

**Federal Industrial Development in Canada**

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**United Nations Commission for Sustainable Development (CSD)14**  
**National Report for Industrial Development**

Introduction

Industrial sustainability is an achievable goal. Human activities - industrialization, urbanization, agriculture, fishing, forestry and mineral extraction - profoundly affect the environment. To achieve industrial sustainability, resources need to be better managed, and wastes and pollution need to be reduced. Global environmental concerns help drive the use of biotechnology in industry not simply to remove pollutants but to prevent pollution at the source. Efforts to achieve clean industrial products and processes will bring great benefits to industry over the next ten to twenty years.

In today's world, it is increasingly clear that short-term, piecemeal solutions to dealing with environmental problems no longer suffice. In earlier decades, an emphasis on waste management suggested that our industrialized economies were waste-generating, and biotechnological options were almost totally used for waste treatment, end-of-pipe disposal, and remediation.

Attention must shift from disposing of pollutants to preventing their creation. New industrial approaches are therefore needed, and the goal should be to eliminate pollution at the source: prevention rather than remediation. For industry, this means continuous innovation, improvement, and use of "clean" technologies to reduce pollution levels and consumption of resources.

The key drivers for environmentally preferable technologies in Canada are the potential and real benefits derived from economic, environmental and social sustainability. Government policy is also important as it responds to public pressure and enforces or encourages changes in manufacturing processes to meet strategic, environmental or social needs. Scientific and technological feasibility is also a major consideration.

<http://strategis.ic.gc.ca/epic/internet/inind-dev.nsf/en/de00010e.html>

The development and commercialization of new technologies is seen as a primary tool to further industrial development in Canada. The Government of Canada has undertaken periodic Science and Technology reviews (available at [www.ic.gc.ca](http://www.ic.gc.ca)), and has increased resources to support Research and Development in universities, and encouraged partnerships with industry for commercialization of promising technologies.

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**1. Major elements and targets of national industrialization strategy or plan.**

N/A

**2. Process of development of the strategy, including multi-stakeholder participation.**

**2.1** The Government of Canada has achieved an internationally recognized level of expertise in the development of **Technology Roadmaps**<sup>1</sup>. These Roadmaps, developed with Industry Canada and in partnership with industry, build the intellectual foundation for long-term technological advances in specific sectors.

By forming alliances and partnerships, they also help advance research and development (R&D) innovation and commercialization. A number of Roadmaps have been developed, and work is ongoing on the following: Aerospace Composites Manufacturing, Processing and Repair; Aircraft Cabin Management Systems Integration Technology Insertion; Biopharmaceuticals; Bio-based Feedstocks, Fuels and Industrial Products; Clean Coal; CO<sub>2</sub> Capture and Geological Storage; and Language Industries.

**2.1.1** One specific roadmap example is the Canadian Fuel Cell Commercialization Roadmap. The Canadian Fuel Cell Commercialization Roadmap is an industry-led planning process supported by Industry Canada. Its objective is to accelerate full-scale commercialization by Canadian fuel cell companies.

The transition to a hydrogen economy presents new opportunities and tremendous benefits for Canada. A sustainable solution to climate change and pollution, particularly in our cities; new growth and investment opportunities for Canadian industry; the creation of high-quality jobs; and, an overall improvement of the quality of life for all Canadians, are just some of these benefits.

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<sup>1</sup> Technology roadmapping is a planning process driven by the projected need of tomorrow's markets. It helps companies to identify, select, and develop technology options to satisfy future service, product or operational needs. In today's fiercely competitive environment, companies must use effective tools to plan their future. Technology roadmapping is a way to identify product or service needs, map them onto technology alternatives, and develop plans to help ensure the required technologies will be available when needed.

The Canadian Fuel Cell Commercialization Roadmap has been developed through the participation, input and assistance of many leaders in industry, government and academia. It represents a critical step in identifying the commercialization challenges, and in selecting the strategies and actions that will allow Canadian stakeholders to successfully meet these challenges. The Roadmap reinforces the need for collaboration among government, industry and academia if Canada is to realize the many economic, social and environmental benefits that fuel cell technology can provide for the country.

During the past two decades, the Government of Canada has invested more than \$200 million in the hydrogen and fuel cell sector. British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick and Prince Edward Island all continue to support industry developments in their respective regions. Moreover, during the past five years, the private sector has also invested approximately \$200 million annually in R&D. The international nature of the sector, combined with the small size of Canadian companies, has encouraged the Canadian industry to place a high priority on developing collaborative relationships with public and private organizations within and outside Canada.

One of the recommendations that resulted from the Canadian Fuel Cell Commercialization Roadmap is the development of a **National Hydrogen and Fuel Cell Strategy**. This strategy would promote the development of fuel cell technologies and the new energy paradigm based on hydrogen energy technologies. There are four chief areas to be addressed: Hydrogen infrastructure; Mobile applications; Stationary power and Portable power.

Once implemented, the Canadian National Hydrogen and Fuel Cell Strategy will focus on developing an energy industry that will ultimately provide a long-term, sustainable energy solution for Canada and the world. Actions which include tools, policies and initiatives, could be applied in the following critical areas: research and development; demonstration and deployment; education, awareness and outreach; regulation; and coordination, analysis and promotion.

There are numerous early actions that we can use to take advantage of our opportunities and address priority issues. These actions fall into several key categories:

- research and development;
- demonstration and deployment;
- education, awareness and outreach;
- regulation; and
- coordination, analysis and promotion.



Canadian governments at all levels have a catalytic role to play in each of these categories, and can help establish fruitful partnerships among industry, academia and the research community.

The development and implementation of the National Strategy is being directed through the Hydrogen and Fuel Cell Committee (H2FCC). This committee represents 22 federal departments, agencies, and programs. It oversees all of the federal government's actions toward full-scale commercialization of the industry.

Internationally, the Coordinating Committee (H2FCC) has been involved in the US/Canada Technology Partnering Initiative, various International Energy Agency committees, the International Partnership for the Hydrogen Economy, OECD Energy Working Group, the North American Energy Working Group, and Asia-Pacific Economic Cooperation Energy Working Group. H2FCC is also fostering partnerships with US federal counterparts in order to build the North American Hydrogen Economy, to strengthen North America's highly integrated energy markets, and increase reliable and sustainable energy supplies for the region's continued population and economic growth. By representing the Canadian government, as well as other stakeholders, at these international tables, the H2FCC is positioning Canada as a key player in the global transition to a hydrogen economy and serves to promote Canadian technologies as ideal industrial partners for international collaborations.

A specific demonstration project is the **Proposed British Columbia (BC) Transit Fleet Demonstration**. As part of the Hydrogen Highway™, BC Transit is championing the world's first hydrogen fuel cell bus fleet for an urban mass transit system. The proposal, to be implemented for the 2010 Winter Olympics, will operate a fleet of 15 – 20 buses in Victoria and Whistler, B.C. The Greater Toronto Hydrogen Village™, the BC Hydrogen Highway™ and the Vancouver Fuel Cell Vehicle Program are being built by partnerships that include the Government of Canada, Technology Partnerships Canada, Hydrogen Early Adopters, the Canadian Transportation Fuel Cell Alliance, the Ontario Fuel Cell Innovation Program, Sustainable Development Technologies Canada and the BC Hydrogen Strategy (see also Section 2.1.1.2 below).

**2.1.1.1 The h2 Early Adopters (h2EA) Program** embraces a ground-breaking federal initiative in the demonstration and early adoption of hydrogen and hydrogen-compatible technologies. Canada is recognized as a leader in the evolution of the early stages of a hydrogen economy, and this program is encouraging companies to work together to demonstrate the potential of these important technologies. Canada's long-term objective to maintain its position as a world-leader in the evolution of a hydrogen economy is in its very early stage of being realized. As one of the initial steps towards this objective, Technology Partnerships Canada, a Special Operating Agency of Industry Canada, is implementing and delivering the *h2 Early Adopters (h2EA) program* designed to

demonstrate new hydrogen technology concepts that will lead to a hydrogen economy for Canada.

The Government of Canada, through the h2EA program, is committed to working in partnership with the industry to build a solid "Hydrogen Team". Working together, Government and Industry will foster the development and early introduction in the Canadian marketplace of hydrogen and hydrogen-compatible technologies, such as fuel cells and those used to produce, store and distribute hydrogen.

The h2EA program will lead efforts to demonstrate new concepts, such as "hydrogen highways" and "hydrogen villages". More specifically, the strategic objectives of the h2EA program are:

- Increased public, consumer and investor awareness and acceptance of the hydrogen capability;
- Integration of hydrogen and hydrogen-compatible technologies;
- Development of hydrogen infrastructures;
- Development of skills and supply chain in the hydrogen industry;
- Development of codes and standards for the hydrogen industry; and,
- Increased performance, reliability, durability and economical viability of hydrogen and hydrogen-compatible technologies.

Through the funding of real-world applications for hydrogen technologies, the TPC h2EA program demonstrates to Canadians that our hydrogen industry is at the forefront of innovation: working hard to ensure a clean and sustainable future.

[http://tpc-ptc.ic.gc.ca/h2/epic/internet/inh2ea-aph2.nsf/en/h\\_mo00001e.html](http://tpc-ptc.ic.gc.ca/h2/epic/internet/inh2ea-aph2.nsf/en/h_mo00001e.html)

**2.1.2** Another roadmap example is the one that was developed for the **Bio-based Feedstocks, Fuels and Industrial Products**. The bioproducts industry includes firms that produce fuels, chemicals, materials and specialty products using biological feedstocks and bioprocesses. In Canada, approximately 75-100 companies located in almost all regions of the country undertake R&D and/or manufacturing of bioproducts. These include small, highly specialized companies, as well as subunits of some of Canada's larger companies involved in the production of chemicals and plastics, processed foods, and wood and paper products. Annual bioproduct sales amount to \$100-\$150 million.

A key issue for the economic viability of the industry is how to make the fullest possible use of the raw bioresource inputs and how to maximize the value-added for a range of products that can span several sectors.

The objective of the Roadmap exercise was to provide private and public sector decision makers with an industry consensus on future, market-driven technology priorities, policy/regulations and outreach needs. This will enable Canadian biomass producers and companies to manufacture products from biomass sources, while developing solutions for a range of systems problems including climate change, persistent organic pollutants and management of municipal, forestry, marine and farm residues.

<http://strategis.ic.gc.ca/epic/internet/intrm-crt.nsf/en/rm00130e.html>

Examples of the other available roadmaps can be found at  
[http://strategis.ic.gc.ca/epic/internet/intrm-crt.nsf/en/h\\_rm00127e.html](http://strategis.ic.gc.ca/epic/internet/intrm-crt.nsf/en/h_rm00127e.html)

**2.2** The Government of Canada also has a number of **regional strategies** to promote economic development as well as sustainable development. Fifteen federal departments and agencies make up the Industry Portfolio. Together, these organizations are uniquely positioned to further the government's goal of building a knowledge-based economy in all regions of Canada and to advance the government's jobs and growth agenda in these specific areas:

- **Innovation through science and technology** — helping firms and not-for-profit institutions more rapidly turn ideas into new products and services;
- **Trade and investment** — encouraging more firms in more sectors to export to more markets, and helping Canadian firms attract a larger share of foreign direct investment;
- **Growth of small- and medium-sized enterprises (SMEs)** — providing access to capital, information and services; and
- **Economic growth of Canadian communities** — fostering new approaches to community economic development, based on community strengths and information infrastructures.

