboration in energy R&D takes place through the International Energy Agency. Canada also cooperates with the European Union through the Canada–European Union Agreement for Scientific and Technological Cooperation, the Asia–Pacific Economic Cooperation Energy Working Group, and the Hemispheric Energy Initiative. In addition, there is work with the Organization for Economic Cooperation and Development and the United National Commission for Sustainable Development to promote the efficient and environmentally friendly production and use of energy.

The Canadian International Development Agency is also promoting the international cooperation through participation in energy programs such as UNDP/World Bank Energy Sector Management Assistance and other UN and World Bank energy programs.

International outreach in areas related to climate change is underway via the Technology Development and Demonstration Program funded from the Government of Canada's Action Plan 2000. Components include a Basic Research Initiative via the National Science and Engineering Research Council, a suite of eleven R&D projects, technology road mapping in five technology areas, international collaboration with Canadian partners in foreign markets and three technology officers working in posts abroad.

Chapter 4C: CHANGING CONSUMPTION PATTERNS - TRANSPORT

Decision-Making: Companies involved in transportation production and distribution are represented by organizations that maintain relations with the federal and provincial/territorial governments. Decision-making also involves consultation with stakeholders and four orders of government: municipal/local, provincial/territorial, regional, and federal. Generally, municipal/local governments and regional governing bodies are responsible for municipal transit, parking fees, and bicycle lanes.

Provinces and territories have authority to set emissions and fuel quality standards comparable to, or exceeding, federal standards. They are also responsible for some aspects of inter-provincial/territorial highway issues.

The federal government is largely responsible for international issues, setting emissions and fuel quality standards, and some national and inter-provincial/territorial aspects of rail, bus, and truck transportation.

The main federal legislation governing transportation in Canada is the *Canada Transportation Act 1996*. A recent review of the *Act* included assessments of both its overall environmental impact, and government powers to support sustainable development objectives.

Programs and Projects: Work by experts from a range of sectors led to an assessment of more than 100 potential measures to reduce emissions from transportation. The results of this work were reflected in the Government of Canada's *Action Plan 2000 on Climate Change*.

Canada has been a leader in Intelligence Transportation Systems (ITS) development for several years. Some of the first ITS development occurred in Canada, including the world's first computer-controlled traffic signal system in Toronto. Transport ITS systems are yielding environmental benefits while increasing productivity. (See <http://www.its-sti.gc.ca>)

Through a variety of initiatives, governments in Canada are advancing work on a number of projects, including: the production and use of alternative fuels and alternative fuel vehicles; the promotion of energy-efficient practices; the development of measures that reduce green house gas emissions (GHG); the improvement of fuel quality; and the development of new air quality standards.

The Government of Canada delivers several initiatives to increase the fuel efficiency of motor vehicles and to encourage the use of alternative transportation fuels (ATFs). Opportunities to improve the fuel efficiency of road transport include manufacturing more fuel-efficient vehicles, encouraging private and commercial owners to purchase more fuel-efficient vehicles and promoting more fuel-efficient driving and maintenance practices. As well, there are opportunities for passenger and freight users to employ more energy-efficient modes of transportation.

The Vehicle Efficiency Targets Initiative encourages manufacturers to produce vehicles that meet voluntary average fuel consumption targets for new cars, vans and light-duty trucks. The Personal Vehicle Program is an information program that encourages motorists to buy, drive and maintain their vehicles in ways that reduce fuel consumption, save money and benefit the environment.

The federal government also promotes the development and use of ATFs through its Vehicle Fuels initiative to promote the reduction of GHG emissions in the transportation sector through greater use of energy sources such as natural gas, ethanol, propane and fuel cells. In certain circumstances, financial incentives are provided. Present targets include a four-fold increase in current ethanol production and use by 2010. As well, the Canadian Transportation Fuel Cell Alliance works to develop fuel cell vehicles and fuelling pathways.

Capacity-Building, Education, Training and Awareness-Raising: The \$150 million Climate Change Action Fund (CCAF) was established in 1998 by the federal government to help Canada meet its commitments under the *Kyoto Protocol* to reduce GHG emissions. It is intended to support early actions to reduce GHG emissions and to increase understanding of the impact, cost and benefits of implementing the *Protocol*. More than 100 projects are designed to raise public awareness about climate change and to encourage the public to take action. Some 25 per cent of these projects are related to transportation.

Some programs under the CCAF focus on shared transport. For example, the Canada Commuter Challenge encourages Canadians to leave their cars at home when going to work. Programs such as British Columbia's Commuter Connections promote ride sharing to reduce fuel consumption and emissions. Supported by CCAF, Commuter Connections is involved in providing rideshare programs for some 60,000 commuters in the province's most heavily populated areas.

In 2000, Transport Canada launched an internal Green Commute program to promote sustainable commuting behaviour among its employees in the National Capital Region. It is committed to expanding the program to its regional offices, and promoting adoption of the program by other federal departments across Canada.

Moving On Sustainable Transportation (MOST) promotes greater awareness and the development of innovative approaches to sustainable transportation. To date, 26 projects have been funded, including *Active and Safe Routes to School* that encourages active modes of transportation to and from school.

Environment Canada organizes voluntary vehicle emissions clinics in cooperation with various regional organizations in both the public and private sector.

Many of the provinces operate clean driving programs. For example, emissions testing and repair has become a mandatory requirement for vehicle registration and transfer of ownership under Ontario's Drive Clean Program.

Environment Canada and Transport Canada worked closely with the Canadian Urban Transit Association, Bombardier, and other private sector partners to deliver a major nation-wide sustainable transportation campaign in 61 Canadian cities. The campaign focused on informing the public about alternatives to single-occupant vehicles and highlighted the role of public transit in creating cleaner and healthier communities.

Information: Indicators will be developed by 2003/2004 to assist in making decisions and monitoring progress on sustainable transportation.

Work is underway to continue improvement of a network to analyze, develop, improve and disseminate pollutant information inventories. For more information, see: <http://www.ec.gc.ca/pdb/cac/cacdoc/1995e/canada95.htm>

Research and Technologies: Governments in Canada are working with the alternative fuel industry and major vehicle manufacturers to expand the use of propane, natural gas, methanol, ethanol, electricity, hydrogen, and fuel cells. Canada developed the world's first hydrogen-powered fuel cell transit bus.

Alternative Transportation Fuels is an initiative to encourage the production and use of alternative fuels and alternative fuel vehicles. It calls for economic and market studies, emissions and safety assessments, information and technology transfers, and assistance to industry to promote cost-effective applications.

All major North American car manufacturers now have fuel cell programs. Automakers have indicated they will have limited production fuel-cell cars on the road by 2004. Electric vehicles are also expected to play a role in Canada's transportation energy future. Canadian researchers are developing and testing a range of technologies, including hybrid electric vehicles.

Transportation research is undertaken by a variety of government, non-government, and university groups.

Cooperation: Transport Canada cooperates with foreign governments and international organizations on several initiatives. For example, Canada endorses the *World-Wide Fuel Charter for Gasoline and Diesel Fuels*, an effort to develop common recommendations based on consideration for vehicle emission technologies.

The Canadian International Development Agency (CIDA) is also important to promoting international cooperation as the primary agency responsible for delivering Canada's Official Development Assistance (ODA) program. CIDA's mandate includes supporting sustainable development in developing countries. CIDA works with partners in international organizations, and in the private and public sectors in Canada and the ODA-recipient countries. CIDA supports numerous projects addressing environment, energy, and transport issues.

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Chapter 5: DEMOGRAPHIC DYNAMICS AND SUSTAINABILITY

Decision-Making: In the lead-up to the five-year review of the Cairo Conference, Canada created an inter-departmental working group of nine federal departments. It also engaged in a domestic consultation process, and since then has maintained an on-going dialogue with provincial and territorial governments, as well as Canadian civil society, NGOs, and other interested actors. Canada engages in consultations and establishes positions on population and development issues internationally through its participation in high-level meetings and conferences with multilateral organizations and other international donors.

Programs and Projects: 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, persons with disabilities, recent immigrants, single parents and Aboriginal people.

Population and development issues are relevant to each of the principal Canadian foreign policy objectives: the promotion of prosperity and employment; the protection of Canadian security within a global framework; and the projection of Canadian values and culture. In its statement on foreign policy, *Canada and the World*, the Government of Canada recognized the importance of population growth and related issues, including mass and involuntary migration, poverty, social inequity and environmental degradation. The outcomes of ICPD and Beijing conferences and their five year reviews continue to serve as the basis for Canada's action on population and development issues, including in the area of sexual and reproductive health.

Canada has committed 25 per cent of its official development assistance resources to meeting basic human needs, with family planning, primary health care, and water and sanitation identified as key components of the Canadian ODA mandate. Canada is also committed to supporting women's empowerment and basic education, both known to be effective means of stabilizing population growth. Canada seeks to ensure that these issues are addressed internationally, as well as domestically through policy and programming that are integrated and within an overall sustainable development framework.

Many programs and projects in the area of population and development have been undertaken at the domestic level. Some examples include:

- * *A National Framework on Aging* to guide federal, provincial and territorial governments in the development of policies, programs and overall approach to prepare for an aging population.
- * *In Unison: A Canadian Approach to Disability Issues* (1998), a framework that sets out a federal/provincial/territorial vision of full inclusion for persons with disabilities.

Canada's support to population and development programming internationally has focused on two areas: support for population policy development in a broad sense, including, i.e., support for population censuses and research and training in population and development; and support for family planning and sexual and reproductive health programs.

Status: 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 centres. 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.

Capacity-Building, Education, Training, and Awareness-Raising: In 2000, the Government launched Government On- Line to provide the Canadian public complete access to government information and services, including the ability to access and return government forms securely on-line. It is a tool for Canadians to participate more actively in government services. Through CIDA's bilateral development programming with international and local NGOs, and health ministries of developing countries, Canada is supporting increased awareness and capacity-building in areas of family planning, sexual and reproductive health and reproductive rights.

Information: More information can be found at <http://www.canada.gc.ca>

Research and Technologies: One example is the Government of Canada's financial support for the Participation and Activity Limitation Survey (PALS), a post-census survey that will build a more comprehensive knowledge base about the challenges facing persons with disabilities.

Financing: Domestic activities are financed by the relevant level of government. The Canadian International Development Agency disburses over \$54 million of international assistance per year to reproductive health, family planning, HIV/AIDS, and population programs. This support is channeled in different ways: bilaterally, multilaterally and in partnership with Canadian, international and local NGOs. It includes core contributions to both the United Nations Population Fund (UNFPA) and the International Planned Parenthood Federation. Close to one third of all Canadian population assistance is channeled through UNFPA.

Cooperation: Examples include Canada's involvement in the Regional Conference on Migration, or Puebla Process. This process encourages regional mechanisms and processes to address the question of migration and development, with a view to integrating migration in a more coherent way within the broader context of implementation of economic and social development programs; support for the International Parliamentarians' Conference on the Implementation of the ICPD Programme of Action in Ottawa, November 2002, jointly hosted by the Canadian Association of Parliamentarians' for Population and Development, the Inter-American Parliamentary Group on Population and Development and UNFPA; support in co-ordination with developed and developing countries for the continued implementation of the goals and principles outlined in the ICPD Programme of Action, and ICPD+5.

Chapter 6: PROTECTING AND PROMOTING HUMAN HEALTH

Decision-Making: The federal government sets broad principles that the provinces/territories are required to follow. These principles, embodied in the Canada Health Act, are primarily aimed at ensuring reasonable comparable service levels and health insurance programs across the country. These are accomplished through various fiscal and regulatory means, working together with provincial/territorial governments.

Recognizing the environment is a key determinant of human health, the federal government continues to work closely with partners and stakeholders on health and environmental issues. The *Canadian Environmental Protection Act, 1999 (CEPA 99)* is a key legislative tool to protect the environment and human health in order to contribute to sustainable development. *CEPA 99* acts as a safety net, and is meant to complement other laws such as the *Food and Drugs Act*, the *Pest Control Products Act* and the *Hazardous Products Act* by providing a means to ensure that substances not specifically covered under other legislation meet Canadian standards in the areas of human health and safety and environmental protection. A recent related initiative was the establishment of the multi-stakeholder Pest Management Advisory Council at the Pest Management Regulatory Agency.

Programs and Projects: In mid-2000, the federal government confirmed that ‘Sustainable Development and Healthy Canadians’ was one of its eight government-wide sustainable development themes.

Major initiatives include a national strategy for prevention and control of asthma, a federal tobacco control strategy and the federal initiatives on climate change and clean air. Others include: national nutrition guidelines for healthy pregnancies, childbearing years and term infants; the Rural and Remote Health Initiative; creation of the Centres of Excellence for Women’s Health; implementation of the Policy Toolkit for Public Involvement in Decision Making; launch of the Canada Health Infoway; support for relevant organizations, including the Center for Healthy Human Development and the Center for Chronic Disease Prevention and Control; bioregional health and environment programs, such as the Northern River Basins Study, the Great Lakes Health Effects Program/Great Lakes 2000, St. Lawrence Vision 2000, the Arctic Health Initiative; the Radiation Protection Program; the Northern Contaminants Program; and strengthened risk assessment procedures under the *Pest Control Products Act*.

Status: Current status involves working to ensure benefits for the health of all Canadians while meeting the needs of individuals; strengthening collaboration and coordination on health and sustainable development; adjusting to demographics changes in Canada; implementing cost-effective health and information technologies; and ensuring that increasing international trade, travel and migration do not threaten Canadians’ health.

Capacity-building, Education, Training And Awareness-raising: Examples include the Communities Collaboration Project, a joint initiative among federal and provincial governments and the Rural Development Institute to assist local communities to become resilient, healthy and sustainable through the development of social, environmental and economic strategies; a joint federal/provincial and regional initiative in Prince Edward Island to reduce the risk of heart disease through community-based actions; national programs for creating better indoor/outdoor school environments; the Canada Prenatal Nutrition Program; and the Aboriginal Head Start Program. The federal government also launched the Community Animation Program (CAP) that supports communities to take action on issues involving both health and the environment. The "Children's Environmental Health: Building Capacity for Policy Development and Facilitating Policy Change" initiative is also building partnerships with the voluntary sector to enhance the capacity of non-governmental organizations to address children’s health and environmental issues through greater understanding of the issues and stakeholder participation in the federal government policy development process.

Information: In late 1997, the federal government released a major report on health and the environment entitled “*Partners for Life.*” Also, Health Canada has developed a series of fact sheets that include information on health, the environment and sustainable development (<http://www.hc-sc.gc.ca/susdevdur>)

In 2000, the federal government launched new programs on sustainable development information, including the Canadian Information System for the Environment (CISE) and the Environment and Sustainable Development Indicators initiative of the National Round Table on the Environment and the Economy (NRTEE). These programs include information and indicators on health and the environment.

Research and Technologies: The recently established Canadian Institute of Health Research encourages research on environmental influences on health. Other research support programs are targeted at specific health and environment issues. For example, the Toxic Substances Research Initiative supports research to identify and manage the adverse effects of toxic substances on health and the environment.

Cooperation: Canada actively participated in the successful negotiations for an international agreement on persistent organic pollutants. In May 2001, it became the first country to sign and ratify the agreement (the *Stockholm Convention on Persistent Organic Pollutants*). Since 1997, Canada has worked through the North American Commission on Environmental Cooperation to address pollutants in a North American context, including the development of a Cooperative Agenda on Children’s Health and the Environment.

In addition, Canada is participating in the development of a Globally Harmonized System for Hazard Classification and Communication and continues to be an active partner in programs supported by: the World Health Organization, the United Nations Environment Program and its regional entity the United Nation Economic Commission for Europe, the Pan American Health Organization, and the Organization for Economic and Cooperation and Development’s committees on the harmonization of the classification and labeling of chemicals.

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Chapter 7: PROMOTING SUSTAINABLE HUMAN SETTLEMENT DEVELOPMENT

Decision-Making: Government and civil society have both played a major role in the development of human settlements and the provision of housing in Canada. The Government of Canada, through its departments and agencies, promotes the development of sustainable communities. Many sustainable community initiatives focus on social inclusion. Re-valuing of sustainable governance practices ensures civil society participation to the planning of human settlements in different cities and provinces.

The federal housing agency, Canada Mortgage and Housing Corporation (CMHC) is responsible for housing policy and programs in areas such as mortgage insurance, assisted housing, and research that improves housing quality and affordability.

The thirteen provincial and territorial governments are responsible for the regulation of urban and rural development through planning legislation, the regulation of building and housing standards and building and health codes. Municipal governments have considerable regulatory powers related to land use zoning, land and housing development, transportation and infrastructure services. The private sector provides housing to most Canadians without any government subsidy. Community, non-profit and cooperative organizations play a role in shaping policies and taking action in many areas that affect housing and human settlements in general, and in particular socially and economically disadvantaged households and individuals.

Programs and Projects: CMHC is involved in research and information transfer exploring energy efficiency, technical research and building codes and the development, funding and operation of an array of national social and market housing initiatives.