The Industry Portfolio includes:

[Atlantic Canada Opportunities Agency](#)

[Business Development Bank of Canada](#)

[Canada Economic Development for Quebec Regions](#)

[Canadian Space Agency](#)

[Canadian Tourism Commission](#)

[Competition Tribunal](#)

[Copyright Board Canada](#)

[Enterprise Cape Breton Corporation](#)

[Industry Canada](#)

[National Research Council Canada](#)

[Natural Sciences and Engineering Research Council of Canada](#)

Social Sciences and Humanities Research Council of Canada  
Standards Council of Canada  
Statistics Canada  
Western Economic Diversification Canada

As well, the following organizations are associated with the Industry Portfolio:  
Canada Foundation for Innovation (CFI), an independent corporation established by the Government of Canada.

Canada Research Chairs (CRC)

Genome Canada, a not-for-profit independent organization.

Networks of Centres of Excellence (NCE).

**3. Consideration of environmental and social aspects in the design and follow-up of national industrialization plan.**

N/A

**4. Policies to promote open markets such as reduction of quantitative restrictions and tariffs on imports and promotion of exports.**

The Government will put its full support behind the success of the current round of **World Trade Organization** talks (the **Doha Development Agenda**); success there is critical to opening up market opportunities for developed and developing countries, levelling the playing field, eliminating agricultural export subsidies, substantially reducing trade-distorting domestic support for agriculture and eliminating or reducing barriers to trade in environmental goods and services. The Government will also pursue strategic regional and bilateral initiatives that will maximize opportunities for business.

The Government recognizes that promoting economic growth in the developing world benefits everyone, given that global prosperity helps to anchor international stability, contributes to sustainable development, and ultimately permits more mature and beneficial economic partnerships. To this end, Canada will continue to extend preferential access to our market for all developing countries, pursue development-friendly outcomes in the Doha Development Agenda, provide a broad range of technical assistance related to trade, and actively implement the Canada Investment Fund for Africa.

<http://www.dfait-maeci.gc.ca/cip-pic/ips/infokititcan-en.asp>

**5. Efforts to reduce administrative procedures and costs related to business start-up and operation. (e.g., one stop/single access registration, reduction of capital requirements, creation of industrial parks).**

- 5.1 The Government of Canada recognizes that setting up businesses can be a time consuming and complicated process. To address this issue, the **Business Start-up Assistant (BSA)** was developed as a one-stop site to useful and authoritative information for launching a business in Canada. It combines start-up information from the federal, provincial and territorial -governments, the community and many other sources. Information is organized by topics such as market research, financing, taxation, business planning, and many others - all critical to starting a new business. This easy to navigate site also provides links to federal, provincial and territorial forms for registering your business.

<http://bsa.cbasc.org/gol/bsa/site.nsf/en/su01229.html>

- 5.2 The Government of Canada has recently formed a new department: **Service Canada**. The goal of Service Canada is to provide better, one-stop service to more Canadians in more communities, delivered with the right service attitude. Over time, it will bring federal services and benefits together making it easier for Canadians get more of the help they need in one place, whether by phone, Internet or in person.

Service Canada will integrate services from a number of federal departments to form a single service delivery network. Over the next three years, Service Canada will continue to enhance and introduce more services with the goal of continuous improvement in service delivery and client satisfaction.

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

6. **Efforts to promote investor confidence, including protection of intellectual and other property rights, dedicated commercial courts and efforts to promote speed in the resolution of commercial disputes.**

The **Canadian Intellectual Property Office (CIPO)**, a special operating agency of Industry Canada, administers most of Canada's Intellectual Property (IP) laws and regulations to ensure that they meet present and future client needs and best contribute to the Canadian economy. First, CIPO grants or registers ownership for the following five types of IP: patents, trade-marks, copyrights, industrial designs and integrated circuit topographies. Second, it makes accessible to the public the details of new innovations registered in Canada, thereby encouraging further economic activity. CIPO's core functions reward and encourage innovation and the use of IP by granting IP rights, maintaining a responsive IP framework, and ensuring that the IP data collected by CIPO is available to all its clients, in Canada and abroad. The Canadian Patent Database provides access to over 75 years of patent descriptions and images with the ability to search, retrieve and study more than 1,500,000 patent documents.

[http://strategis.gc.ca/sc\\_mrksv/cipo/toolkit/ab-e.html](http://strategis.gc.ca/sc_mrksv/cipo/toolkit/ab-e.html)

## 7. Nature of regulatory approach to environmental issues. Use of command and control as well as economic instruments to enforce legal requirements.

- 7.1 In the Government of Canada, the lead responsibility for matters of the environment resides with Environment Canada. The primary piece of environmental legislation as related to pollution prevention is the *Canadian Environmental Protection Act (CEPA), 1999*.

The goal of the renewed CEPA is to contribute to sustainable development through pollution prevention and to protect the environment, human life and health from the risks associated with toxic substances. CEPA also recognises the contribution of pollution prevention and the management and control of toxic substances and hazardous waste to reducing threats to Canada's ecosystems and biological diversity. It acknowledges for the first time the need to virtually eliminate the most persistent toxic substances that remain in the environment for extended periods of time before breaking down and bioaccumulative toxic substances that accumulate within living organisms. Health Canada works in partnership with Environment Canada to assess potentially toxic substances and to develop regulations to control them.

<http://www.ec.gc.ca/EnviroRegs/Eng/SearchDetail.cfm?intAct=1001>

Another area where economic instruments can be used to enforce legal requirements is in the area of emissions trading.

- 7.2 The Government of Canada's **Project Green- Moving Forward on Climate Change** provides a regulatory approach to achieve the national LFE emission reduction target. Discussions are ongoing with some provinces to develop equivalency agreements, which would recognize a province's regulatory actions provided that these actions achieve an equivalent environmental outcome.

Since the release of the plan, progress has been made on a number of measures including the development of the domestic Offset System, which will encourage greenhouse gas emission reductions in sectors and activities not covered by the proposed regulations. The Climate Fund is the government's purchasing agency for emission reductions credits from Canadian and international sellers. The Plan will evolve over time as needed to ensure its ongoing effectiveness and value for money. That evolution may impact our approach to the regulation of Large Final Emitters as well as other key sectors of our economy, including transportation.

Action taken at home coupled with international measures provides a positive path forward for Canada and other countries to address climate change over the long term.

[http://www.ec.gc.ca/climate/NewCCplan\\_e.html](http://www.ec.gc.ca/climate/NewCCplan_e.html)

- 7.3 Another component of the Government's Action plan is the **Enhanced Recycling Program of Action Plan 2000 on Climate Change** is a Government of Canada program aimed at helping municipalities, provinces and businesses increase the amount of materials recycled in a sustainable manner. Over the past five years 35 projects have been implemented across Canada with the goal of increasing sustainable recycling of materials from end-of-life products. Through increased recovery practices Canada is able to gain material and energy efficiencies which contribute to the competitiveness agenda and help meet Canada's commitment to its Kyoto targets. Although efforts have addressed all sectors of the economy, electronics and buildings have been targeted as a priority. Working closely with industry, government is in the process of developing a national extended producer responsibility regime for obsolete electronics products. Also there are a number of initiatives underway to obtain greater reuse and recycling of buildings targeted for demolition. Of particular importance is the development of sustainability standards and guidelines, which address material recycling considerations at the design phase as well as practices to increase recovery efficiencies for materials from new construction as well as obsolete structures. Building on the success of the past five years, a national strategy on resource recovery and recycling is being developed which will involve all levels of government, industry and environmental groups. Discussions will start by reflecting on the past 5 years performance in order to identify gaps, priority sectors and areas for improvement. This will lead to the development of components, which will be structured under for key elements. These elements are policy mechanisms, data collection, technology and innovation and communications and will form the basis of a national resource recovery strategy and implementation plan.

[http://www.recycle.nrcan.gc.ca/enhanced2\\_e.htm](http://www.recycle.nrcan.gc.ca/enhanced2_e.htm)

- 7.4 A recent undertaking of the Government of Canada is the **Smart Regulation** initiative. This is about finding better, more effective ways to protect the health and safety of Canadians and Canada's natural environment within a regulatory system that supports innovation and economic growth. Regulatory frameworks must foster competitive conditions in order to attract investment, stimulate commercialization and protect the public interest.

A study was commissioned to provide advice on how to transform Canada's regulatory system to better protect the health and safety of Canadians and Canada's natural environment within a regulatory system that support an innovative and dynamic economy. The study had three elements:

- Develop a regulatory strategy for the 21<sup>st</sup> century;

- Identify sectors and areas requiring regulatory reform in order to give Canada a strategic advantage; and
- Review and provide an external perspective on specific issues identified by departments and stakeholders.

Although Canada benefits from an internationally recognized regulatory system, continuous improvement is required to develop a competitive advantage for Canadian businesses on the world stage. With the release of *Smart Regulation: Report on Actions and Plans* in March 2005, all federal departments are now involved in the government's effort to break down the impediments to efficiency in regulatory processes, and remain adaptable to changing public priorities, as well as accountable to businesses served by the regulatory system.

One aspect of smart regulations includes managing the increasing number of pieces of environmental legislation. Supporting smart regulation also takes the form of working with international organizations to influence international processes, encourage the development of marketplace frameworks, share best practices, and represent Canadian views and interests.

<http://www.pco-bcp.gc.ca/smartreg-regint/en>

- 7.5 The Government of Canada recognizes that **economic instruments** help promote environmental excellence while also fostering economic growth. These economic instruments can complement or substitute traditional regulatory command and control measures and include: green taxes, tax incentives, tradable permits and subsidies.

The difference between economic instruments and traditional regulatory command and control measures is that instruments use market forces to induce behavioural change while command and control measures dictate how polluters must control specific activities. Studies and real-world experience show that economic instruments can be more flexible, stimulate innovation, and lower costs for consumers and companies that want to green the way they do business. In Canada, economic instruments are being considered more and more. The federal, provincial and territorial governments are involved in a range of instruments such as economic incentives, green taxes and tradable permit programs.

For example, in recent federal budgets, Canada has provided incentives for the use of cleaner burning ethanol fuels and the production of wind energy. Similarly, the [Federation of Canadian Municipalities \(FCM\)](#) manages a Green Municipal Fund supporting environmental projects at arms length from the federal government. Canada has also initiated a few tradable permit programs. Ontario has introduced a trading regime



for the electricity sector while Environment Canada has used a small cap and trade system to phase out methyl bromide.

[http://www.ec.gc.ca/cleanair-airpur/Health,\\_Environment\\_and\\_the\\_Economy/Economic\\_Issues/Economic\\_Instruments\\_for\\_Environmental\\_Improvement-WSA3EA44BA-1\\_En.htm](http://www.ec.gc.ca/cleanair-airpur/Health,_Environment_and_the_Economy/Economic_Issues/Economic_Instruments_for_Environmental_Improvement-WSA3EA44BA-1_En.htm)

**8. Efforts to integrate environmental aspects into industrial operations such as requiring environmental impact assessments for licensing or permitting as well as other policies, which might support this goal.**

The *Canadian Environmental Assessment Act (CEAA)* is administered by the Canadian Environmental Assessment Agency. The Act requires all federal departments, agencies, and Crown Corporations to conduct environmental assessments for proposed projects where the federal government is the proponent. It also requires environmental assessments when the project involves federal funding, permit or license.

The regulations put the procedures of the Act into effect and clarify its requirements and scope in certain circumstances. They are critical to the proper functioning of CEAA.

<http://www.ec.gc.ca/EnviroRegs>

**9. Policies to promote voluntary approaches by industry including corporate social responsibility and environmental stewardship.**

**9.1** The Government of Canada is currently working on the development of a **Competitiveness and Environmental Sustainability Framework (CESF)** in order to position Canada to be a world leader in environmental sustainability. The Government of Canada has recognized that:

- Environmental sustainability is becoming more crucial than ever in terms of improving our quality of life;
- The links that bind the environment and economic competitiveness are driving change in the global economy;
- Those nations that succeed in reconciling the environment and the economy will gain an important economic advantage; and
- Canada must assert itself as a leader in the new industrial revolution, that of the sustainable economy, as it has done in all previous industrial revolutions

The clear connection between environmental considerations and economic competitiveness is leading a transformation in the way the global economy works. More and more, we see the signs of what can only be described as a new Industrial Revolution - a revolution in which environmental sustainability is a key driver of creativity, of

innovation and of competitiveness around the world. The countries that fail to integrate both environmental and economic factors will not position themselves well to improve, or even to maintain, the quality of life of their people.

To support this agenda, Canada, through Environment Canada, has started to develop a new policy framework to guide the ongoing activities of the government on moving toward environmental sustainability.

The overarching objective of the Competitiveness and Environmental Sustainability Framework (CESF) is to attain the highest level of environmental quality as a means to enhance the health and well-being of Canadians, preserve our natural environment, and advance our long-term competitiveness. The CESF will set long-term national environment and health objectives and will take an integrated approach to the full range of sustainability challenges, including: climate change, clean air and water, pollution prevention, land and habitat use, and biodiversity. The CESF is a national approach to facilitate transformational change in Canada to create a world-leading sustainable economy - an economy that recognizes that economic and environmental success go hand-in-hand.

The CESF lays out a comprehensive vision with three overarching goals for the country as a whole to achieve:

- ***Enhancing the safety and well-being of Canadians***
  - Protecting Canadians against hazards in the environment thus contributing to improved health outcomes, lower health costs and greater safety and security for individuals.
- ***Preserving our natural environment***
  - Protecting, conserving and restoring Canada's ecosystems to ensure the highest level of environmental quality and access to Canada's natural capital for future generations.
    - reporting on the state of Canada's environment by showing how human activities affect environmental conditions and trends and impacts on human and ecosystem health for use in decision-making, policy development, and performance reporting.
- ***Advancing our long-term competitiveness***
  - Advancing sustainable approaches to economic development in order to achieve increased productivity; increased efficiency; more sustainable energy use.
    - Levering the forces of the economy and competitiveness through sector sustainability tables to achieve environmental results;
    - Creating a clear and predictable environmental protection regime, which encourages and enables sustainable production and consumption.

**9.1.1** There are significant components of Sustainable Consumption and Production (SCP) which are already in place that will be included in the final CESF (above) framework

once it is completed. Some of those components include eco-efficiency, corporate social responsibility, economic instruments, indicators, environmental labelling, green procurement, life cycle management and other information tools.

[http://www.ec.gc.ca/NOPP/scd/en/index.cfm?par\\_OrgID=6&par\\_Org=1](http://www.ec.gc.ca/NOPP/scd/en/index.cfm?par_OrgID=6&par_Org=1)

- 9.1.2** In November 2005, the Government of Canada announced its **Green Procurement Policy**. Green procurement is the procurement of products and services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw material acquisition, production, manufacturing, packaging, distribution, operation, maintenance, disposal and re-use of the product or service.

Green procurement encompasses the concept of the procurement of goods and services that provide for basic human needs and bring a better quality of life, while minimizing the use of non-renewable natural resources and toxic materials and the emission of wastes and pollutants over the life cycle, so as not to jeopardize the ability of future generations to meet their own needs.

The objective of the Policy on Green Procurement is to advance the protection of the environment and support sustainable development by integrating environmental performance considerations into buying decisions. Environmentally preferable or "green" products and services are considered those that have less impact on the environment over their life cycle when compared to competing goods and services serving the same purpose.

The policy is aimed at contributing to environmental objectives such as reducing greenhouse gas emissions, reducing waste and supporting reuse and recycling, improving energy and water efficiency, reducing toxic and hazardous chemicals and substances, and supporting a healthier environment for all Canadians. Public Works and Government Services Canada, Natural Resources Canada and Environment Canada are the co-signatories/key departments in terms of the implementation of this Policy.

The Federal government is a significant purchaser in Canada and as such its activities impact the national economy and can influence both the price and the availability of goods and services, including construction services, in the marketplace. Through the increased promotion of environmental sustainability and demand for environmentally preferable goods and services, federal procurement can play an important role in providing market incentives for companies and supporting the competitiveness of Canadian industry in global markets.

<http://news.gc.ca/web/index.html>

**9.1.3** Businesses have in many instances recognized the challenges and opportunities that are being placed upon them and have embraced a variety of related approaches for response. **Corporate social responsibility (CSR)** and related concepts such as corporate accountability, corporate sustainability, and corporate citizenship are being used to more effectively integrate the economic, environmental and social objectives of society into corporate structures and processes, more creatively innovate and bring value-added goods and services to solve societal demands, and more meaningfully collaborate and engage key stakeholders to improve public credibility and confidence.

There are organizations representing industry associations, socially responsible investment efforts, research and advocacy work as well as accounting bodies that contribute to improving corporate sustainability reporting. Examples such as the Canadian Association of Petroleum Producers' (CAPP) Environmental, Health and Safety Stewardship Program and the Mining Association of Canada (MAC) Sustainable Mining Initiative are illustrative of industry sector association efforts (see Annex 1).

The Social Investment Organization and the Canadian Coalition for Good Governance encourage corporate transparency with respect to socially responsible investment. Still other organizations such as the Canadian Business for Social Responsibility, the Conference Board of Canada, and Corporate Knights help to research and promote corporate sustainability reporting. Finally, accounting organizations such as the Certified General Accountants Association of Canada, the Canadian Institute of Chartered Accountants and the Association of Chartered Certified Accountants help to encourage, support and contribute to improvements in corporate sustainability reporting through products involving studies, guidance documents, and awards.

**9.1.3.1 Industry Activities.** Individual companies have been integrating CSR and SD into management systems and into their business practices (e.g. TransAlta, Placer Dome, Alcan, Suncor, VanCity, Telus, Royal Bank, Dow Canada). Industry sectors have also been developing CSR and SD platforms to improve environmental and social performance. There are a number of examples by Canadian sector listed below and included in more detail in Annex 1:

- Canadian Chemical Producer's Association (CCPA)
- Canadian Association of Petroleum Producers (CAPP)
- Canadian Steel Producers' Association (CSPA)
- Canadian Electricity Association (CEA)
- Mining Association of Canada (MAC)
- Forest Products Association of Canada (FPAC)
- Vinyl Council of Canada (VCC)

In general, there are indications that Canadian industry has been continuously improving its CSR and SD performance. For example, current data from the International Standards Organization (ISO) indicates that Canadian companies that registered for ISO 14000 have increased by approximately 40 % from 2002 to 2004. Finally, the investment community has created CSR/SD funds and indexes to recognize and reward sustainability performance (e.g. Domini Social Equity Fund, Jantzi Social Index).

**9.1.3.2** The Government of Canada also actively promotes corporate responsibility and sustainability on a number of fronts.

First, there are federal corporate responsibility and sustainability initiatives that are developed under the auspices of federal sustainable development strategies that federal departments must prepare every three years. These strategies have been guided by overarching interdepartmental perspectives such as those conveyed by the Guide to Green Government (<http://www.sdinfo.gc.ca/reports/en/ggg/Default.cfm>) and by expectations of the Commissioner of the Environment and Sustainable development ([http://www.oag-bvg.gc.ca/domino/cesd\\_cedd.nsf/html/menu8\\_e.html](http://www.oag-bvg.gc.ca/domino/cesd_cedd.nsf/html/menu8_e.html)).

Federal government web sites that help to provide an indication of the range of federal CSR activities include:

<http://strategis.gc.ca/sd>

[http://www.nrcan.gc.ca/sd-dd/csr-rse/csr\\_e.html](http://www.nrcan.gc.ca/sd-dd/csr-rse/csr_e.html)

[http://www.humansecurity.gc.ca/govaccount\\_csr-en.asp](http://www.humansecurity.gc.ca/govaccount_csr-en.asp)

<http://www.ncp-pcn.gc.ca> ; and

<http://www.ec.gc.ca/cei>

Second, there also are numerous federal initiatives that are being undertaken to develop and implement domestic, intergovernmental, international and collaborative **public-private initiatives that improve corporate responsibility practices** at home and abroad. For example, the Department of Foreign Affairs and International Trade (DFAIT) works to promote and implement the OECD Guidelines, the UN Global Compact, and on fronts involving the Americas, G8 and the Africa Action Plan. Industry Canada works to encourage convergence on domestic and international voluntary CSR standards (e.g. under the auspices of the International Standards Organization (ISO)), national performance reporting, corporate governance, and improving knowledge capacity on the links between competitiveness and CSR. More recently, in a Federal Government response to a standing committee report on mining in developing countries, the government has proposed to undertake more consultations with stakeholders on select CSR issues, to work with like-minded countries to enhance and clarify the international normative framework for CSR and accountability and to work on a series of other actions to achieve further progress on sustainability practices by industry.

**9.1.3.3 Corporate sustainability reporting** trends in Canada are similar to trends in other parts of the world. The number and quality of sustainability reports has been increasing in response to pressures from stakeholders such as shareholders, regulators, and consumers. A report released by Stratos Inc., in 2003 revealed that 60% of the companies included in the Toronto Stock Exchange Composite Index (220 companies in total) reported some information on their sustainability performance and 22% were producing a sustainability or integrated annual report in 2001 or 2002. Further, a more recent KPMG international study indicates that corporate responsibility reporting by Canada's largest companies has doubled from 2002 to 2005.

While Canadian companies are not legislatively required to publish sustainability reports, a number of recent legislative initiatives at the federal level encourage Canadian companies to consider and report on their non-financial performance. For example: the *Canadian Environmental Protection Act (CEPA) 1999* requires companies to supply information on certain pollutant emissions to the National Pollution Release Inventory (NPRI); the *Canada Business Corporations Act of 2001* now makes it easier for investors/shareholders to bring forward shareholder proposals on social and environmental issues, the *Bank Act* of 2001 calls for financial institutions with equity in excess of \$1 billion to publish annual Public Accountability Statements describing their contribution to the Canadian economy and society (including reporting on an organization's community development activities).

Stratos Inc. with support from Environment Canada, DFAIT and Industry Canada is pursuing initiatives on voluntary **sustainability reporting**. A recent partnership initiative involving Environment Canada, Department of Foreign Affairs and International Trade, Industry Canada and the private sector has resulted in an online Corporate Sustainability Reporting Toolkit to support and encourage companies in reporting on their sustainability performance. To learn more about the toolkit, visit <http://www.sustainabilityreporting.ca>.

Environment Canada has a Corporate Environmental Innovation (CEI) initiative, which aims to accelerate innovation and improve environmental performance in the corporate sector by encouraging and supporting corporate sustainability leadership. Through collaboration with the private sector, academics, non-governmental organizations, and other government departments, CEI's goal is to encourage corporate sustainability leaders to keep leading and to help other companies see the benefit of following their example. CEI's primary activities include research projects and information dissemination aimed at expanding corporate engagement in sustainable development.