Affordable Housing: In 2001 the Government of Canada announced it would help stimulate the creation of more affordable rental housing. On November 30, 2001, the federal, provincial and territorial governments agreed on an Affordable Housing Framework to provide \$1.36 billion over five years for an affordable housing program. The federal investment of \$680 million will be matched with at least \$680 million from other sources should all provinces and territories participate. There was also agreement to continue work on longer-term affordable housing strategies to improve the overall climate for investment in affordable housing. This is in addition to the \$1.9 billion the federal government spends annually on housing.

Homelessness Initiatives: Acknowledging civil society organizations' activities with homeless people, in December 1999, the Government of Canada announced a three year \$753 million Homelessness Initiative aimed at working with community partners to help reduce or prevent homelessness and develop appropriate responses to the priorities identified at the local level. Over time, these responses will assist homeless people to move from the streets and emergency shelters to more secure lives. The cornerstone of the federal government's Homelessness Initiative is Supporting Communities Partnerships Initiative (SCPI). SCPI allocates \$305 million over three years, for communities where homelessness is a serious problem. 80 per cent of the funding will go to 10 cities where homelessness is most acute. The goal of SCPI is to provide a flexible means for communities to plan and implement comprehensive local strategies to reduce and prevent homelessness. The homelessness initiatives also includes \$311 million for housing rehabilitation programs.

Infrastructure: The federal government has committed a minimum of \$2 billion towards a National Infrastructure Program that will provide funding over six years based on partnerships with provincial/territorial and municipal governments. There are also signed agreements with the Federation of Canadian Municipalities (FCM) to provide \$250 million for the Green Municipal Enabling Fund and the Green Municipal Investment Fund to provide municipalities with financial resources to invest in best practices and innovative municipal environmental infrastructure projects. Another component of the program is a partnership between the National Research Council

of Canada and the Federation of Canadian Municipalities for the development of a National Guide to Sustainable Municipal Infrastructure.

Status: Canada is one of the most urbanized countries in the world, with 80 per cent of its population living in urban areas. 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.

Capacity-Building, Education, Training and Awareness-Raising: The Canadian Centre for Public-Private Partnerships in Housing (CCPPPH) within CMHC works with non-profit community groups as well as municipal, provincial and federal governments to develop affordable housing. The *CCPPPH* offers financing advice, expertise and consultation including interest-free Proposal Development Fund loans to help non-profit borrowers with the preparation of the detailed financing proposal for their affordable housing project. From 1997 to 2001, the Centre has helped facilitate the development of over 250 housing projects across Canada representing 14,000 units.

A number of national, regional and local organizations and groups have been established to coordinate research and information transfer activities related to Canadian human settlement and housing efforts including the National Housing Research Committee, the Intergovernmental Committee on Urban and Regional Research, the Technical Research Committee of the Canadian Home Builders' Association, the Institute for Research in Construction, as well as federal interdepartmental working groups and federal/provincial/territorial committees. Non-governmental organizations such as the Federation of Canadian Municipalities, Canadian Housing and Renewal Association, Cooperative Housing Federation, First Nations and Aboriginal organizations and others, are instrumental in information sharing.

Research and Technologies: Through Canada Mortgage and Housing Corporation's (CMHC) Healthy Housing and Sustainable Communities research, Canada develops healthy housing practices that reduce energy-consumption in low-rise and multiunit housing, lessen climate change, protect occupant health by improving the indoor environment and reduce resource use. To encourage sustainable community planning and design, CMHC has published *Practices for Sustainable Communities* which outlines principles, tools and Canadian case studies for the physical dimension of sustainable community development. With a variety of partners, CMHC is engaged in research into sustainable urban and rural development approaches which consider intensification, brownfield redevelopment and infrastructure support. (www.cmhc-schl.gc.ca)

The **R-2000 Program** for residential energy efficiency has more than twenty supporting partners across Canada, including home-builders associations, provincial governments and energy utilities. Manufacturers have developed many unique building products, such as heat recovery ventilators, high performance windows and integrated mechanical heating and cooling systems. (www.chba.ca)

Financing: The Canadian housing finance system is part of the larger national and international capital markets and the federal government supports affordable housing through CMHC's housing finance activities. CMHC mortgage loan insurance has helped one in three Canadians to access financing to purchase a home. In 2001, over 460,000 housing units were insured bringing total CMHC mortgage loan insurance in force to over \$211 billion. CMHC increases the supply of low cost funds for housing through the *National Housing Act* Mortgage Backed Securities

(MBS) introduced in 1987 and the Canada Mortgage Bond Program (CMB) launched in 2001. In 2001, total MBS guaranteed exceeded \$8.9 billion, including \$4.7 billion for CMB.

Cooperation: The Canadian International Development Agency funds urban-based development projects undertaken by a range of organizations. Local governments are also involved in international cooperation and the Federation of Canadian Municipalities (FCM) international program, with CIDA funding, has involved over 100 Canadian municipalities in 40 partnerships with local governments in 15 countries in Africa, Southeast Asia and Latin America. The Sustainable Cities Initiative (SCI) led by Industry Canada is a multi-partner public/private initiative to apply Canadian technology and expertise to priority urban sustainability problems in partnership with selected cities around the world. Canada also remains committed to the goals and principles of the Habitat Agenda and the Istanbul Declaration and believes that their successful implementation requires the involvement of government, local authorities, civil society organizations and others.

Chapter 8: INTEGRATING ENVIRONMENT AND DEVELOPMENT INTO DECISION-MAKING

Decision-Making: Sustainable development issues are managed at different levels of government, depending on jurisdiction and scope. Canadian government activities related to the implementation of *Agenda 21* are coordinated through: federal interdepartmental bodies at the deputy minister, assistant deputy minister and working levels, the National Round Table on Environment and the Economy, and the Canadian Council of Ministers for the Environment and the Office of the Commissioner of Environment and Sustainable Development. In addition, there are federal-provincial agreements for shared jurisdiction.

Sustainable development has been built into key statutes, such as the *North American Free Trade Agreement Implementation Act*, the *Canadian Environmental Protection Act 1999*, the *Canadian Environmental Assessment Act*, the *Fisheries Act*, the *Arctic Waters Pollution Prevention Act*, the *Canada Water Act*, the *Oceans Act* and the *National Round Table of the Environment and the Economy Act*. In 1995, the *Canadian Environmental Assessment Act* came into force, requiring proposed projects to undergo an environmental assessment prior to project approval.

The Commissioner of the Environment and Sustainable Development was a mechanism set up to implement Canada's undertakings under *Agenda 21* to develop and implement a national sustainable development strategy. The *Auditor General Act* cites sustainable development as government policy and departments are required to table sustainable development strategies in Parliament every three years. They must be reported on annually and are subject to audit by the Commissioner. The Act also gives the public the right to petition government on identified sustainable development problems.

Public consultation is a legal requirement under many federal and provincial laws. Governments have increased efforts to find effective means of involving major groups and citizens in shaping the sustainable development agenda. Businesses are also reaching out in innovative, constructive ways to other major stakeholders. Provincial and territorial governments have put in place consultative mechanisms to gather public responses to sustainable development challenges.

UNESCO biosphere reserves have been designated in participating countries as sites where people and organizations have made a commitment to live and work more in harmony with nature. Canada has 12 biosphere reserves in seven provinces where activities such as research, monitoring, education and cooperative projects are used to demonstrate conservation of biodiversity and sustainable development. Biosphere reserves contain protected core areas, such as national or provincial parks, as well as large surrounding "zones of cooperation". For the most part, they are coordinated by committees of local residents in Canada, who need to find their own resources to operate the program.

Programs and Projects: All federal government departments are actively implementing sustainable development strategies and include greening of government operations and implementation of environmental management systems.

Nearly all provincial and territorial governments have sustainable or conservation strategies, or are in the process of developing them. Over the last two decades, all provinces and one territory established environmental assessment legislation. As well, many of Canada's First Nation communities and governments are developing sustainable development and sustainable community strategies.

Strategic environmental assessment has been a requirement in Canada since 1990, and this commitment was renewed with the *1999 Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*.

Examples of key projects include:

State of the Environment Reporting – A series of on-going reports produced by various federal government departments to report on environmental conditions, trends, causes and consequences, significance to the ecosystem, human health and the economy, and progress on resolving particular environmental issues.

The Environment and Sustainable Development Indicators Initiative – A three-year program (2000-2003) to develop and promote a focused set of national indicators that link economic activity to its long-term effects on the environment.

National Water Quality Index Prototype - A water quality index that can be used to describe the state of water quality nationally, and that also captures regional variability.

National Set of Environmental Indicators – A representative profile of the state of Canada's environment that helps measure progress towards the goals of sustainable development.

Statistics Canada Environmental Statistics Programme – Development and publication of policy-relevant statistics linking economic activities with sustainable development issues.

Ecological Monitoring and Assessment Network (EMAN) –100 environmental monitoring sites linked via databases and the Internet.

The Taskforce on Information Sharing for the Environment – Advice to the government on the design and implementation of an integrated environmental knowledge management system during 2000-2001.

Sustainability Reporting Program –An independent assessment of the environmental, economic and social trends shaping Canada's future, the report helps Canadians understand how current lifestyle and development choices improve or threaten long-term prospects for a healthy and successful society.

Status: Canada has a wide range of initiatives in environmental information led by various levels of government and others. There are gaps in maintenance and archiving of core national environmental data sets, in the capacity of environmental information producers in Canada and in the representation of local knowledge in existing information systems.

Capacity-Building, Education, Training, and Awareness-Raising: Environmental Management has been a widely accepted field of study at many Canadian institutions, especially at the graduate level. Such programs often include specific sectoral training as well as comprehensive approaches, with the objective of integrating information into policy development and decision-making. Most of the projects and programs are accessible via the Internet to allow access by Canadians and international interests. In addition, all federal government departments and provincial and territorial governments maintain comprehensive web sites offering additional information.

Financing: Government initiatives are generally funded by the relevant level of provincial, federal or municipal government.

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Chapter 9: PROTECTION OF THE ATMOSPHERE

Decision-Making: Government responsibility for protection of the atmosphere is shared by federal and provincial/territorial governments. The Canadian Council of Ministers of Environment is a major intergovernmental forum for atmospheric issues. Both federal and provincial/territorial governments have legislation and regulations designed to protect the atmosphere. The *Canadian Environmental Protection Act 1999* provides the enforcement tools and powers to reduce pollution. Decisions are also made through partnerships with industry, environmental non-government organizations, Aboriginal peoples, educational institutions, municipalities, public health NGOs, local community groups, and non-profit businesses.

Programs and Projects: Canada-wide Standards (CWSs) have been developed for particulate matter less than 2.5 microns, and for ground-level ozone.

Action Plan 2000 on Climate Change includes a commitment of \$500 million over five years, with a portion of the funds used to develop and deploy alternative energy in Canada.

In July 2000, the Canada Climate Change Development Fund (CCCDF) was established as part of the Government's International Strategy on Climate Change. The goal of the Fund is to contribute to Canada's international objectives in climate change by promoting activities in developing countries that address the causes and effects of climate change, while at the same time contributing to sustainable development and poverty reduction. The Fund is a five-year \$100 million initiative and is administered by the Canadian International Development Agency (CIDA). The CCCDF aims to combine technology transfer with a capacity-building approach to help developing countries reduce their greenhouse gases and to contribute to sustainable development. Specifically, the CCCDF finances projects under four program areas: emissions reductions, adaptation, carbon sequestration and core capacity-building for climate change. Canada has also been able to demonstrate its commitment to assisting developing countries combat the causes and effects of climate change through contributions to the Least Developed Countries (LDC) Fund recently established through the UNFCCC.

The Government is encouraging the energy industry to provide more cogeneration and district energy infrastructure by publishing a national emission guideline for gas turbine plants that promotes total efficiency on an output energy basis, while at the same time preventing NO_x emissions.

Multi-pollutant Emission Reduction Strategies for industrial sectors have been developed for six industrial sectors (base metals, iron and steel, concrete, asphalt, pulp and paper, and lumber and allied wood products). These strategies put together a national picture of sectoral emission reduction plans, built from jurisdictional implementation plans to meet particulate matter and ozone standards.

There are new stringent fuel and emissions standards for on-road vehicles, including reduced sulphur in gasoline and on-road diesel fuels, reduced benzene in gasoline and emissions on handheld utility engines, off-road diesel engines, recreational marine engines, and non-handheld utility engines. In addition, there have been vehicle inspection and maintenance programs in two provinces, vapour pressure limits for gasoline in most provinces, and federal regulations to reduce the sulphur content in diesel fuel and the levels of sulphur and benzene in gasoline.

Municipalities are improving eco-efficiency of operations with federal funds that leverage matching contributions and investments from municipal, provincial and territorial governments, as well as increase public-private partnerships.

Canada has ratified the *Montreal Protocol* and all four amendments to the agreement and works with provincial and territorial governments to ensure that all obligations are met or exceeded. In May 2001 the Canadian Council of

Ministers of the Environment approved Canada's strategy to accelerate the phase-out of CFCs and Halons and to dispose of surplus stocks.

Under the UNECE *Long Range Transboundary Air Poollutants (LRTAP) Convention*, Canada ratified an international *Protocol on Heavy Metals*. Canada has signed the *Gothenberg Protocol* dealing with nitrogen oxides, sulphur oxides and volatile organic compounds. Canada is working with the United States and Mexico to develop and implement North American Regional Action Plans on mercury, DDT, chlordane, PCBs, dioxins, furans, and hexachlorobenzene. Canada also works with the U.S. to address transboundary flows of ground level ozone or summertime smog. An *Ozone Annex to the 1991 Canada-U.S. Air Quality Agreement* was signed in December 2000.

Status: Particulate matter and four other smog-causing pollutants have been added to the list of toxic substances under CEPA, committing the Government of Canada to take control and reduction actions.

Capacity-Building, Education, Training and Awareness-Raising: Environment Canada's EcoAction Community Funding program supports non-government groups in creating measurable environmental results. The Community Animation Program helps build the capacity of community groups to tackle health and environment issues at the local level.

Environment Week uses as its theme, "Community Action on Clean Air and Climate Change" to encourage, celebrate and support community action. Clean Air Day was proclaimed by the Government of Canada to increase public awareness and action on two key environmental priorities; clean air and climate change.

Information: http://www.smc.ec.gc.ca/cd/aesorg/Atmospheric_and_Climate_Science_e.cfm

Research and Technologies:

- Canada has national atmospheric and hydrometric monitoring networks that provide scientific information for decision-making on protection of the atmosphere.
- The federal government provides forecasts of daily smog conditions in a number of areas across the country. Similarly, to minimize the health effects of increased UV radiation due to ozone depletion, the federal government provides twice daily forecasts of UV radiation levels to the public.
- Climate and hydrometric observational data is available to experts and the general public from various digital and paper sources.
- The National Pollutant Release Inventory (NPRI) program allows for nation-wide, publicly-accessible, multi-media data reporting on point-sources releases to the environment in Canada.
- The National Air Pollution Network (NAPS) Network is a joint federal, provincial, territorial and municipal network established in 1969 with 239 air monitoring stations in 136 municipalities.
- Canada is characterizing the emissions from various sources, including many kinds of mobile sources and stationary sources such as flares and landfills. The information is used to update pollution inventories and for policy development.

Cooperation: Canada has established a \$20 million Trust Fund with the World Bank to help developing countries and countries with economies in transition deal with Persistent Organic Pollutants (POPs) problems. The Pollutant Release and Transfer Registers (PRTRs) for developing countries and countries with economies in transition involves Canada sharing expertise gained through the National Pollutant Release Inventory.

Chapter 10: LAND MANAGEMENT

Decision-Making: With the exception of federally controlled lands, provincial governments exercise constitutional authority over land use laws and policies. Provinces delegate much of their authority to municipalities, which often set local land use rules and priorities.

Aboriginal peoples are also involved in decision-making activities on land management. Their resource management efforts draw on their traditional ecological knowledge, non-Aboriginal knowledge, and information technology.

Aboriginal involvement has been growing since the 1970s, when the federal government began the process of settling comprehensive land claims in areas where no treaties were signed with Aboriginal peoples. A Final Agreement details decisions reached among an Aboriginal group, the relevant province or territory, and the federal government on a range of issues, including resource management and land stewardship.

Private industry is also an important contributor to land management activities. For instance, a number of mining companies in Canada are now integrating wildlife and habitat conservation initiatives into project planning, development, and closure activities. Many of these companies also support wildlife-related activities outside the mine development area as part of their overall contribution to sustainable development.

Programs and Projects: At the provincial/territorial levels, five provinces have developed provincial land use policies and implementation strategies: British Columbia, Manitoba, Ontario, Prince Edward Island, and Quebec. In the Northwest Territories and Yukon, land use planning processes are reflected in land claims agreements with Aboriginal peoples.

Many provincial resource and land management planning efforts include strategies for wildlife, parks and protected areas, and forestry. For example, British Columbia established the independent Commission on Resources and Environment (CORE) on the development of a broad provincial land use strategy.

Federal initiatives include the National Parks System, which was established to maintain and protect natural areas of Canadian Significance. In the Fall of 2002, the Prime Minister made a commitment to complete the System on a priority basis. As of January 2003, 25 of Canada's 39 terrestrial natural regions were represented by 39 national parks or national park reserves.

Status: Two key challenges facing land management are the urban sprawl caused by low-density settlements spreading around Canada's urban centres that consume vast quantities of land; and fragile ecosystems that raise a host of land management challenges.

Information: A wide range of environmental data and traditional ecological knowledge is collected by Canadian governments, academic institutions, Aboriginal peoples, private sector actors, and conservation groups.

Some initiatives are:

- The Ecological Monitoring and Assessment Network conducts ecological (biotic and abiotic) research and monitoring across terrestrial and marine ecozones.
- The National Soil Data Base as the national archive for land resources information on soil, landscape, and climate. The information is created by land data analysis projects, and collected by federal and provincial field surveys.
- The National Topographic Data Base (Natural Resources Canada) digital data base covering the entire Canadian landmass. It contains the features normally found on topographic maps at the scales of 1:50 000 and 1:250 000.
- The Greencover initiative that assists farmers in converting economically marginal farmland to alternative uses and improve the management of forage, rangeland and critical habitat areas. It also assists farmers in planting

shelterbelts – rows of trees on agricultural lands – to meet environmental objectives regarding climate change, biodiversity and land management.

- Canada's agri-environmental indicators as measures of key environmental conditions, risks, and changes resulting from agricultural practices. In collaboration with farm leaders, the academic community, and government scientists, 14 indicators were developed and reported in 2000. Results of the study suggest that Canadian farmers have made important strides in conserving the health of agriculture soils.
- The Canadian Earth Observation Network (CEONet) and The National Atlas of Canada facilitate access to national-scale geographic information in digital and conventional maps. The maps reflect the social, economic, environmental, and cultural fabric of Canada.
- The National Land and Water Information Service (NLWIS) is a tool for better management of land and water resources by encouraging responsible environmental choices by those who make the day-to-day decisions on land and water management. This service provides online access to information on soils, landscape, hydrology, land use and other data required by producers, agricultural industry groups, municipalities and governments to manage Canada's land and water resources.
- Canada's agri-environmental indicators are measures of key environmental conditions, risks, and changes resulting from agricultural practices. In collaboration with farm leaders, the academic community, and government scientists, 14 indicators were developed. Results of the study suggest that Canadian farmers have made important strides in conserving the health of agriculture soils.
- GGeoConnections facilitates access to national-scale geographic information in digital and conventional maps. The maps reflect the social, economic, environmental and cultural fabric of Canada.

Research and Technologies: Technological capacity related to land use planning is improving through initiatives such as the RADARSAT satellite and tracking system. Since completion in 1995, it has been used for such resource and environmental management as flood assessment, conducting mineral exploration, forest monitoring and ice monitoring. Two receiving stations have been built and are operated by natural Resources Canada, one in Quebec and the other in Saskatchewan.

Cooperation: Canada's land is shared among various levels of government, individual landowners, business and industry, and local communities. An example of cooperation is the Resource Partnerships Program (RPP) that assists Aboriginal communities to participate in large-scale natural resource development projects through strategic planning and the negotiation of agreements with private sector developers and provincial/territorial governments.

Canada has also developed, through a North American working group, an ecological framework for sustainable resource use and management. Canada also works with other countries through hundreds of initiatives on protection, conservation and rehabilitation of ecosystems. For example, Canada is working in cooperation with other circumpolar countries to protect the Arctic ecosystem through the Arctic Council.

International development agencies such as the International Development Research Centre (IDRC) support the efforts of developing countries to address land use issues. For example, they are conducting research to find better ways to address pressures on land resulting from local population growth.

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Chapter 11: COMBATING DEFORESTATION

Decision-Making: In Canada, 94 per cent of the forest lands are publicly owned. The remaining six per cent of the total forest lands are privately owned, either by individuals, communities or companies. Under Canada's constitution, ownership of publicly owned forested land rests with the provinces, except for those federal lands that account for 23 per cent of the total forest lands. Most of these are located in the territories.

The federal, provincial, and territorial ministers responsible for forests cooperate closely on national and international matters, particularly via the Canadian Council of Forest Ministers (CCFM). The CCFM promotes the development of policies and initiatives for the sustainable management of Canada's forests.

The federal government's involvement in forestry issues is concentrated on science and technology, international relations, trade and investment, industrial and regional development, national statistics, Aboriginal affairs, environmental regulations, and the management of federal lands. Forest management is largely a matter of provincial/territorial jurisdiction. Each province and territory has its own legislation, policies, regulations, standards and programs through which it allocates forest harvesting rights and details management responsibilities.

Forest laws and the effective enforcement of existing guidelines advance sustainable forest management. For example, Saskatchewan's *Forest Resources Management Act* uses unprecedented levels of public involvement, multilevel planning, independent audits, and regular monitoring; amendments to Nova Scotia's *Forests Act* enable the government to apply sustainable management principles to programs throughout the province; Alberta has developed a framework that allows public access to the wide range of benefits provided by sustainable forest ecosystems; and a number of provinces have incentives to encourage the sustainability of private woodlots through silvicultural activities and education. As well, the federal government has extended the intergenerational tax deferred rollover to transfers of commercial woodlots that are operated in accordance with a prescribed forest management plan.

Harvesting of Canada's publicly owned commercial forest land is carried out almost exclusively by private forest companies through licencing agreements with provincial and territorial governments. These agreements generally require a balance between the commercial goals of the industry and the broader goals of the government and public.

Programs and Projects: The National Forest Strategy involves governments, industry associations, environmental organizations, Aboriginal associations and others to develop workable formulae to reconcile conflicting expectations. Under the Strategy, science-based criteria and indicators have been developed that can be used to define and measure Canada's progress in the sustainable management of forests.

The Canadian Biodiversity Strategy (CBS) includes a series of goals and directions for the sustainable use of biological resources. A federal-provincial/territorial Working Group has been established to oversee implementation of Canada-wide biodiversity priorities.

Government agencies routinely seek public views and work closely with industries, Aboriginal groups, and environmental groups to incorporate recreational, social, wildlife, and economic values into forest management planning and decision-making. For instance, the First Nation Forestry Program (FNFP) is a partnership between First Nations and the federal government to promote greater First Nation involvement in the forest sector. The Model Forest Program was established by Canada in 1992 to accelerate the implementation of new approaches to forest management via partnerships between groups and individuals. Model forests cover more than 6 million hectares and represent the diverse ecologies of Canada's major forest regions.

Status: Forest management is becoming increasingly complex. Canada has faced challenges in developing new approaches to data collection and management, creating tools to measure social values, and expanding knowledge of forest ecosystems. Canada's forest management practices and processes will continue to face challenges in adapting to new knowledge and demands.

Capacity-building, Education, Training and Awareness-raising: The Sustainable Forest Management—Networks of Centres of Excellence has a goal of providing research support for the development of a total management protocol for Canada's Boreal Forest. This includes the creation of environmental technologies and management strategies for sustaining all values inherent in the boreal forests.

Information: Canadian forestry companies are providing customers with information about responsible forest stewardship initiatives. A National Forest Information System (NFIS) is being developed to integrate and link information on Canada's forests.

Cooperation: Canada's forest development assistance seeks to strengthen developing countries' capacity to manage forests. Projects supported by Canada typically incorporate a range of activities, including forest resource assessment, community forestry, agroforestry, local forest industry development, the conservation of genetic diversity and combating desertification.

The International Model Forest Network (IMFN) announced by Canada in 1992 continues to expand globally. The IMFN approach links policy with on-the-ground practice using large-scale sites and inclusive, broad-based partnerships.

Canada continues to work cooperatively in international efforts to develop criteria and indicators for sustainable forest management, such as the Montréal, Pan-European, and Tarapoto processes. As well, Canada contributes to the sustainable development of forests under various multilateral environmental agreements (climate change, biodiversity, desertification) and through support to and participation in the United Nations Forum on Forests process.

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Chapter 12: MANAGING FRAGILE ECOSYSTEMS: COMABTING DESERTIFICATION AND DROUGHT

Decision-Making: Sustainable management and use of Canada's land and natural resources is shared by federal and provincial governments. Efforts to address land degradation and desertification involve federal and provincial government departments (such as agriculture, environment, forestry, resource management), conservation groups, industry, farmers, academia, and non-governmental organizations.

Nationally, the federal government has implemented a variety of legal requirements. At the international level, Canada participates actively in discussions to promote sustainable development in many multilateral fora. In particular, Canada is a *Party to the UN Convention on Combatting Desertification (UNCDD)*.

Programs and Projects: The Canadian International Development Agency (CIDA) works alongside the International Development Research Centre (IDRC) and other government departments in the implementation of the UNCCD. CIDA contributes to the desertification challenge through Official Development Assistance (ODA) programming in various regions of the world. (<http://www.acdi-cida.gc.ca/desertification-e.htm>). IDRC has extensive experience working on drylands issues and a long history of programming to combat desertification. It engages in a number of research projects addressing desertification and has produced numerous case studies and reports (<http://www.idrc.ca/>).

Various federal government organizations work on programming of direct relevance to the sustainable development and conservation of Canada's natural resources, including drylands. Agriculture Canada's Prairie Farm Rehabilitation Administration (PFRA) supports a variety of programs to implement land conservation practices in the Canadian prairies (<http://www.agr.ca/pfra/>). Canada's non-government organization community is also actively involved in combating desertification.

The National Water Supply Expansion Program (NWSEP) is a four year \$60 million initiative to improve producer capacity to deal with drought through expanded water supply and protection of the resource. Through the NWSEP, Agriculture and Agri-Food Canada provides financial assistance for the development of solutions to water supply issues across Canada that are considered a priority for agriculture. These may include infrastructure development such as surface storage projects, wells, regional water pipelines, pasture pipelines and tank-loading facilities. Other projects may include strategic studies that will identify water supply solutions for areas that are currently experiencing shortfalls or are anticipated to experience water supply shortages in the near future.

Capacity-Building, Education, Training and Awareness: Canada's research networks (e.g., agricultural research centres, universities, etc.) are active in the development of new technologies in areas such as conservation agriculture, drought monitoring, maintenance of biodiversity, and others, both in Canada and internationally.

Canada has worked to raise domestic public awareness about international desertification through web sites, public service announcements, and activities to mark the World Day to Combat Desertification (June 17). Canada's status as both a Donor Party and an Affected Party under the UNCCD is stimulating research, education, awareness, and collaborative efforts that may help combat land degradation in Canada and abroad.

Information:

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

<http://www.agr.ca/pfra/drought.htm>

Canada's reports to the UNCCD are available to the public through CIDA's website. Notable publications include *Combating Desertification: Building Bridges* and *Desertification: A Perspective on Canada and Combating Desertification: Building Bridges*, that provides an overview of efforts with developing country partners.

Research and Technologies: Canada actively pursues new research and technologies. Canadian accomplishments in climate research, drought monitoring, remote sensing and geographic information systems technology are proving particularly important. For example, the Natural Resources Canada Centre for Remote Sensing has been extensively involved in remote sensing research, and is considered a leader in radar and hyper-spectral applications development. Canada's RADARSAT-1 is currently the most sophisticated civilian radar satellite in orbit, and RADARSAT-2 promises to provide considerably more information on agricultural resources.

Research centres have been established in Saskatchewan and Alberta by Agriculture and Agri Food Canada to focus specifically on dryland farming issues and to help develop a better understanding of issues related to soil organic matter, maintenance of genetic diversity, tillage systems, wind erosion, livestock management, and many other topics.

IDRC undertakes research activities related to combating drought and desertification, with developing country partners, and places a strong emphasis on information sharing.

Canadian universities make substantial research contributions.

Financing: Canada supports developing countries' efforts to combat desertification through its ODA programming. Canada also offers support through multilateral organizations, such as the UNCCD's Secretariat and Global Mechanism, UNDP and UNEP, among others. Canada also provides funding for NGOs working on desertification, and finances initiatives targeting the root causes of desertification (e.g., land management, soil conservation, drought, etc.).

Cooperation: Canada is committed to combating desertification. It has demonstrated its support for the CCD by actively participating in the negotiation of the Convention and by the leadership it demonstrates within convention processes, including as President of the Fifth Conference of Parties to the UNCCD. Canada is also a signatory to many multilateral environmental agreements which support the goals and objectives of the CCD. In addition, Canada supports or is an active participant in multilateral organizations that address land degradation issues.

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Chapter 13: MOUNTAINS

Decision Making: Coordinating Bodies – Mountains in Canada are not governed by a single level of government or managed by a single organization. There are large portions of mountains that are publicly owned, and are major tourist destinations. In addition, there are vast mountain National Parks administered by the Parks Canada Agency of the federal government.

Legislation and Regulations – Legislation specific to mountains does not exist in Canada. However there are a number of federal and provincial laws that help protect mountain environments. For instance, the *Canadian Environmental Assessment Act* helps to guide decisions making on development; the *National Parks Act* sets out guidelines for management of park land; and the *Species at Risk Act* guides habitat protection.

Strategies, Policies, and Plans – Integrated land use and resource management planning are increasingly used in Canada to help ensure environmentally sustainable development in Canada's mountain ecosystem. Watershed planning and river management planning are examples. These initiatives rely on community and regional administration for implementation.

In British Columbia, land and resources management plans (LRMP) are being used as a way to resolve land and resources-based conflicts in all regions of the province, including mountain ecosystems. LRMPs have been developed through a multi-stakeholder process for several mountain regions, such as the east and west Kootenays. These plans take into consideration all aspects of sustainable development: commercial resource use; protected areas; development strategies; and certainty in land use designation. When stakeholders have agreed to an LRMP, it is forwarded to government for approval and implementation.

Major Group Involvement – In the national park context, public participation is being increased in the decision-making process.

Programs and Projects: The Government of Canada announced an expansion in 2002 for the national parks system that includes a new park to protect the mountains and fjords of northern Labrador in the Torngat Mountains. A new park will also be established in the Mealy Mountains of southern Labrador. Another new park will be established in the Northern Interior Plateaux and Mountain natural region of British Columbia and the Yukon.

The 2002 International Year of Mountains successfully drew together partners from federal and provincial parks, heritage tourism organizations and private mountain industry operators to promote mountain conservation.

Canadian Heritage Parks Service, is a partner with the Canadian Forest Service, of Natural Resources Canada in four of ten model forests, such as the Foothills Model Forest outside Jasper National Park. Through this cooperative program, the Parks Service is working to support the maintenance of sustainable regional landscapes that require preservation efforts, as well as activities beyond park boundaries.

Status: Canada does not face population pressures in its mountain regions. Nonetheless, economic activities in mountain regions have come under increased scrutiny, particularly forestry and mining. In some regions resort development, eco-tourism, and related support activities are high growth sectors. In addition, transportation and utility corridors utilize mountain passes that are often critical wildlife habitat.

Mountain areas are well represented in Canada's national parks system, and in the park systems of British Columbia, Alberta, and Yukon. Seven of Canada's mountain national parks have been judged significant enough globally to be designated as World Heritage Sites under the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Challenges: In the mountain parks, forestry visitor/tourism facilities, utility corridors, and to a lesser extent, urbanization and hydro-electric development were commonly identified as having an impact on park ecology. This, in many instances, simply confirms the integration of the park and its surrounding ecosystem, and the need to plan for and manage all protected areas within a broad regional context.

Information:

Information on Canada's parks is at www.parkscanada.gc.ca

Information on the International Year of Mountains is at www.yearofmountains.ca

Chapter 14: SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT

Decision-Making: The pursuit of sustainable agriculture in Canada brings together the knowledge and experience of governments, farm and environmental groups, farmers, farm suppliers, rural residents, scientists, educators and the interested public.

Regulation has been the main government tool for protecting the environment. Some of the more relevant federal laws are the *Canadian Environmental Protection Act*, the *Canadian Environmental Assessment Act*, the *Fisheries Act*, the *Canada Health Act*, the *Pest Control Products Act*, the *Plant Protection Act*, and the *Animal Protection Act*. In addition, a number of provinces are in the process of issuing new regulations related to farming practices. Finally, municipal bylaws may limit the expansion of agriculture by controlling the siting of new operations, particularly intensive livestock operations.

The Sustainable Development Strategy developed by Agriculture and Agri-Food Canada (AAFC) seeks to promote the sustainable use of natural resources, encourage environmentally sustainable growth, and contribute to the development of sustainable communities. It includes clear, measurable, and time-bound performance targets. AAFC integrated its action plan for biodiversity into its Sustainable Development Strategy in order to contribute to the implementation of the *Canadian Biodiversity Strategy*, and will integrate sustainable development principles into its own operations and decision-making.

The Canadian Rural Partnership (CRP) initiative aims to better equip rural communities to participate in opportunities for sustainable community development.