<http://www.ec.gc.ca/cei>

Some of the more noteworthy federal initiatives that encourage voluntary corporate sustainability reporting include: participation in the development of ISO standards on

corporate responsibility and the Voluntary Challenge Registry as a program transitioned to the Canadian Standards Association in 2005 and which allows companies to make public their performance with respect to greenhouse gas emissions.

<http://www.ghgregistries.ca/index.cfm>  
<http://www.csa.ca/Default.asp?language=english>

In summary, there are ranges of corporate responsibility and sustainability initiatives that are being undertaken in Canada. These initiatives have frequently involved partnerships between industry and government although some have been driven primarily by industry. There is evidence that these initiatives are producing positive sustainability results.

- 9.2 Further information on a range of initiatives that aim to promote and improve corporate sustainability practices of Canadian industry at domestic and international levels is available in individual departmental **Sustainable Development Strategies (SDS)**.

In the area of environment stewardship, the federal government departments and agencies that have tabled Sustainable Development Strategies (SDS) in Parliament in accordance with the *Auditor General Act* now face an almost universal requirement. They must develop and implement the management measures needed to support their sustainable development objectives.

As an example, Industry Canada's Sustainable Development Strategy (SDS III) supports a vision of Canada as a leader in the development, commercialization and adoption of sustainable development tools, practices and technologies throughout the economy. SDS III commits the Department to playing a strategic enabler role and promoting innovative sustainable development solutions through the following strategic outcomes:

- Innovation toward sustainable development
- Corporate and community sustainability
- Sustainable development capacity building within Industry Canada

SDS III seeks, first, to reinforce Industry Canada's efforts to promote eco-efficiency tools and practices, and enable the diffusion of environmental technologies by Canadian industry. Second, it includes an expanded suite of initiatives to advance corporate and community sustainability. Third, it calls for further strengthening of Industry Canada's sustainable development capacity in terms of its sustainable development management system.

- 9.3 A mechanism adopted by a number of federal government departments for management of their own operations is an **environmental management system (EMS)** based on the

international standard ISO 14001<sup>2</sup>. An EMS requires an organization to manage a great deal of information from various sources, such as legal requirements, training records, operational procedures, and performance data. While there are several ways to manage this information, many departments and agencies are looking at electronic tools as a way of fulfilling the requirements of their management system. Many private companies also use an EMS to help with the management of their environmental issues and integrate the EMS into their other business planning cycles.

[http://www.ec.gc.ca/emsinfo/home\\_e.htm](http://www.ec.gc.ca/emsinfo/home_e.htm)

There are also industry organizations that promote improved environmental performance. The **EXCEL (Excellence in Corporate Environmental Leadership) Partnership**, for example, is a unique learning partnership of major Canadian corporations who are committed to environmental and sustainable development leadership through continuous improvement of environmental performance.

<http://www.wbcds.ch/>

- 9.4 Eco-efficiency** has an important role in helping Canada and Canadian business become more innovative and competitive while at the same time supporting Canada's Pollution Prevention Policy. It calls for businesses to achieve more value and productivity from lower inputs of materials and energy and with reduced emissions. This enhanced resource productivity makes companies more competitive not less.

Business is achieving eco-efficiency gains through applying new knowledge, tools and technologies to: optimize processes; make existing products more efficient to produce, use and recycle; and, by developing new and innovative products and services to better meet customer needs.

There is role for governments in promoting eco-efficiency. This includes the need to explore and promote the social aspects, as well as maximizing eco-efficiency in government operations and adapting the policy, regulatory and fiscal framework to facilitate wider adoption of eco-efficiency by business.

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<sup>2</sup> ISO (International Organization for Standardization) is the world's largest developer of standards. Although ISO's principal activity is the development of technical standards, ISO standards also have important economic and social repercussions. ISO standards make a positive difference, not just to engineers and manufacturers for whom they solve basic problems in production and distribution, but to society as a whole. ISO standards contribute to making the development, manufacturing and supply of products and services more efficient, safer and cleaner. They make trade between countries easier and fairer. They provide governments with a technical base for health, safety and environmental legislation. They aid in transferring technology to developing countries. ISO standards also serve to safeguard consumers, and users in general, of products and services - as well as to make their lives simpler. (Source: <http://www.iso.org/iso/en/aboutiso/introduction/index.html#one>)



NRCan, in coordination with Industry Canada and Environment Canada, has offered general eco-efficiency training workshops in several Canadian cities, including Vancouver, Regina, Saskatoon, Toronto, Montreal and Halifax. NRCan and Industry Canada have also supported two specific workshops targeting auto parts suppliers of automotive manufacturers. These workshops have been highly valuable to many of the industry participants, and have helped them recognize areas where, for example, enhanced energy efficiency, recycling and pollution prevention can improve their company's bottom line. Canadian businesses will be better situated to compete in domestic and international markets if they are aware of and proactive in adopting these eco-efficient tools and practices.

<http://strategis.ic.gc.ca/epic/internet/inee-ee.nsf/en/ef00042e.html>

- 9.4.1** A linked concept to eco-efficiency is one of performance measurement indicators. It would appear that the trend at the international level is toward the development of a wider range of **indicators of eco-efficiency**, which capture both environmental performance and traditional economic achievements.
- 9.4.2** Industry Canada's **Eco-efficiency Web Site** was created to provide companies with the information they need to become more eco-efficient. Information on the site includes: benchmarking and diagnostic tools; eco-efficiency assistance programs and guides; sources for financing eco-efficiency investments; links to existing departmental databases for locating Canadian suppliers and manufacturers of eco-efficiency solutions; and, an interactive feedback mechanism for soliciting client feedback. There is an eco-efficiency tool available on the web site that was developed to assist small and medium-sized manufacturers in Canada to develop an eco-efficiency program that is custom tailored to their business needs. The process involves the following three steps: Self-Assessment, Strategic Planning and Benefit-Cost Analysis. This three-step process is available as a package of user-friendly worksheets that can be downloaded or completed on-line using an automated version of the tool.

<http://strategis.ic.gc.ca/epic/internet/inee-ee.nsf/en/ef00012e.html>

- 9.4.3** On a more local scale, there is the example of the **The Eco-Efficiency Centre** in Burnside, Nova Scotia. This Centre is a not for profit, arms-length agency that brings an important message to small and medium sized businesses (SMEs) - that there can be both ecological and economical advantages to making the right environmental choices. The Eco-Efficiency Centre works to improve the efficiency of individual companies on the one hand, while encouraging an eco-systemic perspective, by supporting cooperation between businesses. The Centre focuses on providing information in an integrated fashion on eco-efficiency/pollution prevention, resource conservation and economic efficiency.

The Eco-Efficiency Centre was initiated as a partnership between Dalhousie University (School for Resource and Environmental Studies), Nova Scotia's largest university, and Nova Scotia Power Inc., the province's electric utility. The Eco-Efficiency Centre opened in Burnside Industrial Park in September 1998, but Dalhousie University-led research on the flows of materials, energy and information in the Park dates back to 1991. This previous work resulted in Burnside Industrial Park gaining an international profile for research on environmental management of industrial parks. Burnside, for example, was on the cover of a 1997 United Nations Environment Programme publication, "The Environmental Management of Industrial Estates", that has been widely distributed around the world and has served as the basis for workshops and projects in Thailand, Singapore, India, the Philippines, Taiwan, and China.

<http://eco-efficiency.management.dal.ca/aboutus.html>

- 9.5 High Performance Manufacturing** (HPM) is a holistic approach to manufacturing based on respect – respect for clients, employees, communities, and the environment (e.g. Lean Manufacturing, Sustainable Manufacturing, Green Manufacturing). It is the golden rule – do unto others – applied today and into the future. HPM is an approach based on a commitment to continuous improvement, enhanced competitiveness, an unrelenting focus on customer value, total quality in all aspects of business, employee empowerment, trust-based partnerships, and the elimination waste. Industry Canada has put together the High Performance Manufacturing Guide as an initial step for Canadian manufacturers in a process that will direct them toward sources of information and expertise to help in addressing improvements in the triple bottom line of profits, people and the planet.

A framework for sustainable manufacturing is being developed and a sustainable manufacturing toolkit for industry should be available shortly. There is academic research in sustainable manufacturing being pursued and pilot project in southern Ontario on the adoption of an industry lead sustainable manufacturing voluntary code is set to begin shortly.

<http://strategis.gc.ca/lean.manufacturing>

- 9.6 The Environmental Choice™ Program** (ECP), the Government of Canada's ecolabelling program, provides a market incentive to manufacturers and suppliers of environmentally preferable products and services by identifying leading environmental performance. The ECP label thereby helps consumers identify products and services that are less harmful to the environment. Established in 1988, the ECP was the second national ecolabelling initiative undertaken. There are now more than three dozen such programs worldwide. The Global Ecolabelling Network (GEN) is an international association of ecolabelling programs, including the Environmental Choice Program.

The Program's official symbol of certification - the EcoLogo™ - features three stylized doves intertwined to form a maple leaf, representing consumers, industry and government working together to improve Canada's environment. A key aspect of the certification process is the requirement for third party verification of compliance to ECP certification criteria as a condition for certification and licensing. The Environmental Choice Program meets the criteria of a Type I label under ISO standard 14024. This process ensures the Program's credibility and includes:

- A review of each applicant company's product and process information;
- An examination of the company's quality assurance (QA) / quality control (QC) measures;
- And, where deemed necessary by ECP officials, an audit of the company's facilities for purposes of initial certification.

Canada's Environmental Choice™ Program and its EcoLogo™ are internationally renowned because of the program's stringent certification process.

<http://www.environmentalchoice.com/>

- 9.7 The **Environmental Technology Verification (ETV) Program** was established in 1997 by Environment Canada to accelerate the growth of the Canadian environmental industry. The Program provides independent verification of a vendor's environmental technology performance claims, in an effort to promote the commercialization of Canadian innovative environmental technologies into the marketplace. If the claim is verified successfully, the company is issued three documents: a Verification Certificate, a Technology Fact Sheet and a Final Verification Report. The company is also entitled to use the ETV logo (on the specified documentation) to market their technology in Canada and abroad. Verification provides buyers with an assurance that vendors' claims of performance are valid, credible and are supported by demonstration tests.

<http://www.etvcanada.ca>

10. **Policies to restructure and improve the operation of state enterprises**

N/A

**CAPACITY BUILDING, INFORMATION AND RESEARCH &  
TECHNOLOGIES**

**11. Attempts to include sustainability components in planning of industrial location and infrastructure (e.g., industrial siting, wastewater and waste management in industrial zones or parks).**

N/A

**12. Policies or programmes to promote research and development (R&D) on and the transfer of cleaner technologies.**

**12.1** The **Scientific Research and Experimental Development (SR&ED)** program is a federal tax incentive program to encourage Canadian businesses of all sizes and in all sectors to conduct research and development (R&D) in Canada that will lead to new, improved, or technologically advanced products or processes. The SR&ED program is the largest single source of federal government support for industrial research and development.

To qualify for the SR&ED program, work must advance the understanding of scientific relations or technologies, address scientific or technological uncertainty, and incorporate a systematic investigation by qualified personnel.

Work that qualifies for SR&ED tax credits includes:

- experimental development to achieve technological advancement to create new materials, devices, products, or processes, or improve existing ones;
- applied research to advance scientific knowledge with a specific practical application in view;
- basic research to advance scientific knowledge without a specific practical application in view; and
- support work in engineering, design, operations research, mathematical analysis, computer programming, data collection, testing, or psychological research, but only if the work is commensurate with, and directly supports, the eligible experimental development, or applied or basic research.