Federal, provincial and territorial agriculture ministers are working toward a national agriculture policy framework. It includes an effort to enhance the sector's environmental performance through the accelerated adoption of sound environmental practices on the farm.

Governments and other stakeholders are seeking non-regulatory means to encourage voluntary compliance with environmental standards. They are offering information, technical assistance, and financial incentives to help farmers adopt more sustainable practices.

Non-government groups are also actively pursuing sustainable agriculture. For instance, industry groups and public advisory committees work with governments to develop programs which balance economic and environmental concerns. Farm groups offer training, advice and practical assistance to help farmers adopt more environmentally sustainable practices. For example, the Climate Change Skills and Knowledge Transfer program assists farmers in understanding climate change issues and identifying practices to reduce greenhouse gas emissions.

Programs and Projects: The National Soil and Water Conservation Program (NSWCP) supported some 300 projects across Canada to help the agriculture and agri-food sector adopt more sustainable practices. Building on its success, the Agricultural Environmental Stewardship Initiative (AESI) emphasizes projects that address agricultural impacts on water, soil, air quality, biodiversity, and greenhouse gas emissions. The Canadian Rural Partnership Pilot Projects address a variety of rural development priorities, including sustainable produce markets, stewardship activities, infrastructure, and eco-tourism.

Canada's Community Pasture Program has operated in the prairie provinces since 1937 to rehabilitate and conserve nearly one million hectares of severely eroded and drought prone lands. The appropriate use of rangeland in the prairie region of Canada is an example of sustainable agriculture in Canada. Native and seeded rangelands are important to livestock production, and for their provision of public benefits including biodiversity, research sites, ecosystem conservation, carbon sequestration, habitats for endangered species, and recreation opportunities.

Provincial government initiatives complement federal programs. The Alberta Environmentally Sustainable Agriculture (AESAs) program provides \$5 million annually for farm-based extension programs, the development of an environmental farm plan program, monitoring soil and water quality, and applying environmentally friendly technology in the agricultural processing industry.

Industry-led adaptation councils have been established across Canada in every province and territory under the Canadian Adaptation and Rural Development (CARD) Fund. The councils work in partnership with government and industry to promote adaptation and diversification in the agriculture and agri-food sector. Among its other priorities, the CARD focuses on environmental sustainability.

Eleven of Canada's biosphere reserves (see Chapter 8) include significant agricultural areas, and have sustainable agriculture and rural development as priorities. Because of the grass-roots nature of the program, farmers and ranchers are part of the coordinating committees for the biosphere reserves. Redberry Lake Biosphere Reserves in Saskatchewan is an area of low average income and education, and has developed a sustainable development plan it hopes to implement with government assistance.

Status: Summer-fallow was once a common land management practice in the prairies that could result in significant soil erosion. To protect soil resources, it is being replaced by conservation tillage practices and crop rotations. Similarly, Ontario had 450,000 no-till hectares in 1996, compared to 100,000 in 1991.

In some areas, several environmental risks have increased and environmental conditions have worsened (e.g., water contamination from nitrogen, and increased nitrous oxide emissions). The main cause of this has been a relative intensification of agriculture across much of the country from structural changes in farming and increased market demand for some products. Canadian agriculture remains among the most extensive in nature among developed countries, especially with its reduced use of chemicals.

The following national priorities remain challenges: continuing to avoid the conversion of natural lands to agriculture through sustainable intensification; increasing the use of tillage alternatives; improving integrated pest management controls; environmental farm planning; adapting to and mitigating climate change; protection of the marine environment from land-based activities.

Capacity-Building, Education, Training and Awareness-Raising: *Countryside Canada* is a national program that recognizes exemplary stewardship efforts by farmers and ranchers; and the Soil Conservation Council of Canada's "Taking Charge" initiative assists farmers in understanding climate change issues and identifying practices to reduce greenhouse gas emissions.

Information: Canada's agri-environmental indicators (AEIs) are measures of key environmental conditions, risks, trends and changes due to agricultural practices. Fourteen indicators have been developed within six categories: environmental farm management, soil quality, water quality, greenhouse gas emissions, agro-ecosystem biodiversity, and production intensity. The indicators are expected to benefit both Canada's agricultural industry and the environment by generating information on the agricultural sector's environmental performance; demonstrating the agricultural sector's progress in adopting stewardship principles and environmentally sound practices; supporting the development of strategies that target areas and resources facing environmental risks; and facilitating environmental analysis and monitoring of agricultural policies and programs.

Research and Technologies: The federal government carries out research structured in four national programs: sustainable production systems, environment, food safety, and bioproducts and bioprocesses. They operate in cooperation with provincial governments, universities, and the sector itself. For example, the ManureNet database collects information on manure and nutrient management practices across Canada. Several provinces also carry out

research, especially in universities, and also the private sector. As well, producers often learn about new innovations and technologies through "field days" organized by government, NGOs, and farm suppliers.

Financing: AAFC has allocated \$264.5 million under the new Agriculture Policy Framework for environmental action, including improving access to newer and more environmentally friendly pesticides, increasing the number of farms with environmental plans, and taking environmentally fragile land out of production. Provincial, producer, industry-led councils, and other federal departments allocated \$73 million in funds for environmental projects under the Canadian Adaptation and Rural Development fund for 1997-2002. In 1998, the federal government dedicated \$20 million over four years for the Canadian Rural Partnership. Approximately \$12.8 million of this money will be provided to Rural Partnership Pilot Projects.

Cooperation: Canada works with many nations to promote balancing the environmental, economic, and social pillars of sustainable agriculture and development. The Canadian International Development Agency (CIDA) works in partnership with many countries and groups to promote sustainable development activities. For example, CIDA funds the international secretariat of the China Council for International Cooperation on Environment and Development (CCICED). The CCICED advises the State Council and Premier of China on policy options for sustainable development in China.

The International Development Research Centre (IDRC) initiates, supports and conducts research into the problems of the developing regions of the world. Several of its priorities touch directly on sustainable agriculture and rural development, including: food security, equity in natural resource use, biodiversity conservation, and sustainable employment.

Canada also participates in policy and programming activities by the Food and Agriculture Organization of the United Nations; the Inter-American Institute for Cooperation on Agriculture of the Organization of American States; and the Organization for Economic Cooperation and Development (OECD). In June 2002, Canada became the first developed country to ratify the FAO *International Treaty on Plant Genetic Resources for Good and Agriculture*.

Canada supports agriculture and rural development (ARD) in developing countries through a wide range of programs and projects. CIDA has recently identified ARD as a priority area in which it will renew its policy approach and strengthen its investments. The objectives of CIDA's programming in ARD are to reduce poverty, to improve food security, to promote gender equity, and to achieve environmental sustainability. Efforts range from working with governments on agriculture policy development and sector planning, to promoting sound communities in agricultural education.

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Chapter 15: CONSERVATION OF BIOLOGICAL DIVERSITY

Decision-Making: Provincial governments hold jurisdiction over the majority of biological resources. However, the federal government, Aboriginal groups, industry, non-government organizations (NGOs) and scientific institutions all play important roles in the broader biodiversity decision-making process.

The *Canadian Biodiversity Strategy* (CBS) provides an example of the importance attached to cooperative decision-making. The CBS offers a framework for the ecological management of Canada's living resources. Though each jurisdiction can determine its own priorities and actions, the CBS emphasizes cooperation in creating the policy, management and research conditions necessary to advance ecological management.

A federal-provincial/territorial Biodiversity Working Group with representation from each jurisdiction was established to develop and aid in the implementation of the CBS. The Canadian Biodiversity Forum provides advice to the Working Group. It includes representatives from industry, academia, civil society organizations, Aboriginal organizations and the scientific community.

Industry and non-civil society organizations in major sectors have also become actively engaged in the implementation of the CBS by advancing conservation and sustainable use objectives in policies and codes of conduct, and by ensuring that their activities comply with relevant laws and regulations. Aboriginal peoples are also decision-makers responsible for managing and developing traditional lands, in keeping with their key role in conserving biodiversity and ensuring the sustainable use of biological resources.

The private sector and general public also have important roles to play since private land use is critically important to conserving biodiversity and ensuring the sustainable use of biological resources. Large areas of private land are used for agriculture, forestry and other purposes while many areas of public land are leased for a variety of land uses, such as grazing and forestry.

Finally, a variety of communication and participatory mechanisms ensure that all Canadians have the opportunity to become involved in decisions relating to the environment.

Programs and Projects: In addition to separate initiatives, federal, provincial and territorial authorities often cooperate to develop strategies, and action plans. Initiatives include enacting laws for environmental protection and conservation; facilitating and developing public policies for land and resources; acquiring lands for conservation purposes; developing national policies and programs; providing conservation and sustainable use incentives; undertaking scientific research and analysis; and supporting public education and awareness programs

The Accord for the Protection of Species at Risk commits governments to establish complementary legislation and programs that provide for the effective protection of species throughout Canada. The *Species at Risk Act* passed by Parliament in December of 2002, aims to prevent wildlife species (including birds, plants, fish, reptiles, amphibians, molluscs, mammals and insects) from becoming extinct or lost from the wild, and to secure their recovery. It covers all wildlife species at risk nationally and their critical habitats.

Parks Canada protects and restores species and their habitats in national parks (see Chapters 10 & 12), national historic sites and national marine conservation areas (see Chapters 17 & 18). It also uses various media and interpretation programs to build awareness and educate Canadians about species at risk.

The Canadian Parks Ministers' Council committed in 1992 to work towards completion of networks of protected areas representative of Canada's land-based natural regions. In 2000, the Council reported in a publication called "*Working Together: Parks and Protected Areas in Canada*" that Canada's parks agencies had added more than

24 million hectares to the system since 1992. Canada is also in the early stages of efforts to establish marine protected areas.

Each year certain themes from the Convention of Biological Diversity are intensively reviewed by the Conference of the Parties. Parks Canada is coordinating preparations for a discussion of the theme “Protected Areas” for the Convention of Parties meeting in March, 2004.

Status: While there are many sectoral and jurisdictional initiatives to monitor the status and trends of biodiversity, there is no common framework to facilitate integration of data across shared ecosystems. Along with habitat loss, invasive species are the most significant threat to biodiversity. While legislation is in place in all jurisdictions, major gaps in protection exist. For instance, many programs to address invasive alien species tend to be reactive and sectoral in nature.

There are many gaps in Canada’s biodiversity knowledge base. It is difficult to keep pace with developments in biodiversity science, such as those affecting biotechnology and information management.

Federal, provincial and territorial authorities have responded to many challenges by agreeing to collaborate on four implementation priorities for biodiversity issues of Canada-wide concern. They include developing a biodiversity science agenda; enhancing capacity to monitor and report on status and trends; addressing the threat of invasive alien species; and engaging Canadians by promoting stewardship

Capacity-Building, Education, Training and Awareness-Raising: Education and awareness-raising are key activities. In 1998, Canada produced a report entitled *Learning About Biodiversity – A First Look at the Theory and Practice of Biodiversity Education, Awareness and Training in Canada*. Canada participates in the Biodiversity Education experts group that presented its report and recommendations at COP6. Informal education is provided by a variety of government and non-governmental organizations, including the media, museums, zoos, botanical gardens, aquariums and environmental education centres.

Federal, provincial and territorial governments are collaborating in the development of a Canada-Wide Stewardship Action Plan aimed at engaging Canadians in the conservation and sustainable use of biodiversity on private lands. Several non-governmental organizations are also involved in stewardship programs. For example, the Natural Legacy 2000 program, delivered by four of Canada’s largest conservation organizations, marked the millennium with numerous community conservation projects in all regions of Canada. Under the Biodiversity Stewardship in Resource Industries (BSRI) initiative, government, industry and conservation groups have come together to develop new conservation initiatives and partnerships.

The Biodiversity Convention (as well as other MEAs) includes provisions for developed countries to assist poorer countries with the challenging task of implementing it. In recognition of this, the Canadian International Development Agency has identified among the major objectives of its *Sustainable Development Strategy for 2001-2003* the need “to strengthen the capacity of developing countries and CITs to negotiate and implement multilateral trade and environmental agreements.” Specifically, the Strategy commits CIDA to helping these countries reduce and adapt to the effects of climate change, and explore, with other government departments, the possibility of establishing similar “capacity development” mechanisms for related global environmental issues, such as desertification and biodiversity.

Information: Among other initiatives, Canada has developed the Canadian Biodiversity Information Network (www.cbin.ec.gc.ca) and the Canadian Biodiversity Information Facility. Natureserve Canada (<http://www.natureserve-canada.ca/english/about.htm>), consists of a national network of conservation data centres that collect and share data with all interested parties in support of conservation activity within each province and territory. GeoConnections (www.geoconnections.org), provides access to Canada’s geographic information

databases. The Ecological Monitoring and Assessment Network (EMAN) provides a national perspective on the status of Canadian ecosystems, while engaging the public in biodiversity science (www.eman-rese.ca).

Research and Technologies: Canada carries out research in the conservation and suitable use of biological diversity, both as applies to natural biodiversity and to sectors such as agriculture, fisheries and forestry, through federal and provincial government institutions, university and the private sector.

An interdepartmental federal working group encourages the use of science and technology for sustainable development. The group collaborates with the private sector, provincial and municipal governments, foreign agencies and grassroots groups to collect data, test solutions, and share knowledge and information.

Financing: Financing for biodiversity is provided by governments and non-governmental agencies. It can be estimated that Canada spends billions of dollars each year in support of the conservation and sustainable use of biodiversity both domestically and through official development assistance to developing countries and countries with economies in transition (see cooperation section below). Canada's contribution to the third replenishment of the Global Environment Facility (GEF) totalled a 4.28 percent share of the total, which translates into C\$158.94 million over four years. This represents an increase from the GEF-2 contribution of C\$ 122 million over four years. Approximately 40 per cent of the budget of the GEF goes toward biodiversity related projects. Canada also provides funding to the permanent Secretariat of the CBD in Montreal. The most recent contribution totalled \$1 million over three years in support of the ongoing operations of the secretariat.

Cooperation: Canada is an active participant in a number of international environmental and trade agreements whose goals relate to the conservation and sustainable use of biodiversity. These include the *Convention on Biological Diversity*, the *Convention on International Trade in Endangered Species and Wild Fauna and Flora*, the *Ramsar Convention on Wetlands of International Importance*, and the *Convention on the Protection of Migratory Birds in Canada and the United States*. Canada became the first developed country to ratify the *International Treaty on Plant Genetic Resources for Food and Agriculture* in June 2002.

Canada also works through an array of regional and international partnerships. Examples include the *Framework for Cooperation Between the US and Canada for the Protection of Wild Species at Risk* and Canada's involvement in the North American Commission for Environmental Cooperation (CEC), the North American Waterfowl Management Plan (NAWMP), the North American Bird Conservation Initiative (NABCI), the North American Forest Commission of the FAO, the International Model Forest Network, and the biodiversity-related work of the Arctic Council.

The Canadian International Development Agency (CIDA) and the International Development Research Centre (IDRC) assist developing countries in applying science and technology to their environmental and development problems. For example, the IDRC Sustainable Use of Biodiversity Program reviews means to conserve biodiversity by promoting its sustainable use by indigenous and local communities.

CIDA's Sustainable Development Strategy 2002 lays out substantial commitments to pursue biodiversity-related objectives in its programming, and a number of projects have addressed issues related to biodiversity. These initiatives have included support at the international and national level in LDCs for capacity development activities relating to implementation of the multilateral environmental agreements, as well as broader environmental management.

CIDA recognizes the integral link between poverty reduction and biodiversity, and is actively engaged in the policy dialogue at a national and international level. The Agency's bilateral programs include projects related to food security and restoration of arid ecosystems in Africa and the Middle East, for example the conservation of critical wetlands in the Zambezi River Basin. In the Americas, there are projects related to the management of protected

areas, including community management of natural resources. In Asia, the focus has been on strengthening government institutions and assisting in the development and implementation of broad strategies that address both environmental and economic issues. Capacity development at environment ministries, as well as community development are key priorities. In Central and Eastern Europe, projects relevant to biodiversity are centred on socioeconomic issues, and efforts are centred on pollution prevention, environmental justice and strengthening organizational and institutional capacity.

Chapters 16 & 34: ENVIRONMENTALLY SOUND MANAGEMENT OF BIOTECHNOLOGY AND TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGY, INTERNATIONAL COOPERATION AND CAPACITY-BUILDING

Decision-Making: The Canadian environmental industry includes some 6,500 firms that employ some 221,000 persons, generating annual revenues of about \$20 billion. One-third of these firms are manufacturers, while two thirds are service providers.

The federal government has the primary responsibility for protection of the environment for applications that are national in scope, with provinces and municipalities having jurisdiction within their respective regions. Canada's approach to the development and transfer of technology encourages demand-focused, market-driven arrangements rather than clearinghouse mechanisms. In addition, Canada encourages the use of existing transfer mechanisms, and the promotion of mutually beneficial technology-sharing arrangements, to support global environment benefits and expanded trade and market development for participating countries.

Another area of emphasis is the application of environmentally sound technologies and alternative energy technologies that will improve the efficiency and environmental performance of traditional manufacturing and resource processing sectors.

A new *Canadian Biotechnology Strategy* was approved by the federal government and announced in 1998. The renewed strategy builds on the previous version by creating a policy framework, establishing a balanced and arm's length advisory committee, improving horizontal management of issues by the government and identifying themes for implementing the strategy.

The Canadian Biotechnology Advisory Committee (CBAC) is an independent expert advisory committee established in 1999 by the federal government. Its mandate is to provide advice to a Coordinating Committee of federal Ministers on broad policy issues associated with the ethical, social, regulatory, economic, scientific, environmental and health aspects of biotechnology. In fulfilling its mandate, CBAC is to raise public awareness and engage Canadians in an open dialogue on these issues.

Programs and Projects: The federal government's "green industry" initiatives, such as the *Canadian Environmental Industry Strategy* (1995-99) and the Technology Early Action Measures (TEAM) fund foster the development of Canadian environmental technologies and their transfer to developing countries.

As a party to the *Montreal Protocol on Substances that Deplete the Ozone Layer*, Canada contributes approximately US \$5 million a year to the Protocol's Multilateral Fund. Under the Fund, Environment Canada has undertaken a number of bilateral projects with developing countries. Current projects include: reducing consumption of CFCs in the refrigeration and air-conditioning sectors of Chile, Cuba and Uruguay; gradual elimination of India's consumption of new halons; and demonstrating alternatives to methyl bromide in Kenya.

The Canadian Environmental Technology Verification Program, begun in 1997, is designed to provide credible and independent third-party verification of environmental technology performance claims. To date, 34 ETV Certificates have been awarded to qualifying companies.

Capacity-building, Education, Training and Awareness-raising: In partnership with provincial governments, environmental industry associations, and the private sector, the federal government has supported the establishment and operation of the Canadian Environmental Technology Advancement Centres (CETACs). As private sector, not-for-profit corporations operating at arms length from governments, CETACS support the development, demonstration and deployment of innovative environmental technologies by assisting clients with support services such as general business development counselling, market analysis, assistance in raising capital, and technical assistance.

Canada has transferred expertise on environmental regulations, policies and technical programs to several developing countries under the International Environmental Management Initiative (IEMI). Projects supported by the IEMI include an environmental auditing program in Thailand, vehicle emission control workshops in Mexico and Pakistan, and a laboratory accreditation program in Ukraine.

The federal government works with industry in Canada and abroad to support the research and development of new technologies that reduce air pollution. One such technology is being demonstrated through the conversion of two-stroke auto-rickshaws in four major cities in Pakistan to operate on compressed natural gas.

The Phytoremediation (use of plants in cleanup of contaminated sites) Technology Assessment Procedure and Related Training Modules is designed to transfer Canadian experience with environmentally-sound technology to developing countries.

CIDA's Southern Cone Technology Transfer program is a five-year, \$15 million development program focusing on Argentina, Brazil, Chile, Colombia, and Uruguay to fund the transfer of Canadian know-how to partner institutions in the Southern Cone.

Environment Canada and the Indian Ministry of Environment and Forests are collaborating to implement a \$5 million CIDA-funded project to strengthen India's environmental institutions. This project will help India's environmental institutions to obtain the training and build the capacity they need in order to address environmental issues of national and global concern, and promote sustainable development.

Information: Information on Canada's environmental technologies can be found at:
http://www.ec.gc.ca/scitech/labs/environmentaltechnologycentre_e.htm

For more information on biotechnology, see:
<http://www.cbac-cccb.ca/english/>

Research & Technologies: Science-based projects under the Canadian Biotechnology Strategy were evenly distributed between stewardship and benefits. Stewardship projects used scientific research to establish health and environmental regulations for biotechnology products and applications. Benefits projects expanded Canada's research and development base to support Canadian competitiveness in the biotechnology sector and related industries including agri-food, forestry, aquaculture and environmental technologies.

The majority of the scientific research focused on the field of genomics. Canadian scientists have developed genomics-based diagnostic tools that will be used to screen biotechnology products for potential pathogens, detect genetically-modified organisms (GMOs) in forests and diagnose human, animal and plant pathogens using "gene-chips." Scientists were able to increase their understanding of how GMOs may impact other elements of the environment including plants, insects, soil communities, forests and wild fish populations in support of regulatory requirements. Biotechnology has been used to develop new crop varieties that require fewer chemical inputs

(pesticides and fertilizers) while maintaining or increasing productivity. In order to support continued Canadian innovation in genomics and related fields, the Canadian Bioinformatics Resource was funded by CBS.

The Strategy also supported R&D projects that developed new technologies for Canadian industries. Bioremediation products were field tested to allow the clean-up of contaminated waste sites using plants, trees and microorganisms. Natural chemical products in trees were identified with the goal of producing insecticides to protect forest resources from insect damage. Genetic databanks were developed to improve aquaculture breeding programs and to manage wild fish and lobster populations in Atlantic Canada.

Financing: In 2001, Environment Canada, jointly with Natural Resources Canada, established a Sustainable Development Technology Fund at an initial level of \$100 million to stimulate the development and demonstration of new sustainable development technologies, in particular those aimed at climate change and clean air. Funding for climate change-related technology transfer is provided in part through the Climate Change Action Fund (CCAF).

Canadian assistance in the form of technology transfer and international capacity development is routed through a number a channels, notably the Canadian International Development Agency and the International Development Research Centre.

Cooperation: International technology transfer is through cooperative arrangements among Environment Canada, the Canadian International Development Agency, the International Development Research Centre, the Department of Foreign Affairs and International Trade, Industry Canada, and Canadian companies. Governments support efforts by industries and researchers to meet international needs through agreements with other countries, joint ventures and technology transfer. Efforts in technological cooperation and capacity-building are focused on particular areas of Canadian expertise. There are currently Environment Canada technology transfer projects in China, India, Pakistan, Egypt and Mexico.

Canada has technology transfer obligations under the United *Nations Framework Convention on Climate Change* (UNFCCC), and works toward meeting these obligations in part through participation in the UNFCCC's Expert Group on Technology Transfer, the Technology Early Action Measures program, NRCan's Canadian Initiative for International Technology Transfer and NRCan climate change trade promotion offers (Mexico City, Warsaw and New Delhi).

Canada is an active participant in international bodies such as the Organization for Economic Cooperation and Development and the United Nations Environment Programme. Canada has signed the Cartagena Protocol on Biosafety.

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Chapter 17: PROTECTION OF THE OCEANS, ALL KINDS OF SEAS, INCLUDING ENCLOSED AND SEMI-ENCLOSED SEAS, AND COSTAL AREAS AND THE PROTECTION, RATIONAL USE AND DEVELOPMENT OF THEIR LIVING RESOURCES

Decision-Making: The protection of the marine environment is a shared responsibility between the federal and provincial/territorial governments. In addition, land claims agreements with Aboriginal communities may include the establishment of cooperative management bodies. Other important partners in protecting coastal and marine environments are municipal governments, industry, non-government organizations, communities, and individual Canadians.

The federal Fisheries and Oceans Canada (DFO) department is responsible for policies and programs in support of Canada's economic, ecological and scientific interests in oceans and inland waters; for the conservation and sustainable utilization of Canada's fisheries resources in marine and inland waters; for leading and facilitating federal policies and program on oceans; and for safe effective and environmentally sound marine services responsive to the needs of Canadians in a global economy.

The most relevant legislation and regulations include the *Oceans Act* that provides for the federal government to work with all coastal and marine interests to develop a strategy for managing Canada's oceans; the *Canadian Environmental Protection Act, 1999* (CEPA), with provisions covering international water pollution and the disposal of wastes and other matter at sea; the *Fisheries Act*, which sets out fish habitat protection powers; and the *Canadian Environmental Assessment Act* that establishes a process to assess the environmental effects of projects requiring federal action or approvals.

Marine Protected Areas (MPAs) are a regulation based tool for protecting and conserving oceans space and resources requiring enhanced protection. These include: commercial and non-commercial fisheries resources, including marine mammals and their habitats; endangered or threatened marine species and their habitats; unique marine habitats; and marine areas of high biological diversity or productivity.

Integrated Management (IM) is a planning approach that involves all interested parties in the development and implementation of comprehensive plans for the conservation, protection and development of oceans and oceans resources. Both MPA and IM management plans include Marine Environmental Quality Objectives designed to anchor the decision making process on ecosystem based considerations.

Programs and Projects: Canada endorsed the Global Programme of Action (GPA) for the Protection of the Marine Environment from Land-Based Activities; Canada's National Programme of Action for the Protection of the Marine Environment (NPA) was developed in consultation with Aboriginal peoples, environmental groups, industry, academia, communities and the general public. (www.ec.gc.ca/marine/npa-pan.htm); Under the authority of Canada's *Oceans Act* and of its policy statement, *Canada's Oceans Strategy*, integrated management plans are being developed for all activities in or affecting Canada's estuarine, coastal and marine waters. (http://www.dfo-mpo.gc.ca/canwaters-eauxcan/oceans/opat-orapo/index_e.asp)

Support for *Canada's Ocean Strategy* is directly provided by three inter-related programs created under the *Oceans Act* including: Marine Protected Areas; Integrated Management; and Marine Environmental Quality. Since the passage of *Canada's Oceans Act* in 1997, 13 Marine Protected Area initiatives have been initiated, along with 20 Integrated Management initiatives that include four Large Oceans Management Area plans on all three coasts.

Canada's Ecosystem Initiatives seek to advance the sustainable development of coastal areas (www.ec.gc.ca/ecosyst/infodoc.html). Specific habitat management actions include investing in Canada's national habitat program, redesigning Canada's Habitat Program to emphasize proactive initiatives, and asking DFO to

develop a national system of marine protected areas. Parks Canada establishes and manages National Marine Conservation Areas (NMCAs) to represent Canada's 29 marine natural regions. These marine protected areas are managed for sustainable use overall and contain smaller zones of high protection.

Tools for preventing pollution range from regulations and permits to applied research. Canada has taken several steps over the years to improve sewage treatment such as Infrastructure Canada investments in water and wastewater systems, water management, solid waste management, and recycling (www.tbs-sct.gc.ca/ino-bni/); Green Municipal Funds program that stimulates investment in environmental technology and innovations at the municipal level (www.fcm.ca); and all levels of government and several interest groups working together to develop a comprehensive management approach to municipal wastewater issues.

Canada has been developing an emergency preparedness partnership with industry. Industry provides relevant services through privately-owned and operated Response Organizations that are maintained through fees levied by industry on all oil shipped in Canadian waters. As well, the Canadian Coast Guard (CCG) is involved in the preparation of a discussion paper on "*The Effect of Global Climate Change on Canadian Coast Guard operations in the Canadian Arctic.*"

Status: Work is underway to provide greater First Nations access to the commercial fishery through the negotiation of one to three year agreements, and the *Aquaculture Action Plan* calls for strengthening its scientific information base on aquaculture, and developing options for aquatic animal health and other industry development programs.

Capacity-Building, Education, Training, and Awareness-Raising: The Canadian and US Coast Guards helped establish the Haitian Coast Guard. This has assisted Haiti to protect its coasts from environmental threats and other dangers.

Canada has supported the sustainable development of small islands through programs such as the Canadian Coast Guard's *Caribbean Marine Training Assistance Program*.

Government-supported outreach activities range from sharing information to developing joint stewardship programs, such as those found in Canada's Stewardship Agenda (www.stewardshipcanada.ca). Specific initiatives include the Sustainable Communities Initiative (www.sustainablecommunities.gc.ca), the Canadian Rural Partnership (www.rural.gc.ca), and Sustainable Communities in Nova Scotia (www.nsaccess.ns.ca/sci).

Governments support environmental youth programs in partnership with educational institutions, Aboriginal peoples, and NGOs.

Information: The National Contaminants Information System contains information collected since the 1970s on toxic chemicals in fish, other aquatic life, and their habitats (www.meds-sdmm.dfo-mpo.gc.ca/meds/Prog_Nat/NCIS/homemain_e.htm).

The Coastal Resource Mapping project collects and collates traditional knowledge.

Information on CIDA's *Strategy for Ocean Management and Development* is found at: www.acdi-cida.gc.ca.

The Atlantic Coastal Zone Information Steering Committee (ACZISC) contributes both to the development of a regional coastal zone information infrastructure and to the promotion of integrated management initiatives.

Canada has been experimenting with new technologies to map Canada's offshore lands and the Great Lakes. The information can provide key data for the sustainable development of ocean resources.

The Oceans Program Activity Tracking (OPAT) System (www.dfo-mpo.gc.ca/canoceans) is an interactive mapping and information system to display and share details on Oceans Act program activities as outlined in Canada's Oceans Strategy.

The federal government provides information on ecosystems and environmental indicators (www.ec.gc.ca/soer-ree/).

Research and Technologies: The Program for Sustainable Aquaculture supports research in the aquaculture sector. The Marine Environmental Quality program identifies knowledge gaps and research priorities. The Environmental Science Strategic Research Fund co-ordinates and funds research in areas such as the capacity of habitat to sustain fish production and the response of aquatic ecosystems to physical disruption, and the introduction of contaminants and exotic species.

Monitoring programs are conducted at the regional and provincial/territorial level (www.ainc-inac.gc.ca/NCP/indexe.html; www.gulfofmaine.org/library/gulfwatch/index.html; www.pyr.ec.gc.ca; www.ns.ec.gc.ca/epb/sfish/sfish.html; www.eman-rese.ca; and www.ec.gc.ca/pdb/npri/).

Cooperation: Canada signed the *Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea*. Through Official Development Assistance, Canada has contributed to Chapter 17 of *Agenda 21* through integrated management and sustainable development of coastal and marine areas; sustainable use and conservation of marine living resources under national jurisdiction; and strengthened international (including regional) cooperation, coordination and sustainable development.

The Canadian International Development Agency participates in the UN system and other relevant international fora, including the: Commission on Sustainable Development; Food and Agriculture Organization/Committee on Fisheries; UN Open-ended Informal Consultative Process; Intergovernmental Oceanographic Commission; Network of Aquaculture Centres in Asia-Pacific; Southeast Asian Programme in Ocean Law, Policy and Management; and Support Unit for International Fisheries and Aquatic Research.

Canada participates in international initiatives for the protection of the marine environment, including the *London Convention on Prevention of Marine Pollution by Dumping of Wastes* (including the 1996 Protocol); *Global Programme of Action for the Protection of the Marine Environment*; *Regional Programme of Action for the Protection of the Arctic Marine Environment*; *Arctic Council*; *Commission for Environmental Co-operation under the North American Free Trade Agreement*; *Gulf of Maine Council on the Marine Environment*; *Georgia Basin-Puget Sound Task Force*; *United Nations Convention on the Law of the Sea*; and *International Convention on Pollution Preparedness, Response and -eration*.

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Chapter 18: FRESHWATER

Decision-Making: There is no single mechanism for co-ordinating federal and provincial government water resource management programs and policies in Canada. Mechanisms exist but are sector-specific (e.g., fisheries, 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.

The federal government has direct constitutional responsibilities for fisheries, shipping, Aboriginal and other federal lands, and international relations, including those related to waters shared with the United States. 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.

Programs and Projects: Efforts to augment freshwater supplies are limited to urban areas experiencing high population growth and to drier regions of the country. The hydrological studies of the Geological Survey of Canada help to increase knowledge of aquifers and in some cases can determine the rates of the groundwater recharge essential to sustainable groundwater management. Some provincial governments, such as Saskatchewan, have programs aimed at procuring and augmenting freshwater supplies.

In Canada, flood disaster preparedness is coordinated mainly by the provincial emergency measures organizations and community officials.

The federal and provincial governments, in coordination with Prairie Farm Rehabilitation Administration, develop policies for mitigating the effects of droughts. There are also crop insurance programs to assist farmers in the event of major crop losses, as well as drought indexes and forecasting for information and planning purposes during extremely dry periods. In the case of municipalities, most have conservation measures ready to be implemented should water supplies become low.

The federal *Drinking Water Safety Program for Natives* provides for joint indigenous-government initiatives to increase monitoring of water treatment systems, to train water treatment operators and to evaluate and advise indigenous communities on the design and operation of water treatment systems.

Parks Canada leads the Canadian Heritage Rivers System, Canada's national program for freshwater heritage conservation. It is a cooperative federal-provincial-territorial program whose objectives are to give national recognition and protection to Canada's outstanding rivers. There are currently 39 rivers in the System. Parks Canada establishes and manages National Marine Conservation Areas (NMCAs) to represent Canada's 29 marine

natural regions, five of which are in the Great Lakes. These marine protected areas are managed for sustainable use overall and contain smaller zones of high protection.

For agricultural use the federal government of Canada currently operates and maintains six irrigation projects serving 18 000 hectares of land in southeastern Saskatchewan.

Status: 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. 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.