<http://www.cra-arc.gc.ca/taxcredit/sred/menu-e.html>

**12.2** The **National Research Council Canada (NRC)** is composed of over 20 institutes and national programs, spanning a wide variety of disciplines and offering a broad array of services. They are located in every province in Canada and play a major role in stimulating community-based innovation. NRC institutes and programs are organized into five (5) key areas: Life Sciences; Physical Sciences; Engineering; Technology and Industry Support; and, Corporate Services

The NRC is responsible for:

- undertaking, assisting or promoting scientific and industrial research in different fields of importance to Canada;
- establishing, operating and maintaining a national science library;
- publishing and selling or otherwise distributing such scientific and technical information as the Council deems necessary;
- investigating standards and methods of measurement;
- working on the standardization and certification of scientific and technical apparatus and instruments and materials used or usable by Canadian industry;
- operating and administering any astronomical observatories established or maintained by the Government of Canada;
- administering NRC's research and development activities, including grants and contributions used to support a number of international activities; and
- providing vital scientific and technological services to the research and industrial communities.

This mandate is discharged to a great extent through the operation of the NRC Industrial Research Assistance Program (see section 17.1 for further details, the Canadian Technology Network (see section 16.1 for further details) and the NRC Canada Institute for Scientific and Technical Information.

The NRC has several areas of Research and Industry Support: Aerospace (1 research institute, one technology centre); Biotechnology (6 research institutes); Engineering and Construction (3 research institutes, 3 technology centres); Fundamental Sciences (3 research institutes); Industry Support (One institute, one national program); Information and Communications Technologies (2 research institutes); Manufacturing (4 research institutes, one technology centre).

The NRC's Industry Partnership Facility (IPF) exists to foster and assist new ventures using NRC technologies or expertise, thereby providing economic gain to Canada. The IPF will provide facilities, services and professional expertise that promote the establishment of a successful venture.

<http://www.nrc-cnrc.gc.ca/>

As an example of providing research support, NRC initiated the development of a **technology cluster in fuel cell technologies**<sup>3</sup> to strengthen Canada's system of innovation.

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<sup>3</sup> Clustering is a term that economists have borrowed from science to describe the growth of a significant concentration of innovative companies around a nucleus of R&D facilities, such as those provided by a university or a leading-edge government laboratory. In recent years, several of NRC's research institutes have become central hubs for dynamic technology clusters in diverse areas of science and engineering. Communities such as Montreal, Ottawa and Saskatoon have seen the tremendous growth that can occur when industry leaders and researchers come together to identify needs and develop solutions that touch the

NRC's efforts to support the growth of the Vancouver, British Columbia fuel cell cluster began in 1998 when it initiated a development strategy and convened a Fuel Cell Implementation Task Force. Those developments sparked the creation of a National Fuel Cell Research Initiative in 1999, followed by the formation of Fuel Cells Canada (FCC) a year later.

As part of this national initiative, in 1999, NRC created a fuel cell research facility at its Vancouver Innovation Centre. A year later, NRC launched a Fuel Cell Program, a horizontal initiative that now involves dozens of researchers at six NRC institutes across Canada. In 2002, NRC significantly enhanced its presence in the cluster with the formation of the NRC Institute for Fuel Cell Innovation (NRC-IFCI), which serves as the focal point for the horizontal initiative.

NRC-IFCI's current strategic plan covers three broad areas that address critical needs within the cluster: the pursuit of research breakthroughs, the operation of a technology centre, and cluster-building activities. Among its targeted research efforts, NRC-IFCI is developing next-generation, low-temperature proton exchange membrane (PEM) fuel cells and high-temperature solid oxide fuel cells (SOFCs) in an effort to help reduce costs and improve fuel cell reliability and durability. NRC-IFCI maintains testing and evaluation facilities including nine hydrogen-ready labs, a membrane electrode assembly facility, a new Hydrogen Technologies Environmental Chamber (HTEC) and an industrial incubator for early stage companies.

As part of its cluster-building role, NRC facilities showcase Canadian technologies and companies, supports networking and provides headquarters for FCC and major demonstration programs such as the Vancouver Fuel Cell Vehicle Program.

In late 2004, NRC-IFCI opened a new Hydrogen Technologies Environmental Chamber (HTEC), the only public facility of its kind in North America. This advanced facility allows companies and researchers to test and evaluate hydrogen vehicles and stationary power systems under a wide range of climatic conditions – all in one location. This research is an important step in moving hydrogen and fuel cell products closer to commercialization.

[http://www.nrc-cnrc.gc.ca/clusters/vancouver\\_e.html](http://www.nrc-cnrc.gc.ca/clusters/vancouver_e.html)

The NRC Industrial Research Assistance Program (NRC-IRAP) provides a range of both technical and business oriented advisory services along with potential financial support to

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lives of people in their sphere of influence. With stakeholder involvement in strategic planning, this local touch can quickly transform a small community into a dynamic network with global reach. (source: [http://www.nrc-cnrc.gc.ca/clusters/what\\_e.html](http://www.nrc-cnrc.gc.ca/clusters/what_e.html))

growth-oriented Canadian small and medium-sized enterprises. An extensive integrated network of 260 professionals in 100 communities deliver the program across the country. Working directly with these clients, NRC-IRAP supports innovative research and development and commercialization of new products and services.

NRC-IRAP views SMEs as the strategic backbone of the Canadian economy and is committed to working with them while they realize their full potential and turn knowledge and innovation into strategic opportunities, jobs and prosperity for all Canadians.

Recognized globally for research and innovation, NRC is a leader in the development of an innovative, knowledge-based economy for Canada through science and technology.

IRAP has three components that are of interest to SMEs: Technology Support Program (TSP); Research, Development and Adaptation (RDA); and Pre-Commercialization Assistance (PA).

<http://irap-pari.nrc-cnrc.gc.ca/>

- 12.3** The **NRC Canada Institute for Scientific and Technical Information (CISTI)** is one of the world's major sources for information in all areas of science, technology, engineering and medicine. CISTI's headquarters in Ottawa houses one of the world's most comprehensive collections of publications in science, technology and medicine. [NRC Research Press](#) is CISTI's publishing arm, with 15 international journals of research plus several books and conference proceedings.

CISTI began over 75 years ago as the library of the National Research Council of Canada, the leading agency for R&D in Canada, and became the National Science Library in 1957. The change to CISTI came in 1974 to reflect the wide scope of services provided and the increasing role in the development of electronic information products and services for the sci/tech community.

[http://cisti-icist.nrc-cnrc.gc.ca/main\\_e.html](http://cisti-icist.nrc-cnrc.gc.ca/main_e.html)

- 12.4** **Technology Partnerships Canada (TPC)** is a special operating agency of Industry Canada with a mandate to provide funding support for strategic research and development (R&D), and demonstration projects that will produce economic, social and environmental benefits to Canadians.

TPC's main R&D program is geared to pre-competitive projects across a wide spectrum of technological development. The program focuses on key technology areas such as Environmental Technologies, Aerospace and Defence Technologies and Enabling

Technologies, which includes biotechnology and health related applications, as well as manufacturing and communications technologies.

TPC's environmental strategy enables companies to further their technologies, and pursue significant breakthroughs in the development of sustainable energy alternatives; and in pollution prevention, abatement and remediation. Environmental R&D investments cover promising Canadian technologies in five key areas: traditional environmental media (such as clean water, and waste reduction), eco-efficient industrial practices, improved energy efficiency, alternate energy sources (including hydrogen and fuel cell technologies) and renewable energy. TPC works in partnership with other government departments and levels of government to maximize investment in key emerging technologies.

<http://tpc.ic.gc.ca>

Note: On September 20, the Honourable David L. Emerson, Minister of Industry, announced that the federal government will be launching the new Transformative Technologies Program (TTP) to replace the Technology Partnerships Canada (TPC) program.

**12.5 Sustainable Development Technology Canada (SDTC)** is a not-for-profit foundation that finances and supports the development and demonstration of clean technologies which provide solutions to issues of climate change, clean air, water quality and soil, and which deliver economic, environmental and health benefits to Canadians. To do so, the Foundation draws from an investment fund of \$550 million.

SDTC's mission is to act as the primary catalyst in building a sustainable development technology infrastructure in Canada. The Foundation reports to Parliament through the Minister of Natural Resources Canada. SDTC works closely with an ever-growing network of stakeholders and partners to build the capacity of Canadian clean-technology entrepreneurs, helping them form strategic relationships, formalize their business plans, and build a critical mass of sustainable development capability in Canada.

There are many links in the innovation chain between research and commercialization. Two of the most critical—but traditionally undersupported—are development and demonstration. These are the critical stages at which technologies exit the laboratory and prove themselves in full-scale, real-world test situations. SDTC bridges the gap in the innovation chain by fast-tracking groundbreaking clean technologies through development and demonstration, in preparation for commercialization. SDTC fosters and encourages innovation and collaboration among private, academic and public-sector partners, and strives to ensure the dispersion of clean technologies in relevant market sectors throughout Canada.



One of SDTC's chief aims is to de-risk clean technologies in a way that will ultimately attract downstream private-sector investment and open up opportunities for commercial success. This is accomplished by employing a stringent due diligence process when selecting technologies to support, and by actively strengthening project consortia—requiring every project to involve representatives from the entire supply chain: researchers, product developers, manufacturers, distributors, retailers and end customers. In all, 80 percent of SDTC's consortia are industry-led.

By assembling consortia of partners who strengthen one another's go-to-market capabilities, SDTC helps build the capacity for innovation and success of Canada's clean-technology entrepreneurs. Through this process SDTC is able to help innovators sharpen their market savvy, increase their ability to identify the economic and environmental strengths of sustainable development projects, and define the investment potential that their clean technologies ultimately represent to venture capital financiers.

<http://www.sdtc.ca/>

- 12.6** The **Program of Energy Research and Development (PERD)** is a federal, interdepartmental program operated by Natural Resources Canada (NRCan) on behalf of the Government of Canada. PERD funds research and development designed to ensure a sustainable energy future for Canada in the best interests of both our economy and our environment. It directly supports 40 per cent of all non-nuclear energy R&D conducted in Canada by the federal and provincial governments, and is concerned with all aspects of energy supply and use, with the exception of nuclear energy.

PERD funds directly to partner departments and agencies, which then team up with the following agents:

- Federal laboratories
- The private sector (industry, research institutes, companies, consortia and alliances, individuals)
- Associations
- Other funding agencies such as the Natural Sciences and Engineering Research Council (NSERC), the Industrial Research Assistance Program (IRAP), and Technology Early Action Measures (TEAM)
- Universities
- Provincial and municipal governments and research organizations
- International organizations

<http://www2.nrcan.gc.ca/es/oerd/english/View.asp?x=659>

- 12.7** The **Canadian Environmental Technology Advancement Centres (CETACs)**, were established in 1993 and supported by Environment Canada to promote the growth of

Canada's environmental industry sector. The CETACs help small-and medium-sized enterprises (SMEs) commercialise leading edge-technologies that address Canada's environmental priorities. The Centres provide a wide range of business support services tailored to SME client needs including improving SME business skills and building their management capacity, assisting with accessing public and private capital, providing market analysis and strategic advisory and mentoring services. They also help SMEs lessen their environmental impact by assisting them in adopting pollution prevention, and sustainable development practices and solutions. In addition, CETACs deliver a range or complimentary programs to stimulate investment in environmental sustainable goods and services by industrial manufacturing SMEs.