Capacity-Building, Education, Training, and Awareness-Raising: Canada's provincial governments are actively promoting various water conservation programs aimed at raising public awareness of conservation and pollution prevention issues. In 1999, British Columbia developed a province-wide water conservation strategy. Under a *Canada-Newfoundland Agreement Respecting Water Resource Management*, the province prepared several brochures and guidelines to increase public awareness.

Information: Canadian environmental and water quality guidelines are developed in cooperation with the provinces and promulgated as national guidelines by the Canadian Council of Ministers of the Environment.

The federal and provincial governments, as well as other authorities, regularly collect information on Canada's water resources, including information on levels, flows, and quality, in order to meet demand, protect health and well-being, and provide a basis for sound economic development. Information is also collected on key Canadian aquifers and their groundwater resources. For the household sector, the federal government conducts a municipal water use and pricing survey twice every five years and has done so since 1983.

Information is also available through various government web sites linked with numerous organizations and agencies such as the Canadian Water and Wastewater Association, the Canadian Water Resources Association, and many provincial and municipal agencies. Information on water use is also distributed to the public through summary reports, and in various professional papers.

Information on freshwater resources management and development is also available at:
www.ec.gc.ca

Research and Technologies: The National Water Research Institute is the Canadian government's main scientific research centre on water, and undertakes many research and monitoring projects. Canada also promotes the development and sharing of innovative water technologies internationally.

Financing: The federal government works with the provinces and municipalities to address sewage issues. Infrastructure and innovation programs have been developed to support freshwater objectives. CIDA spent \$600 million on water-related projects from 1986-1987 to 1999-2000. The federal government also works with the provinces and municipalities to address wastewater treatment issues.

Cooperation: The *Boundary Waters Treaty of 1909* between Canada and the United States sets out the principles and procedures under which waters along the border are to be shared. The *Treaty* established the International Joint Commission, consisting of six members, three from each country.

Canada contributes to capacity-building and the strengthening of institutional and human resource development in developing countries in the area of water use for agricultural and domestic purposes.

In 1996, the United Nations University, with the government of Canada, established the International Network on Water, Environment and Health (INWEH) with its headquarters at McMaster University in Hamilton, Ontario. INWEH is a problem-solving network of universities, colleges, research institutes, governments, non-government agencies, and the private sector that addresses critical water and health issues in developing countries by providing training and education to enable such countries to practice sustainable development.

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Chapter 19: ENVIRONMENTALLY SOUND MANAGEMENT OF TOXIC CHEMICALS

Decision-Making: Decisions on the environment are made as a shared responsibility between the federal government and provincial/territorial governments.

Developed in 1998, under the *Canadian Council of Ministers of the Environment Harmonization Accord*, Canada-wide Standards represent the political and accountable commitments by Ministers to address environmental protection and health risk issues, including those posed by toxic chemicals.

The federal legislative authority for the regulation of pesticides in Canada is the *Pest Control Products Act* (PCPA). The Pest Management Regulatory Agency administers the PCPA for the federal government.

The Government's principal framework for protecting Canadians and the environment from harmful substances is the *Canadian Environmental Protection Act, 1999* (CEPA 1999). It 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, 2001.

Programs and Projects: 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 New Substances Program addresses chemicals, polymers and products of biotechnology.

Status: 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.

Capacity-Building, Education, Training and Awareness-Raising: Healthcare EnviroNet shows health care staff how to reduce the environmental impact of facilities (www.c2p2online.com). *Enviroclub* involves 20 small and medium-sized manufacturing companies from the province of Québec in a program aimed at promoting leadership in pollution prevention and eco-efficiency.

The Pollution Prevention Awards, presented by the Canadian Council of Ministers of the Environment, recognize organizations showing leadership and innovation in pollution prevention.

Information: The *National Pollutant Release Inventory*, established in 1993, is a legislated, nation-wide, 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).

Research and Technologies: 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.

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

Cooperation: Internationally, Canada has long been involved in developing the science and demonstrating the need for international action on Persistent Organic Pollutants (POPs). Canada signed the *Cartegena Protocol on Biosafety* under the Convention on Biological Diversity in April of 2001. It also participates in the work of the Joint Meeting of the Chemicals Committee and the Working Party on Chemicals, Pesticides and Biotechnology, as well as in almost all the numerous expert groups that support the work on Environment, Health and Safety.

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.

Environment Canada chairs the Task Force on New Industrial Chemicals and contributes to the Environmental Exposure Assessment work as well as serves as an active member of the Working Party on National Environmental Policies.

In an effort to streamline the new substances notification and assessment schemes in Canada and the US, Canada has partnered with the US Environmental Protection Agency and industry in both countries in the “Four Corners” pilot project that led to the formalization of the project into an Agreement.

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Chapter 20 to 22: ENVIRONMENTALLY SOUND MANAGEMENT OF HAZARDOUS, SOLID AND RADIOACTIVE WASTES

Decision-Making: 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 will be integrated into the amended Export and Import of Hazardous Wastes Regulations (EIHWR) that enables implementation of 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).

Programs and Projects: 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.

Status: 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 multi-stakeholder 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 drafted 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.

Capacity-Building, Education, Training and Awareness-Raising: 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 Centres. The role of these centres 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.

Information:

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>.

Cooperation: 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 Centre, has provided \$70,000 Canadian as seed money to initiate the activities of the Regional Training Centre 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 Centre for the Sound Management of Hazardous Wastes under the Basel Convention, in collaboration with the United Nations Asian and Pacific Centre for Technology Transfer in Delhi.

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Chapters 24 to 32: MAJOR GROUPS

WOMEN

Decision-Making: Canada's national machinery for advancing women's equality is well established. Both the federal government and all the provinces and territories have a Minister or Secretary of State responsible for the Status of Women, and have a women's bureau or agency to work with other government ministries in providing gender analysis and policy advice on existing or proposed government legislation, policies, and programs.

Programs and Projects: Part of *Canada's Women's Health Strategy* is the reduction of environmental hazards that threaten women's health. Under this strategy, Canada will accelerate screening and assessment of new and existing substances, improve management and control of toxic substances, and track progress.

Canada recognizes the key role that indigenous women play in environmental health, and their sensitivity to environmental change. It supports the involvement of indigenous women in federal efforts to meet commitments under the UN Convention on Biological Diversity, and in activities of circumpolar countries to enhance the contribution of indigenous and northern women to sustainable development.

The full participation of women as equal partners in the sustainable development of their societies is one of six priorities of Canada's *Official Development Assistance* program. It is supported through initiatives that advance women's equal participation with men as decision-makers; support women and girls in the realization of their full human rights; and reduce gender inequalities in access to and control over the resources and benefits of development.

Status: *Setting the Stage for the Next Century: The Federal Plan for Gender Equality* is Canada's federal plan for implementing the *Beijing Platform for Action*. The *Federal Plan* includes a commitment to consider gender equality in the development of legislation and policies related to the environment and sustainable development, among other areas, and to strengthen the full participation of women as equal partners in sustainable development.

The federal government has also played a role in promoting the participation of women and girls in male-dominated fields of study by providing special grants for women in certain doctoral programs; developing strategies to encourage girls to study math and science; and funding of Chairs for Women in Science and Engineering at Canadian universities. Such initiatives will support women's entry into non-traditional fields such as environmental resource management and environmental science.

Capacity-Building, Education, Training, and Awareness-Raising: In Canada, education is under provincial and territorial jurisdiction. All levels of government recognize the importance of improving women's education and training opportunities as being central to improving education and training opportunities for women and girls in order to improve employment opportunities and subsequent economic well-being. In the *Federal Plan*, the federal government works with the provinces and territories and women's organizations to focus on improving women's access to lifelong learning, supporting and encouraging women's participation in the fields of science and technology, and developing appropriate training materials for women.

Cooperation: The *Convention on the Elimination of All Forms of Discrimination Against Women* has been ratified by Canada.

Canada has promoted the integration of a gender perspective in the texts of international sustainable development agreements; areas such as poverty alleviation, health, population, human settlements; capacity-building science;

education and awareness; decision-making information and tools for measuring progress. Canada will continue to promote integration and mainstreaming of women's human rights and gender equality in international fora, and is committed to agreements reached at UN international conferences.

CHILDREN AND YOUTH

Decision-Making: The National Youth Round Table on the Environment was created in 1997 to promote dialogue and involvement of youth in the policy making process. The Youth Round Table on the Environment has been involved in many consultations on programs and policy within Environment Canada and continues to play its role as a youth advisory body for the Minister of the Environment and Environment Canada staff.

Programs and Projects: The United Nations Association of Canada created *Youth Agenda 2002* with a goal of forming a national youth network around socio-cultural, economic and environmental issues that will be relevant to youth before, during and after the Earth Summit in Johannesburg. This initiative provides the Canadian youth community with the opportunity to form a “network of networks” that will channel and build on the already amazing work of youth organizations and individual youth in the country.

A Youth Outreach Advisor at Environment Canada is committed to the task of ensuring an open line of communication between the Department and the Canadian Youth Community.

The Government of Canada has a Youth Cluster on its main Web site that brings together information of direct relevance to youth. Through the Youth Employment Strategy, the International Environmental Youth Corps Program and the Science Horizons Youth Internship Program, there has been help for over 400 youth across Canada in obtaining practical work experience in environmental projects in areas such as climate and ecosystem research, wildlife research and management, ecological monitoring and assessment and the development of scientific tools such as standards and guidelines of environmental quality.

Status: Youth are involved in environmental and sustainable development issues in Canada through many channels. Since 1992, young people and partners from youth and student groups, governments, non-governmental organizations, education associations, and individuals have been active in hands-on sustainable development projects, curriculum and policy change, and awareness campaigns to help implement *Agenda 21*.

Challenges: Engaging children and youth in sustainable development is a key challenge for the future of Canada and all countries. Emphasis is placed on children and youth as a target group for a variety of educational programs and initiatives.

Capacity-Building, Education, Training, and Awareness-Raising: The Canadian Federal Government, in cooperation with provincial ministries of education, has introduced SchoolNet, a program to bring Internet connectivity to schools across Canada, improving communications and educational opportunities for students in elementary and secondary schools. In 2002, Canada is hosting the fourth UN Children's Conference, a key opportunity to raise awareness of global sustainability issues among children and youth

Cooperation: Canada is investing in internet connectivity programming in the developing world, recognizing the potential of on-line education and communications to advance sustainable development.

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INDIGENOUS PEOPLE

Decision-Making: 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.

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.

Other legislation related to decision-making includes: the *Mackenzie Valley Resource Management Act* that provides for an integrated system of land and water management in the Mackenzie Valley; the *Canada-Yukon Oil and Gas Accord Implementation Act* that sets an accord between the Governments of Canada and the Yukon Territory relating to the administration and control of oil and gas; and the *Nisga'a Final Agreement Act* (2000).

There have also been numerous Final Agreements (outcomes of successful land claim negotiations) such as: 1999 - *Nisga'a Final Agreement*, 1998 - *Tr'ondëk Hwëch'in Final Agreement*, 1998 - *Tr'ondëk Hwëch'in Self-Government Agreement*, 1997 - *Little Salmon/Carmacks Final Agreement*, 1997 - *Little Salmon/Carmacks Self-Government Agreement*, 1997 - *Selkirk First Nation Final Agreement*, 1997 - *Selkirk First Nation Self-Government Agreement*, 1993 - *Sahtu Dene and Métis Comprehensive Land Claim Agreement - Volume I*, 1993 - *Sahtu Dene and Métis Comprehensive Land Claim Agreement - Volume II* 1993 - *Umbrella Final Agreement between the Government of Canada, the Council for Yukon Indians and the Government of the Yukon*, 1993 - *Vuntut Gwitchin First Nation Final Agreement*, 1993 - *Vuntut Gwitchin First Nation Self-Government Agreement*, 1993 - *Champagne and Aishihik First Nations Final Agreement*, 1993 - *Champagne and Aishihik First Nations Self-Government Agreement*, 1993 - *Teslin Tlingit Council Final Agreement*, 1993 - *Teslin Tlingit Council Self-Government Agreement*, 1993 - *Nacho Nyak Dun First Nation Final Agreement*, 1993 - *Nacho Nyak Dun First Nation Self-Government Agreement*, 1993 - *Nunavut Land Claims Agreement*, 1992 - *The Gwich'in (Dene/Métis) Comprehensive Land Claim Agreement*.

The Canadian government, through the proposed First Nations Governance Initiative, the *First Nations Financial and Statistical Act*, and modernization and expedition of the land claims adjudication process, has committed to a gradual but comprehensive transfer of functional authority to Aboriginal communities based on comprehensive institutional capacity development at local and national levels. This will impact on areas of governance, health, education, economic development and justice. Methodology and timing will be based on consultation and collaborative strategies with Aboriginal communities and other levels of government.

The Canadian International Development Agency has launched the Indigenous Peoples Partnership Programme (IPPP) to support capacity transfer from Canadian Aboriginal entities to Indigenous peoples of the Americas. The focus is on capacity enhancement partnerships, knowledge considered by Indigenous peoples to be important to their development, and Indigenous youth leadership. The pilot phase has been approved for \$10 million over four years.

Capacity-building, education, training, and awareness-raising: The *Canadian Rural Partnership* is the key policy framework supporting federal rural policy efforts to date. It is funded by \$20 million over four years (1998 - 2002), and built around the *Federal Framework for Action* priorities. The Partnership ensures that federal

programs, policies and activities provide support to rural communities. These priority areas include improving opportunities for rural youth, access to financial resources, and access to federal services, in rural communities.

The EcoAction Community Funding Program is an Environment Canada program that provides financial support to community groups for projects that have measurable, positive impacts on the environment. Non-profit groups and organizations are eligible to apply to the Funding Program. This includes, but is not limited to: community groups, environmental groups, Aboriginal groups and First Nations councils, service clubs, associations and youth and seniors' organizations.

Information: The Northern Information Network (NIN) encourages information sharing about the Yukon, Northwest Territories and Nunavut for more effective decision-making in areas such as resource management and economic development. NIN supports a variety of research initiatives in and about the North, including project impact assessments, sustainable development strategies, wildlife management planning, land-use planning, and emergency preparedness.

The Aboriginal Canada Portal provides links in one place to a number of sites such as National Aboriginal Organizations, 12 federal departments with Aboriginal mandates, all provincial governments and organizations with Aboriginal responsibilities, as well as all related Aboriginal community information.

Research and Technologies: GeoConnections' Sustainable Communities Initiative brings on-line decision-making power to Canada's remote communities. It helps Aboriginal, rural and northern communities in Canada use geographic or "geospatial" information to make decisions about economic, environmental and social development. It also provides remote communities with geospatial information, often presented in computer-generated maps. Geospatial information can describe forests, lakes, rivers, fields, geology, highways, territorial boundaries; anything that can be defined geographically.

Cooperation: The Northern Contaminants Program (NCP) aims reduce and, where possible, eliminate contaminants in traditionally harvested foods, while providing information that assists informed decision-making by individuals and communities in their food use.

Phase I of the Program (1991-1997) focused on determining the main sources of contaminants and their transport pathways and fate in the Arctic, as well as their levels and spatial and temporal distribution within Arctic ecosystems and humans. The results are being used in international negotiations to control contaminants. The NCP Phase II is a five-year program (1998-2003) that funds research on northern contaminants with an emphasis on expanding human health research, developing effective community dialogue, and continuing work on international agreements to control contaminants.

The NCP works closely with the Arctic Council's Arctic Monitoring and Assessment Programme (AMAP). This cooperative program monitors and assesses human-caused pollution in the circumpolar Arctic in an effort among the eight Arctic countries, Arctic Aboriginal organizations and a number of observer countries and organizations.

NCP findings have provided evidence for international controls of contaminants. POPs and Heavy Metals Protocols under the *United Nations Economic Commission for Europe (UNECE) Convention on Long-range Transboundary Air Pollution (CRTAP)* have been signed by 36 countries, including Canada, since June 1998.

In the operation of national parks, national historic sites and national marine conservation areas, Parks Canada works with Aboriginal peoples to enhance community relationships with Aboriginal heritage presentations, economic partnerships, commemoration and Aboriginal themes. It has also entered into cooperative management arrangements with local Aboriginal groups in fourteen of its 39 national parks.

NON-GOVERNMENTAL ORGANIZATIONS

Decision-Making: 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. Institutions (e.g. universities, foundations) are also important. For example, the *International Institute for Sustainable Development (IISD)* promotes sustainable development in decision-making internationally and within Canada. The *Public Policy Forum* is a non-partisan, non-profit organization aimed at improving the quality of government in Canada through better dialogue between government, the private and voluntary sectors.

Programs and Projects: In 2000, the federal government provided funding for a new initiative to strengthen the federal government’s relationship with the voluntary sector and to increase sector capacity. Key issues being addressed by the *Voluntary Sector Initiative (VSI)* include: improved access for the voluntary sector to information technology; a new approach to financing the voluntary sector that is long-term and sustainable; and the development of policy capacity within voluntary sector organizations.

In December 2001, the Government signed a national accord with the voluntary sector, laying a new foundation for active partnership with voluntary organizations in the service of Canadians. The *Accord* spells out the values, principles and commitment that will underlie the future relationship between the Government of Canada and Canada’s voluntary sector.

Challenges: There are ongoing requirements to allocate sufficient resources (technical and consultation expertise, time and finances) to ensure that increasingly complex issues are adequately addressed. It is a challenge for both the public and government to set priorities and allocate resources for the most critical issues.

It is a challenge to promote equitable opportunities in the public participation and consultation processes, as government must find economic ways to address differences among participants in areas such as technical expertise, language, geography and access to information.

As a result of government downsizing, voluntary organizations currently are under pressure to deliver a greater number of services and raise larger amounts of money to support their activities.

Capacity-Building, Education, Training, and Awareness-Raising: There is a commitment to enhancing technical and policy capacity of Canada's voluntary sector organizations, and developing a new approach to financing the voluntary sector that is long-term and sustainable.

In February 1998, the Government announced the creation of the Voluntary Sector Network Support Program (VolNet) in order to "expand the technological capacity of the voluntary sector" and to "enhance the capacity of voluntary organizations."

Financing: The trend for non-governmental organizations in Canada to deliver a greater number of services and to raise larger amounts of money to support their activities has compelled many to make more strategic allocations, and to seek new sources of funding. This includes entering into partnerships and broadly-based stakeholder coalitions which target specific environmental and sustainable development issues of mutual concern. Many are developing partnerships with the private sector on issues ranging from conservation management and forest certification to joint input on government policy initiatives.

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LOCAL AUTHORITIES

Decision-Making: 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.

Programs and Projects: The Federation of Canadian Municipalities (FCM) is the structure that coordinates and consolidates partnerships among municipalities throughout provinces and territories. Local authorities apply a decentralized and integrated approach in developing socially and culturally sound projects and programs targeting social inclusion or promoting employment, and a sustainable environment (such as local development centres, public-private committees, the green concept and so on).

The Canadian International Development Agency has supported international urban cooperation with Canadian municipalities since 1986, principally through FCM. In turn, FCM has considerably expanded its international cooperation efforts, as have individual Canadian cities. FCM Municipal cooperation involves work at the macro, meso and micro levels of development. The partnerships between municipal practitioners strengthen local governance and the democratic process, and build municipal capacity to plan, implement and manage environmentally sound local development.

Status: 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.

Financing: The federal government has invested \$125 million in cooperation with municipalities across the country to implement projects and programs to enhance community sustainability. A key focus of this effort is to strengthen green infrastructure.

Cooperation: The federal government and many Canadian institutions support development in the world, bringing Canadian expertise and community values to local authorities in developing countries and countries with economies in transition. Canada's Sustainable Cities initiative is bringing technologies and management techniques to partner cities in the developing world and countries in transition. FCM has an active international program that has facilitated information and technology exchange, directly linking Canadian municipalities with appropriate partners in the developing world.

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WORKERS AND TRADE UNIONS

Decision-Making: 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.

Programs and Projects: Within Canadian workplaces, labour has worked cooperatively to address environmental issues, such as pollution prevention and waste reduction. For instance, the Canadian Auto Workers and Chrysler Canada have formed a Joint National Environment Committee. Many collective agreements in the auto industry mandate labour participation in pollution prevention and Toxics Use Reduction programs in the workplace.

Cooperation: *The International Labour Organization (ILO) Conventions* have been ratified in Canada.

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BUSINESS AND INDUSTRY

Decision-Making: 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.

Programs and Projects: Under Canada's *National Action Programme on Climate Change (NAPCC)*, business is responding to initiatives to reduce greenhouse gas emissions such as the national Voluntary Challenge and Registry (VCR) Programme and EcoGeste in Quebec.

Canada's *Climate Change Plan* proposes five key instruments to achieve goals including achieving emissions reduction targets; targeted measures in specific sections and program areas that include a set of market-based incentives, regulations, tax measures and information; a Partnership Fund that cost-shares emissions reductions in collaboration with governmental and private sector partners; strategic infrastructure investments in innovative climate change approaches; and a coordinate Innovation Strategy.

Through Memoranda of Understanding, a number of voluntary initiatives are underway with industry encouraging the concept of stewardship in management and use of natural resources. Among these is the *Responsible Care Initiative* of the Canadian Chemical Producers' Association. Responsible Care is recognized as a model industry code of conduct and has been adopted internationally by the chemicals industry. Motor vehicle manufacturers (General Motors, Ford, and Chrysler) have reduced releases of targeted substances by more than 4,000 tonnes. The drycleaners' association in Quebec has developed a guidebook to train drycleaners on water-based dry-cleaning solvents. The printing and metal finishers' associations are also promoting pollution prevention to their members.

The Canadian Industry Program for Energy Conservation (CIPEC; a sector-level program) and the Industrial Energy Innovators Initiative (IEII; a company-level program) both address barriers to planning, implementing and tracking energy efficiency projects in industry.

Through CIPEC and IEII, Natural Resources Canada provides a framework for voluntary industry-government cooperation to achieve greater energy efficiency in Canada's manufacturing and mining sectors. The Department also provides such support as workshops dealing with all aspects of energy management and various technical, financial and information services.

The Commercial Building Incentive Program (CBIP) and the Industrial Building Incentive Program (IBIP) provide financial incentives, by way of contributions, to commercial and industrial builders respectively to incorporate energy-efficient technologies and practices into the design and construction of new commercial, institutional and industrial buildings. The Energy Innovators Initiative (EII) provides financial incentives to encourage commercial businesses and public institutions to make investments in energy efficiency and reduce greenhouse gas emissions that contribute to climate change.

Status: The *International Chamber of Commerce's Business Charter for Sustainable Development* has been endorsed in Canada by 35 companies, nine industry associations and one crown corporation. The Charter's 16 principles provide a framework for the establishment of corporate environmental management systems emphasizing continual improvement.

Sustainable development is a high priority for many industry associations. For example, the Canadian Standards Association (CSA) developed a national sustainable forest management certification program for Canada's forest industry. Based on internationally agreed criteria and advice from interested stakeholders, the standards verify that a defined forest is being managed according to a sustainable forest management system. Model forests have also been established in many provinces to gain practical experience in sustainable forest management techniques. Some provinces, such as British Columbia and Alberta, have also launched discrete sustainable forest management initiatives.

Several major enterprises in Canada have adopted sustainable development policies, for example Shell, Imperial Oil, Ontario Hydro, TransAlta, Monsanto, Dow, Dupont, IBM, Alberta-Pacific Forest Industries, and Daishowa-Marubeni International.

Cooperation: Canada endorses the OECD Guidelines for Multinational Enterprises as an important tool to support sustainable behavior by Canadian companies investing in the developing world.

For more information on the Canada and the MNE guidelines visit: <http://www.dfait-maeci.gc.ca/tna-nac/ncp-pcn/multinational-e.asp>

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SCIENTIFIC AND TECHNICAL COMMUNITY

Decision-Making: See Science section.

Programs and Projects: See Science Section.

Status: Canada's scientific and technological community leads in the sustainable development process and efforts to inform the general public. Initiatives of the scientific community that have extended the science and technology base for sustainable development in Canada are covered more fully in the Science section.

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FARMERS

Decision-Making: Policies and programs to support sustainable agriculture are designed in the regions because of Canada's regional diversity in landscape, climate and farm types, as well as the division of jurisdiction between federal and provincial/territorial governments.

Successful technologies developed regionally are then promoted nationally and applied in other settings where appropriate. The process for achieving sustainable agriculture within Canada is a cooperative one, bringing together the knowledge, skills and experience of governments, farm and environmental groups, farmers and farm suppliers, other rural residents, scientists, educators and the interested public.

Federal laws include the *Canadian Environmental Protection Act 1999 (CEPA 99)*, the *Canadian Environmental Assessment Act*, the *Fisheries Act*, the *Canada Health Act*, the *Pest Control Products Act*, the *Plant Protection Act*, and the *Animal Protection Act*. These all contain provisions that are pertinent to the environmental performance of agriculture. New developments in biotechnology and other research and development tools are regulated to follow safety rules. The federal government supports science-based risk assessments for the products of biotechnology in order to protect the health of humans, animals, plants, and the environment.

Most recently, federal, provincial and territorial agriculture ministers are working toward a national agriculture policy framework that takes a more integrated, sustainable development approach based on food safety, innovation and environmental protection. One of the major themes of this action plan is to enhance the sector's environmental performance through accelerated adoption of sound environmental practices on the farm.

Industry groups and public advisory committees play key roles in working with governments to develop programs which balance the economic and environmental goals of farming, and encourage the adoption of best management practices such as conservation tillage and using pesticides more efficiently.

Challenges: Rural Canadians identified priorities for the Government of Canada in their work to promote rural development, such as improving access to federal government programs and services for rural Canadians; improving access to financial resources for rural business and community development; providing more targeted opportunities, programs, and services for youth, including Aboriginal youth; strengthening rural community capacity-building, leadership, and skills development; creating opportunities for rural communities to maintain and develop infrastructure for community development; connecting rural Canadians to the knowledge-based economy and society and helping them acquire the skills to use technology; strengthening economic diversification in rural Canada through more targeted assistance; working with provincial and territorial governments to examine and pilot-test new ways to provide rural Canadians with access to health care at reasonable cost; working with provincial and territorial governments to examine and pilot-test new ways to provide rural Canadians with access to education at reasonable cost; fostering strategic partnerships within communities, between communities, and among governments to facilitate rural community development; promoting rural Canada as a place to live, work, and raise a family, recognizing the value of rural Canada to the identity and well-being of the nation.

Capacity-Building, Education, Training, and Awareness-Raising: Countryside Canada is a three-year national program designed to strengthen environmental conservation practices within the agricultural sector by recognizing exemplary stewardship efforts of farmers and ranchers across the country. The program acknowledges that an increase in wildlife habitat conservation is dependent, in great part, on the cooperation and enthusiasm of private landowners, including farmers and ranchers.

The Climate Change Skills and Knowledge program helps to raise the awareness among producers of the impact of climate change on the agricultural sector. The Soil Conservation Council of Canada delivers this initiative via its "Taking Charge" program, to assist farmers in understanding climate change issues and in identifying best management practices they can employ to reduce greenhouse gas emissions.

The Agricultural Environmental Stewardship Initiative (AESI) contributes to environmental stewardship by addressing national, environmental priority issues such as water quality, soil health, wildlife habitat and biodiversity, and greenhouse gas emissions through education and awareness, technology transfer and stewardship tools. The program builds on the regionally-sensitive National Soil and Water Conservation Program model and complements the other national environmental initiatives focusing on climate change, wildlife habitat and livestock issues.

The Livestock Environmental Initiative, delivered by the Canadian Pork Council, helps the livestock industry address environmental concerns through the research and development of technology, and the acceleration of technology assessment and transfer.

The Climate Change Funding Initiative helps to improve the scientific understanding of the agricultural sector's contribution to greenhouse gas emissions. The Initiative is delivered by the Canadian Agricultural Research Council and increases Canadian expertise on climate change and creates science networks to address knowledge gaps and technology development.

Information: Canada's agri-environmental indicators (AEIs) are measures of key environmental conditions, risks, trends and changes resulting from agriculture. They are national in scope but sensitive to regional variations in the agricultural landscape and to the farming practices implemented. Fourteen indicators have been developed within six categories: environmental farm management, soil quality, water quality, greenhouse gas emissions, agro-ecosystem biodiversity, and production intensity.

Research and Technologies: The federal government's primary interest is in carrying out research for the public good, generating technologies that are effective, affordable, and readily available to farmers. It supports 18 agricultural research stations across the country, which often cooperate with provincial governments, universities, and the sector itself, allowing the costs and the results of research to be shared. In particular, cooperation and joint funding with industry help to stretch research funds and align government research priorities with the sector's real needs. They also speed up the process of transferring new technology out of the laboratories and into the hands of people who will use it, and help to raise the profile and acceptance of industry-generated technologies and products.

Financing: Agriculture and Agri-Food Canada has committed over \$43 million between 1997-2002 for environmental programs under the Canadian Adaptation and Rural Development (CARD), including grants and contributions to activities as well as expenditures for water supplies. Provincial governments, producers and other federal departments have also allocated over \$71 million toward these same initiatives during this period.

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Chapter 33: FINANCIAL RESOURCES AND MECHANISMS

Decision-Making: Decision-making often involves consultation with relevant parties. These may include the interdepartmental community, other donors, multilateral institutions, international financial institutions (IFIs), and regional development banks.

Programs and Projects: 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, and 25 per cent of ODA is spent meeting basic human needs. The Canadian International Development Agency (CIDA), responsible for overseeing most of Canada's ODA expenditures, developed four Key Agency Results to help better align its planning, reporting and programming cycle with its mandate. These strategic outcomes are: economic well-being, social development, environmental sustainability, and governance. Cross-cutting themes are gender quality and environment.

Status: 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.

Capacity-Building, Education, Training and Awareness-Raising: Helping the recipients of Canada's aid develop the ability to meet their own needs is essential to ensuring that benefits are sustained beyond the life of individual projects. For this reason, programs and projects supported by CIDA promote capacity-building.

Information: The federal government reports statistics on a quarterly basis to international financial institutions and on a bi-annual basis to the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD). Statistics Canada publishes data on Canada's contributions to international financial institutions in *Canada's Balance of Payments* and in the CANSIM electronic database, both of which can be accessed via the Statistics Canada website at www.statscan.ca.

Financing: Canada continues to ensure intergenerational equity and to integrate economic, social and environmental considerations and objectives into policymaking. Canada maintains a healthy fiscal climate by pursuing the Government's Debt Repayment Plan, ensuring the debt-to-GDP ratio remains on a permanent downward track. This will minimize financial costs that would narrow the choices of future generations. It has implemented the Government's Five Year Tax Reduction Plan as part of its long-term fiscal plan. Canada also continues to develop uses of economic instruments through assessing the potential costs of a major economic instrument, such as emissions trading, and other policy options to reduce emissions of greenhouse gases.

Specific information regarding financial resources and mechanisms is not organized for *Agenda 21* reporting.

Cooperation: International cooperation is essential to helping developing countries meet their commitments under *Agenda 21*. Given the link between sustainable development and poverty, the flow of financial assistance from the developed to the developing world should supplement the mobilization of developing countries' own financial, technical, and human resources.

Illustrations of Canada's commitment to cooperative undertakings include strong support for efforts to strengthen the ability of international organizations to promote global sustainable development. In this regard, Canada's bilateral development assistance programming is complemented by support for relevant international financial institutions. In addition, Canada is taking a leading role in UNEP to strengthen capacity-building mechanisms within the framework of multilateral environmental agreements. Canada is also working closely with such key organizations as the

Organization for Economic Cooperation and Development to better coordinate donor activity in support of sustainable development in the developing world. Another area is debt relief as an important element of efforts to promote sustainable development in developing countries. 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\$215 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 often 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.

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Chapter 35: SCIENCE FOR SUSTAINABLE DEVELOPMENT

Decision-Making: 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.

Programs and Projects: *Northern Science and Technology in Canada Federal Framework and Research Plan* maximizes, in partnership with governments, universities and northern peoples, the return on federal investment in science and technology.

In 1995, the four federal government departments dealing with natural resources joined together to encourage collaboration and coordination in the use of science and technology for sustainable development. They were joined in 1998 by Health Canada.

Ecosystem initiatives aim for environmental results and sustainable development. They respond to the unique problems of targeted areas and communities and address environmental, economic, and social concerns — recognizing the interrelationships among land, air, water, wildlife and human activities.

The Program of Energy Research and Development (PERD) has supported the development of environmentally and economically sustainable energy technologies.

Nitassinan is an Innu view of the landscape and the processes that interact within it. Over the past five years, a partnership among the Innu Nation, Environment Canada, the Gorsebrook Institute of Saint Mary's University and Natural Resources Canada has been exploring new ways to connect Innu knowledge and western science.

The Ecological Monitoring and Assessment Network (EMAN) was first formed in 1994 to monitor and report on changes in Canada's ecosystems. EMAN is now a cooperative multi-agency network that involves partners and agencies organized to provide a national perspective on how Canadian ecosystems are changing.

The federal Environmental Effects Monitoring program determines if effluents are causing effects in aquatic ecosystems. This information can be used to assess the adequacy of pollution prevention measures and control technologies.

Status: The scale of environmental impacts is increasing, and there is a need for responses to keep pace. Wildlife resource management decisions now need to be made at the ecosystem and landscape scale. Even as the issues have become more complex, the public has become more demanding of information and results. Improved access to information and a diversity of viewpoints coupled with an increasingly educated and connected population have led to heightened requirements for stakeholder involvement and demands for accountability on the part of the federal government.