The three CETACs are private sector, not-for profit corporations that operate independently, at arm's length from the federal government.

- Ontario Centre for Environmental Technology Advancement (OCETA) serves SMEs in Ontario  
<http://www.oceta.on.ca/>
- CETAC-WEST serves SMEs in western Canada  
<http://www.cetacwest.com/>; and
- Enviro-Access serves SMEs in Quebec  
<http://www.enviroaccess.ca/>

### **13. Programmes to promote the concept of sustainability within industry as well as in higher education including business and engineering schools.**

**13.1** The **Framework of Agreed Principles on Federally Funded University Research** between the Association of Universities and Colleges of Canada (AUCC) and the Government of Canada was announced in November 2002. The framework was established to gauge progress toward the goal of doubling the amount of research performed and tripling the commercialization of research by 2010. The AUCC and the Government of Canada have agreed on a schedule for public reporting related to the agreement, and are working together to further define how research output and commercialization will be measured. The first report on the progress toward these goals was delivered by the AUCC in October 2005.

[http://www.aucc.ca/publications/media/2005/10\\_24\\_e.html](http://www.aucc.ca/publications/media/2005/10_24_e.html)

**13.2** The **Social Sciences and Humanities Research Council of Canada (SSHRC)** is an arm's-length federal agency that promotes and supports university-based research and training in the social sciences and humanities. SSHRC-funded research fuels innovative thinking about issues including the economy, education, health care, the environment,

immigration, globalization, language, ethics, peace, security, human rights, law, poverty, mass communication, politics, literature, addiction, pop culture, sexuality, religion, Aboriginal rights, the past, our future.

SSHRC grants and fellowship programs allow researchers to explore, invent and develop deep expertise in a wide variety of disciplines, as well as to target research to specific social needs. SSHRC programs also provide support for research training and research communication activities.

SSHRC administers the Canada Research Chairs Program. With a budget of \$900 million over five years the program aims to establish 2,000 research chairs at universities across the country.

SSHRC grants and fellowships are awarded through an independent, national, peer-review process designed to ensure excellence. Peer review is universally recognized as the most objective and effective way to allocate public research funds.

Each year volunteer selection committees made up of Canadian scholars and experts assess thousands of research proposals and, based on academic excellence and other key criteria, they make recommendations about which projects to fund. About 4,600 other Canadian and international experts provide written assessments of proposals to help the review committees in their decision-making.

SSHRC partners with a variety of government, business and non-profit organizations to develop and fund strategic research programs. These joint initiatives build knowledge and expertise on key social, cultural and economic issues.

<http://www.sshrc.ca/>

- 13.3** The **Science and Engineering Research Canada** (also known by its legal name "Natural Sciences and Engineering Research Council of Canada" as well as the acronym NSERC) is the national instrument for making strategic investments in Canada's capability in science and technology. NSERC supports both basic university research through discovery grants and project research through partnerships among universities, governments and the private sector, as well as the advanced training of highly qualified people.

NSERC's role is to make investments in people, discovery and innovation for the benefit of all Canadians. NSERC supports nearly 22,000 university students and postdoctoral fellows in their advanced studies as well as promote discovery by funding more than 10,000 university professors every year. NSERC also plays a key role to help make innovation happen by encouraging more than 500 Canadian companies to invest in university research.

In 2005-2006, NSERC will invest \$865 million in university-based research and training in all the natural sciences and engineering.

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

#### **14. Policies to promote R&D to increase productivity in key industrial sectors.**

**14.1** The **Canadian Biotechnology Strategy (CBS)** provides further support to federal science and technology policy. It promotes an integrated approach to identifying and managing the opportunities and challenges created by the increasing reliance on biotechnology across many sectors of our society. Interdepartmental coordination is managed by the Canadian Biotechnology Secretariat (CBSec), which is housed in Industry Canada. The CBSec also leads the communication and horizontal management, governance and accountability for the CBS. In addition, CBSec provides operational support to the Canadian Biotechnology Advisory Committee (CBAC), an external forum that undertakes comprehensive analyses, informed by stakeholder consultations, on a range of issues arising from biotechnology and its implications in society.

**14.2** Interest in wind power as a promising source of electricity has grown significantly over the past few years. In the past decade Canada has installed about 200 megawatts of wind energy capacity. The Government of Canada's **Wind Power Production Incentive (WPPI)**, is intended to encourage electric utilities, independent power producers and other stakeholders to gain experience in this emerging and promising energy source.

WPPI will provide financial support for the installation of 1,000 megawatts of new capacity over the next five years. The incentive will cover approximately half of the current cost of the premium for wind energy in Canada compared to conventional sources. This incentive will be available to electricity producers for the first ten years of a project.

<http://www.canren.gc.ca/wind/index.asp>

**14.3** The Canadian Government is also committed to stimulate the development and use of forms of **renewable energy** other than wind, such as small hydro, solar, biomass and landfill gas.

[http://www.canren.gc.ca/renew\\_ene/index.asp](http://www.canren.gc.ca/renew_ene/index.asp)

**14.4** The Government of Canada is leading a number of **national strategic frameworks** intended to help Canadian firms move up the value chain and become more competitive in domestic and global supply chains. One such initiative is the development of a national strategic framework for the automotive sector, intended to place a strong emphasis on

R&D. This framework will consider the factors that are important to the longer-term growth of this sector and encourage innovation related to the next generation of smart, fuel-efficient and hybrid vehicles, as well as renewable fuels. The strategy will also consider the development of a long term plan for the enhanced recycling of end of life vehicles. A first round of discussions and consultations with other government departments has been undertaken, and further consultations with parliamentarians and industry stakeholders, including the Canadian Automotive Partnership Council, are planned as part of the process.

Canada's aerospace industry is the fourth largest in the world and is a substantial generator of wealth for the country. The recently released National Aerospace and Defence Strategic Framework is a comprehensive framework of programs and policies to support the growth of Canada's aerospace and defence industry from coast to coast, and build on its strong globally competitive position.

The Government is working closely with a broad range of stakeholders, including representatives from the industry, the space sector, labour, academia and provincial governments, to develop a strategy that addresses the needs of the aerospace sector across the country. Specifically, the strategy will focus on key challenges, such as Canada's need to maintain and strengthen its technological leadership, an issue that points directly to the role of government in supporting the industry's R&D efforts.

[http://strategis.ic.gc.ca/epic/internet/inad-ad.nsf/vwapj/aerospace-e-PDF.pdf/\\$file/aerospace-e-PDF.pdf](http://strategis.ic.gc.ca/epic/internet/inad-ad.nsf/vwapj/aerospace-e-PDF.pdf/$file/aerospace-e-PDF.pdf)

In addition to developing sector strategies in the automotive and aerospace sectors, the Government of Canada, through Industry Canada, will also be seeking to advance a life sciences strategy to increase the competitiveness of life sciences industries, which are expected to play an increasingly important role in the global economy.

As well, Industry Canada is also contributing to the more rapid commercialization of emerging ocean technologies through the implementation of the federal Ocean Action Plan. Canada believes that solutions to problems such as declining fish stocks and deteriorating environmental conditions in the oceans can be found in new management models founded on the three principles of Canada's *Oceans Act*: sustainable development, the precautionary approach and integrated management. Recognizing the long-term value of sustainable development of the oceans, Canada has taken some significant steps towards the protection of the ecosystem and implementation of integrated oceans management. The Oceans Action Plan articulates a *government-wide* approach to seize opportunities for sustainable development. The Plan serves as the overarching umbrella for coordinating and implementing oceans activities, and as the framework to sustainably develop and manage our oceans.

[http://www.dfo-mpo.gc.ca/canwaters-eauxcan/oap-pao/index\\_e.asp](http://www.dfo-mpo.gc.ca/canwaters-eauxcan/oap-pao/index_e.asp)

- 14.5** Canada's advanced Internet development organization - is a not-for-profit corporation supported by its members, project partners and the Federal Government. **CANARIE's** mission is to accelerate Canada's advanced Internet development and use by facilitating the widespread adoption of faster, more efficient networks and by enabling the next generation of advanced products, applications and services to run on them. CANARIE is dedicated to the research and implementation of advanced networks and applications that will stimulate economic growth and increase Canada's international competitiveness. CANARIE has already succeeded in enhancing Canadian R&D Internet speeds by a factor of almost one million since its inception in 1993. The organization has also funded numerous advanced Internet applications projects, providing some 500 companies with the opportunity to achieve business success through innovation.

CANARIE also intends to act as a catalyst and partner with governments, industry and the research community to increase overall IT awareness, ensure continuing promotion of Canadian technological excellence and ultimately, foster long-term productivity and improvement of living standards.

<http://www.canarie.ca/about/about.html>

- 14.6** **Precarn** Incorporated is a national, member-owned industrial consortium supporting the development of intelligent systems technologies through its extensive network of corporations, research institutes and government partners. Precarn funds, coordinates and promotes collaborative research conducted by industry, university and government researchers

[http://www.precarn.ca/home/index\\_en.html](http://www.precarn.ca/home/index_en.html)

- 14.7** **Technology Early Action Measures (TEAM)** is an interdepartmental technology investment program established under the federal government's Climate Change Action Plan. TEAM supports projects that are designed to develop technologies that mitigate greenhouse gas (GHG) emissions nationally and internationally, and that sustain economic and social development.

TEAM's unique approach brings together industry, community, and international partners to encourage additional investment in innovative technology. TEAM's position in the technology innovation process has enabled the Government of Canada to support a wide range of technology options and paths for mitigating GHGs.

TEAM supports late-stage development projects and first-time demonstration projects designed to reduce GHG emissions nationally and internationally, at the same time

sustaining economic and social development. The TEAM program follows a unique approach that is built on incremental financing and extensive networking, and brings together industry, community, and international partners to encourage additional investment.

[http://www.climatechange.gc.ca/english/team\\_2004](http://www.climatechange.gc.ca/english/team_2004)

## **15. Policies to facilitate licensing and sale of technologies resulting from government programmes or funding.**

- 15.1** Canadian companies engaged in energy efficiency research and development can receive financial assistance for their work under the Government of Canada's **Industry Energy Research and Development Program** (IERD). The program is aimed at promoting the development of products, processes or systems that will increase the efficiency of energy use throughout industry, and at encouraging use of the technology developed under the program.

Projects contribute to a cleaner environment and help Canadian companies increase their market competitiveness. Technologies can be applied to all Canadian industrial sectors, including the transportation and buildings sectors. Projects that have received support under the program include the development of energy efficient fireplaces and space heaters, the development of large, highly efficient industrial electric motors, a process for recycling used crankcase and lube oils, radio frequency drying of lumber and the production of high performance automotive parts using powder metallurgy.

IERD may provide repayable financial assistance up to 50 per cent of the total estimated allowable cost of an approved project. Repayment is conditional upon the commercial success of the project. The cost-sharing ratio will depend on the degree of risk, the magnitude of potential energy savings, and the degree to which the technology developed can be used by other companies.

The CANMET Energy Technology Centre (CETC), see Section 15.2 below, of Natural Resources Canada administers IERD, funded by the Program on Energy Research and Development (PERD).

<http://www.nrcan.gc.ca/es/etb/cetc>

- 15.2** The **CANMET Energy Technology Centre** (CETC) is one of Canada's premier organizations in the field of energy, science and technology. As a key research arm of Natural Resources Canada (NRCan) and as part of NRCan's Energy Sector, CETC works with private and other public sector partners to develop and deploy leading-edge energy

products and processes for virtually all sectors of the Canadian economy. CETC has world-class laboratory facilities and employs some 180 people

CETC develops a wide range of environmental energy technologies, including: renewable energy, including solar, wind, small hydro and bioenergy; energy-efficient technologies for industry, communities and buildings; alternative transportation fuels, including natural gas, propane, ethanol, methanol, hydrogen and electric and hybrid vehicles; district heating and cooling and integrated energy systems; advanced low-emission combustion technologies; processing and environmental catalysis for fuels production and hydrocarbon conversion; and energy-efficient metallurgical fuel products and technologies.

CETC offers to its clients and partners flexible business arrangements, including fee-for-service, cost-sharing and under certain circumstances, financial assistance. As a governmental organization, CETC's objectives are to secure environmental, economic and social benefits while fostering the wise use of conventional energy and the increased use of renewable energy and alternative fuels. As a contractor to its clients and partners, CETC's goal is to help them meet their own business objectives.

<http://www.nrcan.gc.ca/es/etb/cetc/cetc01>

## **16. Policies to promote cooperation between the industrial sector and the R&D community.**

**16.1** The **Canadian Technology Network** (CTN) of the National Research Council links federal and provincial government labs and agencies, universities, community colleges, industry associations, technology centres and economic development agencies. Together these organizations provide innovative Canadian companies with quick and personal access to expertise, advice and information about how to meet technology and related business challenges. Their mission is to provide integrated, accessible pathways to information and services relevant to small and medium-sized enterprises using technology.

Their objectives include:

- Encourage interdependency among existing providers of industrial support services, networks, sources of information, and expertise.
- To enhance the capacity of current networks by finding organizations that deliver services and expertise that compliment those already available.
- To provide better access to a network of regional, national, and international sources of expertise.



The CTN can give SMEs access to a wide range of technology and related business assistance through a cross-country network of advisory and affiliate members.

<http://ctn-rct.nrc-cnrc.gc.ca/>

- 16.2** The **Canada Foundation for Innovation** (CFI) is an independent corporation created by the Government of Canada to fund research infrastructure. The CFI's mandate is to strengthen the capacity of Canadian universities, colleges, research hospitals, and non-profit research institutions to carry out world-class research and technology development that benefits Canadians.

Knowledge that is derived from R&D is a key driver of economic growth. The federal government has invested substantially in research performed by federal laboratories, businesses and universities. For example, since 1997, the Government of Canada has more than doubled its annual investments in university R&D.

<http://www.innovation.ca/>

- 16.3** The **Networks of Centres of Excellence** (NCE) program fosters powerful partnerships between university, government and industry. Networks of Centres of Excellence funded by the program are designed to develop Canada's economy and improve the quality of life of Canadians. The NCE program has been operating successfully for fifteen years.

Networks of Centres of Excellence are unique partnerships among universities, industry, government and not-for-profit organizations aimed at turning Canadian research and entrepreneurial talent into economic and social benefits for all Canadians. An integral part of the federal government's Innovation Strategy, these nation-wide, multidisciplinary and multisectorial research partnerships connect excellent research with industrial know-how and strategic investment. The funding for research and training in Canadian universities through the agencies' peer-reviewed research programs is the foundation upon which the successful network approach is built.

Three Canadian federal granting agencies: the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Social Sciences and Humanities Research Council of Canada (SSHRC), and Industry Canada combine their efforts to support and oversee the NCE initiative.

In the area of natural resources and environment, the Networks of Centres of Excellence are in: AquaNet-Network in Aquaculture; ArticNet; Canadian Water Network, and the Sustainable Forest Management Network.

[http://www.nce.gc.ca/about\\_e.htm](http://www.nce.gc.ca/about_e.htm)

- 16.4** The Government of Canada's **Advisory Council on Science and Technology (ACST)** has a role to review Canada's performance in research and innovation, identify emerging issues of national concern, and advise on a forward-looking agenda with a view to positioning Canada in an international context. This also includes research and analysis to support the development of policies related to skills development and the commercialization of research and technology in the knowledge-based economy. The members of the Council are eminent Canadians representing different sectors of business, academia, and research institutions, and come from across Canada. In carrying out their role, the members provide expert, non-partisan advice to the Prime Minister.

<http://acst-ccst.gc.ca/>

- 16.5 Enabling technologies.** The Government of Canada works to enhance the development, adaptation, diffusion, and use of strategic and sustainable technologies, and world-first products and services, in order to build a stronger, knowledge-based economy in all sectors. A number of activities are undertaken to advance enabling technologies, particularly biotechnology, nanotechnology, advanced materials and advanced manufacturing, sustainable energy alternatives such as hydrogen and fuel cell technologies.

[http://strategis.ic.gc.ca/epic/internet/intrm-crt.nsf/en/h\\_rm00000e.html](http://strategis.ic.gc.ca/epic/internet/intrm-crt.nsf/en/h_rm00000e.html)

**17. Programmes to make available “best practice” information (including environmental and social aspects) to industry sectors as well as to promote information exchange between enterprises.**

- 17.1** Canada's nearly two million small and medium-sized enterprises (SMEs) - are the key drivers of job and wealth creation in all sectors of the nation's economy. One of National Research Council's (NRC) primary objectives in stimulating wealth creation in Canada is to link its diverse networks, programs and infrastructure to SMEs to help them access, develop and exploit new technologies and knowledge essential for their growth and prosperity. NRC's primary vehicle for stimulating the innovation capabilities of SMEs is its **Industrial Research Assistance Program (NRC-IRAP)**. Regarded worldwide as one of the best programs of its kind, NRC-IRAP is a vital component of NRC's innovation strategy and a cornerstone of Canada's innovation system.

This program stimulates wealth creation through technological innovation by providing technology advice, assistance and services to SMEs to help them build their innovation capacity. NRC-IRAP brings together a diverse network of organizations, services and programs to help Canadian SMEs develop and exploit technologies in the competitive, global, knowledge economy. Through expert technical and business advice, financial

assistance, access to business information, contacts, and national and international networks, the program provides customized solutions to some 12,400 SMEs annually.

The program's success stems from its track record of customized services and the highly skilled people that deliver those services across Canada. Its 235 Industry Technology Advisors (ITAs) are a unique resource, the focal point of one-on-one relationships with companies that extend for years.

NRC-IRAP builds on this foundation of ITAs with other strengths. It plugs clients into NRC's extensive networks of knowledge, experience and contacts from "around the corner and around the globe." It partners with over 100 Network Member (NM) organizations at the regional level all providing advice and assistance to SMEs.

The IRAP portfolio of services has four main components:

- Technology Expertise and Advisory Services
- Financial Assistance for R&D activities
- Networking
- Partnerships

Canadian small and medium-sized enterprises (SME's) with under 500 employees and industrial associations desiring to enhance their technological capability are eligible for support.

<http://www.irap.nrc.ca>

- 17.2 Canadian Environmental Solutions (CES)** is a directory of Canadian companies providing technologies, products and services to address the environmental challenges faced by every sector of the economy.

The CES database is easy to use and provides a wealth of information. In a matter of seconds, the profiles of companies that provide environmental technologies and services to address specific environmental challenges can be found. The CES can be accessed in two ways; the user can navigate the categories of environmental issues or use the search facility to perform comprehensive searches of the database easily and quickly.

<http://strategis.ic.gc.ca/epic/internet/inces-sec.nsf/en/h iq00002e.html>

- 17.3** The Government also promotes the use of recycling. In the area of **metals and minerals recycling**, a database has been set up on the Department of Natural Resources' (NRCan) web site to promote and enhance recycling in Canada by providing information about metals and minerals recycling and recycling in general. The focus is on recycling in

Canada but this site also includes information on events, publications and information sources outside of Canada. Canada's searchable database on metals and minerals recycling companies provides basic information on Canadian companies and individuals involved in the collection, processing, sales, recovery and recycling of recyclable metals, minerals and metal-bearing materials. It also includes additional detail on the activities and specific commodities handled by Canadian companies. The companies have entered the information in the database, in the language of their choice.

[http://www.recycle.nrcan.gc.ca/default\\_e.htm](http://www.recycle.nrcan.gc.ca/default_e.htm)

- 17.4** The Canadian **pulp and paper** industry is a major exporter of recycled products and the largest importer of recovered paper. In today's world, recycling makes good economic and environmental sense. It keeps paper out of the landfill and puts it back to use making paper products. In 1999, the industry transformed 5.2 million tones of old newspapers, magazines, corrugated containers, communication papers boxboard and other grades of paper into new containerboard, boxboard, newsprint, construction papers, communication, kraft and sanitary papers and building materials.

To capitalize on further opportunities for recycling and diverting more paper from landfills, the industry is working with local governments to expand curbside recovery by creating a separate bin for waste paper. A breakthrough was achieved when Metropolitan Toronto agreed to create a Blue Box program for paper recyclables with the potential to expand both the volume and types of fibre recovered.

[http://www.cppa.org/english/wood/mil\\_rec.htm](http://www.cppa.org/english/wood/mil_rec.htm)

- 17.5** The Canadian Steel Producers Association (CSPA) has just completed a major study of the potential for increased energy efficiency in the Canadian steel industry, benchmarking itself against leading energy-saving technologies worldwide. **Benchmarking the Energy Intensity of the Canadian Steel Industry** was undertaken by the CSPA with funding from Natural Resources Canada's Industrial Programs Division (IPD) and is part of IPD's benchmarking initiative established to help Canadian industry achieve significant energy-efficiency gains.

Canadian steel producers have already reduced the amount of energy required to make a tonne of shipped steel by 26 percent since 1990 - double the target set by the CSPA under Natural Resources Canada's Canadian Industry Program for Energy Conservation. Because of the industry's commitment to energy efficiency and lower carbon dioxide (CO<sub>2</sub>) emissions, the study was undertaken to identify potential opportunities for energy reduction. Twelve plants agreed to compare their steel mills with a model EcoTech plant developed by the International Iron and Steel Institute (IISI). The study did not report on actual energy use but rather benchmarked the industry. It compared the technologies used

in the Canadian steel plants and the energy intensity of their processes with those of the EcoTech plant.

The study underlines the significant benefits that the integrated steel mills in Ontario could realize from the development of cogeneration facilities. Cogeneration using byproduct gas has the potential to reduce energy requirements and would result in a significant offset in the demand for electricity production in Ontario. The opportunities identified by the study will be further assessed at the plant level, including an evaluation of costs and benefits, and to determine whether they can be retrofitted to a particular plant configuration.

[http://www.nrcan.gc.ca/media/newsreleases/2005/200502b\\_e.htm](http://www.nrcan.gc.ca/media/newsreleases/2005/200502b_e.htm)

## FINANCING

### **18. Measures to promote competition in domestic financial sector.**

N/A

### **19. Measures to facilitate access to credit by non-state industrial enterprises, notably by SMEs.**

**19.1** The **Business Development Bank (BDC)** is the Federal government's main vehicle for providing financial support to small and medium-sized enterprises. The BDC's range of financing alternatives include: Term loans & flexible loans, Venture loans (subordinate debt), Venture capital, Working capital for growth or exporters, Micro business, young entrepreneurs, aboriginal business, Working Capital for Exporters, and Working Capital Loans.

BDC is a financial institution wholly owned by the government of Canada. BDC plays a leadership role in delivering financial, investment and consulting services to Canadian small businesses, with a particular focus on the technology and export sectors of the economy. BDC's innovative financing and consulting services are specifically created to respond to the needs of today's Canadian businesses. It is important to note that our funds are borrowed on the money market like other commercial banks; we do not receive government funding for the money we offer in loans.