Capacity-Building, Education, Training and Awareness-Raising: Smog forecasts combined with public awareness programs at the community level allow Canadians to know more about air pollution and to take preventive action. http://www.msc-smc.ec.gc.ca/qa_smog/index_e.cfm

In 1992 Canada became the first country in the world to provide daily forecasts of UV radiation. The UV Index measures the intensity of the sun's burning rays. <http://www.ec.gc.ca/ozone/uvhealth.htm>.

Wind chill describes the sensation of cooling combinations of temperature and wind. This feeling can't be measured using an instrument, so scientists have developed a mathematical formula that relates air temperature and wind speed to the cooling sensation felt on the skin. http://www.msc.ec.gc.ca/windchill/index_e.cfm.

SchoolNet's Education Resources web site, designed for teachers, students and parents, is one of the world's largest collections of online educational resources.

The Canadian Museum of Nature contributes to the promotion of science culture and science literacy in Canada through hands-on interpretive programs, curriculum-based workshops and education programs for students.

Parks Canada's science education program includes a public education program through which some parks provide basic park research and monitoring data to education ministries, local school boards and education publishers for use in basic subjects such as English and mathematics.

Information: The Canadian Information System for the Environment (CISE) was created to strengthen the management and sharing of environmental information as the basis for sound public policy on the environment and a foundation for governments accountability. <http://www.ec.gc.ca/cise/eng/index.cfm>

The Sustainable Development Information System (SDinfo) is an electronic information system developed by the Government of Canada for the World Wide Web. See: www.sdinfo.gc.ca

Residents in most of Eastern Canada can see near real-time readings (available from May to September) of ground-level ozone. <http://www.epa.gov/airnow/>

The Meteorological Service of Canada collects climate and hydrometric observational data from various digital and paper sources, contributes to the quality checking of the climate data, and archives the data in digital format. http://www.msc-smc.ec.gc.ca/climate/index_e.cfm.

Research and Technologies: The federal research program focuses on providing the understanding required to resolve environmental issues of significance to Canada. For instance, the patented Microwave-Assisted Processes (MAP™) is a family of technologies using microwaves to enhance biological, chemical, and physical processes that support sustainable development as they require less energy and solvent than conventional processes, while generating fewer wastes.

A federal interdepartmental working group has been established to encourage the use of science and technology for sustainable development. The group collaborates with private industry, provincial governments, researchers and grassroots groups to collect data, test solutions and share knowledge and information.

In many parts of the world there is negligible rainfall and conventional sources of water are either unavailable or too expensive to be practical. Fog collection is a technology developed by Canada, working with institutions in Chile. The successful pilot project has led to subsequent projects in South America, Africa and Asia.

CIDA is supporting research on agricultural productivity (Africa-specific research) through the Consultative Group on International Agricultural Research (CGIAR). This concentrates on the needs of small-scale farmers and women. In addition, CIDA is supporting research in the areas of vaccine and microbicide development through the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATAM) (www.globalfundatm.org) and the Global Alliance for Vaccines and Immunization (GAVI) (www.vaccinealliance.org/home/index.php).

The federal government is encouraging the development and use of emerging renewable energy sources through tax incentives and departmental activities related to research and development, and market development. The main thrust of Natural Resources Canada's support to emerging renewable energy has been through financial and technical support to research and development activities by industry.

Through the Climate Change Action Fund and Action Plan 2000, the federal government has committed \$48 million between 1998 and 2006 on research and activities to improve the knowledge of Canada's vulnerability to climate change; provide assessment of risks and benefits; and to build a foundation for decision making on adaptation. The Government's Climate Change Impacts and Adaptation Directorate (CCIAD) manages and funds over 100 new projects focusing on a range of socio-economic and environmental issues across the country including some focus on adaptation technology development. The program also facilitates the sharing of knowledge regarding impacts and adaptation research between decision-makers and researchers through support of the Canadian Climate Impacts and Adaptation Research Network (C-CIARN).

Additional basic research, applied R&D and targeted enhancements to Canada's innovation system and international outreach in areas related to climate changes is underway via the Technology Development and Demonstration Program funded from the Government of Canada's Action Plan 2000. Components include a Basic Research Initiative via the National Science and Engineering Research Council, a suite of eleven R&D projects, technology road mapping in five technology areas, international collaboration with Canadian partners in foreign markets and three technology officers working in posts abroad.

Canada has supported and will continue to support participation of researchers, through authorship and review, in IPCC work.

The Energy Technology Futures project (ETF) is a major policy research effort focussed on long-term emerging policy, program and technology issues related to the Canada's energy sector. The project has developed visions of Canada's energy system three to five decades into the future with an emphasis on clean energy options for Canada, and has engaged in multilateral projects to develop scenarios for related sectors, such as transportation.

Financing: Canadian research and development has traditionally obtained funding through a combination of agency budgets and a range of partnership and leverage arrangements conducted on projects of mutual interest with partners.

Cooperation: In support of its commitment to sustainable development, Canada is a partner with targeted national and regional environmental science networks such as the Climate Research Network, the Canadian Cooperative Wildlife Health Centre (CCWHC), the Wildlife Ecology Research Chair at Simon Fraser University, and the Atlantic Cooperative Wildlife Ecology Research Network (ACWERN). New networks focusing on both wildlife and water research issues are already being developed.

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Chapter 36: PROMOTING EDUCATION, PUBLIC AWARENESS AND TRAINING

Decision-Making: Environment Canada has the lead in coordinating national responses with respect to the implementation of Chapter 36 of *Agenda 21* in Canada.

Formal education falls under the jurisdiction of provincial governments. To ensure information sharing and collaboration in the education and sustainability field in Canada, the Canadian Council of Ministers of the Environment and the Council of Ministers of Education (Canada) are involved in discussions about this issue.

Since 1999, Environment Canada has engaged in a nation-wide consultation to determine how best to respond to Chapter 36 of *Agenda 21*. The result has been an effort by over 5400 Canadians to develop a *National Framework for Environmental Learning*, presented to the World Summit in South Africa in the summer of 2002. The *National Framework* is supported by action plans by members of a strategic alliance of partners in the formal, non-formal and informal sectors of education.

Programs and Projects: Canadians have participated in several fora of lively debate on education and sustainability in the last five years. In 1997, la Centrale des syndicats du Québec, l'Association québécoise pour la promotion de l'éducation relative à l'environnement, and l'Université du Québec à Montréal hosted an international conference on education and a sustainable future for 700 participants from 34 nations of La Francophonie in Montreal. At that conference, l'Université du Québec à Montréal, Yukon College, the Canadian Journal of Environmental Education and Environment Canada began the discussions which would lead to the first world on-line colloquium on the future of environmental education in a post-modern world. Over 450 participants registered from all over the world.

Learning for a Sustainable Future - Ontario has developed a model for education and sustainability involving schools within their communities. Several of these professional institutes have been held throughout Ontario for hundreds of teachers, students, funders, community groups and others, and the model is evolving constantly to meet participants' needs.

The UNESCO Chair of York University has brought together Faculties of Education from all over Canada to explore how best to re-orient teacher training in the spirit of *Agenda 21*. The same Chair has also developed intensive training programs for teachers which last two years. La Centrale des syndicats du Québec has 600 schools and other places of work engaged in a network of Green Brundtland Insitutions (French translation is les Établissements verts Brundtland) whose program is based on four pillars: ecology, peace, democracy and solidarity.

The federal government's public awareness and community funding program, EcoAction, has adapted its criteria for funding so that applicants must now implement a learning component to their programs.

Over 100,000 students have participated in the Rescue Mission Indicators for Action project which was developed by Peace Child International.

Status: The consultation process that led to the development of the *National Framework for Environmental Learning and Sustainability* has engaged hundreds of Canadians who were unaware of the many programs, projects and activities related to education and sustainability. They are asking for a structure to assure that they continue to have opportunities to network, to collaborate, and to advance the issue.

Information: At this time, there is no coordinating mechanism to showcase the many data bases related to education and sustainability. Statistics Canada has published its Human Activity and the Environment report at five-year intervals and is now planning annual updates (<http://www.statcan.ca/english/kits/human.htm>).

Research and Technologies: Research on education and environment and sustainability is happening at various colleges and universities throughout Canada. Lakehead University in Thunder Bay, Ontario has created a Department of Lifelong Learning to assure that environmental learning can continue among students who don't pursue post-secondary studies. The Environmental Studies Association of Canada supports a multi-disciplinary approach to environmental learning.

Financing: At this time, there is no national budget to support programs, projects, activities and research which find their funding in creative ways. One of the desired outcomes of having a National Framework for Environmental Learning and Sustainability is to find multi-sector partners willing to support life-long learning in this field.

Cooperation: There are no formal mechanisms in place on international cooperation at this time with respect to Chapter 36. Canada is a member of International Union for the Conservation of Nature's Education Committee which is not delivering programs in North America at this time.

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Chapter 39: INTERNATIONAL LAW

Many aspects of this issue have been covered in the various chapters of this profile.

Decision-Making: 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 legislative jurisdiction over the subject matter. This necessitates the creation of consultative structures across all levels of government during both negotiations and the implementation phase. Such structures include the Canadian Council of Ministers of the Environment, a group including all federal, provincial and territorial ministers of the environment, and the Joint Ministers of Energy and the Environment, responsible for managing Canada's national response to climate change. 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.

Financing: Funding is provided under the federal budget. Precise details are not available since public expenditure accounting is not organized for *Agenda 21* reporting.

Cooperation: The following are examples of Canada's cooperation:

- Canada contributes, through a variety of bilateral channels, to help build developing country capacity both to participate in international negotiations and to implement commitments undertaken. Canada also facilitates technology transfer through bilateral programs, and contributes to the various funding mechanisms established under multilateral conventions to enhance developing country capacity. This includes funds earmarked for least developed countries.
- Canada contributes, through the Global Environment Facility and other multilateral institutions, to international funding for capacity-building, technology transfer and adaptation activities in the areas of climate change, bio-diversity, international waters 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 established the \$100 million Canada Climate Change Development Fund (CCCDF) to promote activities in developing countries that address the causes and effects of climate change, while at the same time contributing to sustainable development and poverty reduction.
- To support developing countries in negotiations under the UN *Framework Convention on Climate Change* (UNFCCC), Canada funded a series of seminars to increase the capacity of developing countries, particularly Francophone countries, to participate meaningfully in international negotiations. Canada also funded the publication of a guide for developing country negotiators.

International legal instruments relating to sustainable development that have come into force for Canada, or which Canada has ratified or acceded to, since 1997 include:

- *Agreement on Environmental Cooperation between Canada and Chile*

- *Agreement on Environmental Cooperation between Canada and Costa Rica*
- *UN ECE Convention on Environmental Impact Assessment in a Transboundary Context*
- *NAFO Conservation and Enforcement Measures*
- *1996 Protocol to the 1972 Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter*
- *FAO International Plan of Action on Illegal, Unregulated and Unreported Fishing*
- *Protocol relating to modification of the International Convention for the Conservation of Atlantic Tunas*
- *1992 Protocol to the International Convention on Civil Liability for Oil Pollution Damage*
- *International Tropical Timber Agreement*
- *Montreal Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer*
- *Beijing Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer*
- *Exchange of notes between the United States and Canada Amending Annex IV to the Pacific Salmon Treaty, 1985*
- *United Nations Framework Convention on Climate Change*
- *The Kyoto Protocol to the United Nations Framework Convention on Climate Change*
- *LRTAP Protocol on Financing of the Co-operative Programme for Monitoring and Evaluation of the Transmission of Air Pollutants in Europe*
- *LRTAP Protocol on Further Reduction of Sulphur Emissions*
- *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*
- *UN Convention on Persistent Organic Pollutants*
- *UN Agreement for the Implementation of the Provisions of the UN Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks*
- *2001 Amendments to the Canada-US Air Quality Agreement*

Canada has signed but not ratified the following international legal instruments:

- *Protocol on Environmental Protection to the Antarctic Treaty*
- *United Nations Convention on the Law of the Sea*
- *Convention on the Conservation and Management of Highly Migratory Fish Stocks in the western and central Pacific Ocean*
- *Cartagena Protocol on Biosafety*
- *LRTAP Protocol Concerning the Control of Emissions of Volatile Organic Compounds (VOCs) or their Transboundary fluxes*
- *UN ECE Convention on the Transboundary Effects of Industrial Accidents*
- *International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea*
- *Protocol on Environmental Protection to the Antarctic Treaty*
- *United Nations Convention on the Law of the Sea*
- *Convention on the Conservation and Management of Highly Migratory Fish Stocks in the western and central Pacific Ocean*

Canada participated in the following negotiations:

- *Basel Protocol on Liability & Compensation (open for signature)*
- *UNESCO Convention on the Protection of Underwater Cultural Heritage (adopted at General Conference)*
- *International Treaty on Plant Genetic Resources for Food and Agriculture (instrument ready for signature)*
- *Yukon River Salmon Agreement (instrument ready for signature)*
- *Canada-France negotiations for a framework convention on the extraction of trans-boundary oil and gas*
- *Canada-Singapore Agreement on Environmental Cooperation*
- *Canada-CA4 Agreement on Environmental Cooperation (El Salvador, Guatemala, Honduras, Nicaragua)*

Chapter 40: INFORMATION FOR DECISION-MAKING

Decision-Making: 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.

Programs and Projects: CCME's State of the Environment reporting network is involved in the development of a national inventory of provincial/territorial databases for environmental analysis, modeled on the Statistics Canada's inventory of federal environmental databases.

The Canadian Information System for the Environment (CISE) facilitates decision-making through an information system that spans the collection, management, assessment, and communication of environmental information that responds to the needs of a broad range of users, including citizens, policy makers, and resource managers.

The Canadian Urban Research on the Environment (CURE) project, supports information sharing and networking among municipalities to find solutions to urban environmental problems.

Core data sets form the foundation on which sustainable development information is built. These data sets take years to build and must evolve to meet changing demands for information. They cover soils, topography, energy use and energy statistics.

Sustainable development indicators are integrative tools that measure progress toward sustainable development. They also provide a bridge between the detailed data found in core data sets and interpreted information. At the national level, Canada has a number of indicator initiatives to track different aspects of sustainable development.

Statistics Canada publishes a set of environment and natural resource accounts that are used to derive a set of ten environment–economy indicators.

Information: A variety of networks provide a way for professionals to share information in their field. These networks cover health, the North, meteorology, pollution prevention, biodiversity, freshwater and others.

Traditional ecological knowledge is recognized as providing long-term and detailed data about wildlife resources and ecological processes on lands and waters. Such knowledge is increasingly being twinned with modern science to complement the perspectives of each. One example is the Inuit Knowledge Study in Canada's newest northern territory, Nunavut.

The Canadian Environmental Sciences Network (CESN) provides a horizontal management framework to build on current areas of environmental networking in Canada. This network of networks is the national focal point for environmental sciences in Canada, linking the creators, users and sponsors of Canada's environmental knowledge.

In addition to government sources of data and information, academic institutions, NGOs and industry are major sources of environmental information. The major foreign sources of information for sustainable development include UNEP's GEMS, GRID, GCOCS, IRPTC and INFOTERRA.

NirvCentre/WEB is the Canadian node of the Association for Progressive Communications (APC) electronic network. It hosts the exchange of information among environmental and developmental NGOs in Canada, and connects Canada to the stream of computer communications between the north and south nodes of APC.

Capacity-Building, Education, Training and Awareness-Raising: The Community Access Program, a key component of the federal government's Connecting Canadians initiative, aims to provide Canadians with affordable public access to the Internet and the skills they need to use it.

Canada connected public schools and libraries to the Internet through the SchoolNet and LibraryNet programs. The Computers for Schools program provides Canada's schools and public libraries with surplus computer equipment and computer software donated by governments, businesses, and individuals to increase access to this technology in a learning environment.

The National Round Table on the Environment and the Economy is participating with a wide cross-section of companies to test material and energy eco-efficiency indicators.

Government On-Line is delivering programs, services, and information over the Internet and is a key component in improving service to Canadians.

To inform the public of sustainability issues and offer concrete ways that these issues can be tackled at the grassroots level, the Government of Canada runs a variety of public information programs. It also offers information tools to help in making household and business decisions that support sustainable development.

The Smart Communities Program encourages Canadian communities to use information and communication technologies in new and innovative ways to achieve better health care delivery, education, and business opportunities.

Cooperation: The transfer of remote sensing technology to developing countries takes place under such programs as Natural Resources Canada's GlobeSAR-2, which links Canada to countries in Latin America.

The Canadian International Development Agency (CIDA) and the International Development Research Centre (IDRC) have lead roles in providing Canadian assistance to developing countries in support of *Agenda 21* and the conventions signed and initiated at UNCED. For example, CIDA completed a Poverty Reduction Policy that guides work with people who can be most affected by environmental degradation. CIDA's commitment to gender issues ensures that the capacities and needs of women are important in programming.

The International Institute for Sustainable Development (IISD) and many other non-governmental organizations in Canada are also actively involved in similar efforts.

The Federation of Canadian Municipalities and IDRC intend to use the Canadian Municipal Environmental Directory to establish partnerships between Canadian and developing country municipalities.

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