**19.2** Addressing the financing needs of Small and Medium Sized Enterprises (SMEs) will remain an important priority of Industry Canada. Officials will continue to work closely with BDC concerning its mandate to fill the gaps not served by private sector financial institutions, and focusing particular attention on venture capital. Consultations will be held following the report to Parliament from a comprehensive review in 2004–2005 of the **Canada Small Business Financing Program (CSBF)**. The CSBF program increases the availability of loans and leases for establishing, expanding, modernizing and improving small businesses, by encouraging financial institutions and leasing companies to make financing available to small businesses. Canadians benefit from the CSBF program, as it helps businesses grow and create jobs, which results in a more dynamic Canadian economy.

The social economy's growing contribution to Canada's communities will be advanced through a review of how it can access other programs and agencies that provide financing to small businesses. Finally, the Department will continue to deliver an ongoing program of research and analysis on SME financing issues, with regular reporting to parliamentarians, stakeholders and SMEs.

The research and analysis of issues of interest to Canadian small businesses will also be undertaken. These activities will include examining the characteristics of innovative small businesses, as well as the barriers faced by small business in developing and adopting innovations. Venture capital is vital to increasing Canada's ability to commercialize research through investment in SMEs in sectors of growing strategic importance to the economy.

<http://www.bdc.ca>

<http://strategis.ic.gc.ca/epic/internet/incsbfp-pfpec.nsf/en/Home>

See also section 2.3 for a listing of government agencies that assist SMEs through regional development activities.

## **20.0 Measures to strengthen long-term financing for infrastructure and industry.**

**20.1** The Government of Canada knows that investments in public infrastructure are critical to prospects for sustained economic growth and for enhancing quality of life for Canadians.

Through Infrastructure Canada, the Government of Canada is focusing on projects that meet key national public policy priorities, such as improving quality of life for Canadians, making Canada more internationally competitive or meeting our national climate change objectives.

The New Deal for Cities and Communities provides \$5 Billion (Canadian \$) over five years to help cities and communities invest in environmentally sustainable municipal infrastructure (ESMI). The federal government has negotiated agreements with provinces and territories for sharing gas-tax revenues. ESMI investments include public transit, water and wastewater systems, community energy systems etc. that will result in outcomes such as clean air, water, and reduced green house gas emissions. Cities and communities are also required to develop sustainability plans as part of this initiative.

This focus includes investments in water and wastewater treatment facilities, enhanced transportation systems, urban infrastructure and more efficient border crossings, for example. It also includes measures to support the efficient management and operation of public infrastructure facilities, both new and existing. An integrated research strategy has been developed to address key gaps in our understanding of infrastructure and to foster a multi-disciplinary research community that supports future policy and operational activities. Part of this strategy is to work with research partners from across the federal government and other levels of government, university scholars, think tanks, professional associations and other experts in three closely related areas: knowledge generation; dissemination; and community building

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

- 20.2** Across Canada and around the world, governments are searching for new ways to efficiently deliver services and to develop and maintain the infrastructure that allows economic development and ultimately contributes to a healthy quality of life. Increasingly, they are turning to **public-private partnerships (P3S)** to do so. The Government of Canada maintains an office within Industry Canada to increase awareness of public-private partnerships by providing a centre of knowledge and expertise on P3 issues.

The P3 Office's mandate is to foster competitive, knowledge-based Canadian service industries. Canadian services firms in sectors such as engineering, architecture, construction, legal, and management consulting can provide cost-effective, innovative solutions for public infrastructure and services by way of public private partnerships. Done the right way, P3s offer promising new business opportunities for Canadian services firms.

Public-private partnerships are arrangements between public and private sector entities for the purpose of providing public infrastructure and related services. They are characterized by the sharing of risk and reward between the partners.

Public-private partnerships are in use across the world and in several instances (some well known, some not) in Canada. They are not limited to any level of government or any one type of infrastructure or service. Whatever the reason for the partnership, the

common theme in all P3s is that they bring together the strengths of both the public and private sectors, using the innovative capacities of private enterprise to create efficiencies that allow government to free up public funds for more core economic and social programs.

<http://strategis.ic.gc.ca/epic/internet/inpupr-bdpr.nsf/en/Home>

- 20.3 Investments in International Infrastructure.** Canada's recent International Policy Statement (IPS) identifies infrastructure as a critical element of the private sector enabling environment in developing countries. As a result, Canada will continue to support investments in infrastructure through international financial institutions and development banks. Canada also supports discussions at the international level to develop new instruments to mobilize additional capital for infrastructure.

In addition, the Canadian International Development Agency (CIDA) will continue to be directly involved in areas where it has a competitive advantage. In particular, CIDA will support interventions to help development partner countries build their own capacity to develop and to manage infrastructure projects, or to access world-class expertise needed to present bankable projects for financing. CIDA will continue to support efforts to build regulatory capacity to address issues of access, service and reliability, as well as transparency, accountability and efficiency.

CIDA recognizes that, given the current problems in infrastructure development and maintenance, the private sector has a significant role to play. For this reason, CIDA supports international organizations like the Public-Private Infrastructure Advisory Facility, which provides technical assistance to developing countries in order to improve the quality of infrastructure through private sector involvement. It should not be forgotten, however, that the appropriate governance, regulatory framework and subsidies must be in place to ensure that the poor are listened to, and their needs are met.

- 21. Programme to promote transparency in financial markets such as credit rating systems, private and public credit registry systems.**

The **Office of the Superintendent of Financial Institutions** (OSFI) was created to contribute to public confidence in the Canadian financial system. OSFI's legislation has due regard to the need to allow institutions to compete effectively and take reasonable risks. Our legislation also recognizes that management, boards of directors and plan administrators are ultimately responsible and that financial institutions and pension plans can fail.

Under the legislation, the mandate of OSFI is to:



- Supervise institutions and pension plans to determine whether they are in sound financial condition and meeting minimum plan funding requirements respectively, and are complying with their governing law and supervisory requirements;
- Promptly advise institutions and plans in the event there are material deficiencies and take or require management, boards or plan administrators to take necessary corrective measures expeditiously;
- Advance and administer a regulatory framework that promotes the adoption of policies and procedures designed to control and manage risk;
- Monitor and evaluate system-wide or sectoral issues that may impact institutions negatively.

The Office of the Chief Actuary, which is part of OSFI, provides actuarial services to the Government of Canada.

[http://www.osfi-bsif.gc.ca/osfi/index\\_e.aspx?ArticleID=3](http://www.osfi-bsif.gc.ca/osfi/index_e.aspx?ArticleID=3)

## **22. Policies to provide legal protections to creditors.**

The **Office of the Superintendent of Bankruptcy** exists to ensure that bankruptcies and insolvencies in Canada are conducted in a fair and orderly manner. The Office is responsible for:

- supervising the administration of estates in bankruptcy, commercial reorganizations, consumer proposals and receiverships;
- maintaining a publicly accessible record of bankruptcy and insolvency proceedings;
- recording and investigating complaints from creditors, debtors, and members of the general public regarding possible wrong doing by someone involved in the insolvency process;
- licensing of private sector trustees to administer estates and the appointment of administrators of consumer proposals; and
- setting and enforcing professional standards for the administration of estates.

<http://osb-bsf.ic.gc.ca/>

## **23. Programmes or policies that serve to integrate specific environmental and social concerns into lending practices.**

**Export Development Canada (EDC)** provides Canadian exporters with financing, insurance and bonding services as well as foreign market expertise. EDC is a Crown corporation that provides trade finance and risk management services to Canadian exporters and investors in up to 200 markets worldwide.

These developing markets offer a wealth of opportunity for Canadian exporters and investors, but also involve greater risk. EDC helps assess the long-term potential and manage the increased complexity and risk. Last year, Canadian business concluded \$54.9 billion in export and domestic sales and investments in markets using EDC trade financing services, up 6 per cent over the previous year.

EDC embraces operating principles that reflect good Corporate Social Responsibility (CSR). Their philosophy integrates a core set of values that includes honesty, respect, fairness and integrity into policies, procedures and day-to-day business practices. This enables EDC to act ethically in the global market place while trying to keep pace with the rapid changes affecting international trade.

EDC issued its first Corporate Social responsibility (CSR) Annual Report in 2004. The report focuses on EDC's efforts and accomplishments in the areas of business ethics, transparency, environment, community involvement and organizational climate. Also available is EDC's Chief Environmental Advisor's Report 2004.

<http://www.edc.ca/>

#### **24. Measures to ensure adequate resources for clean-ups of contaminated and degraded sites.**

Federal contaminated sites may be located on lands owned or leased by the federal government, or on non-federal lands where the federal government has accepted full responsibility for the contamination. These sites, for example, are located on abandoned mines, sites used to store fuel, airports, government laboratories, harbours, landfills, lighthouse stations, military bases and training facilities, and reserve lands.

The **Federal Contaminated Sites Action Plan** was created in 2003 to help federal departments and agencies in efforts to manage risks associated with contaminated sites for which the federal government is responsible, especially those that pose the greatest risk to human health and the environment. The Action Plan was created to deliver on the Budget 2003 commitment. Budget 2004 provides for long-term funding of \$3.5 billion for federal contaminated sites. With these ongoing resources, the Government of Canada is demonstrating that human health and environmental protection are priorities and that it is taking action for the common good and the quality of life of all Canadians. For 2005-2006, \$138.7 million has been committed to remediation, risk management and care and maintenance of 97 higher-risk sites identified under the Action Plan. A further \$14.3 million is set aside for technical assessments of an estimated 500 sites to determine next steps.

[http://www.ec.gc.ca/press/2005/050802\\_b\\_e.htm](http://www.ec.gc.ca/press/2005/050802_b_e.htm)

COOPERATION

**25. Programmes to promote international cooperation in the development and diffusion of cleaner industrial technologies.**

The Government of Canada, led by **International Trade Canada**, stimulates trade and investment flows that can benefit the Canadian economy. Industry Canada contributes to these efforts through strategic corporate analysis, and by participating in domestic and international visit programs. Marketing tools and information are also provided, as is support to selected major trade shows and business development missions.

Recognizing that trade liberalization and globalization have a significant impact on the Canadian economy, the federal government works in partnership with industry and other levels of government to regularly assess trade policy initiatives and determine the potential challenges and opportunities they represent for Canadian firms.

The Canadian International Development Agency (CIDA) supports efforts to develop energy efficiency markets and to improve energy regulatory frameworks in developing countries. For example, in Honduras, CIDA is supporting the development of financial and technical feasibility studies for energy efficiency initiatives in the industrial sector, as well as development and implementation of cleaner production incentives (e.g. a guarantee loan fund involving two major Honduran banks). In Bolivia, CIDA has supported the formulation and effective enforcement of regulatory frameworks in the hydrocarbon and mineral resource sectors through activities to improve technical and environmental regulations, guidelines and standards, and build capacity in institutions responsible for directing, administering and regulating the hydrocarbon and mining sector including in social and environmental standards. In China, CIDA has provided assistance to promote energy efficiency in residential buildings through the development of standards and regulations and practical demonstration of energy efficient techniques and technologies. CIDA also contributed to promote cleaner production through assistance in the development of national policy/regulations and in the demonstration of cleaner production solutions, techniques and technologies at industries in six industrial sectors (pulp and paper, fertilizer, brewery, chlor-alkali/PVC, non ferrous metal and oil and gas). Awareness raising, training and technical assistance were also supported.

**26. Programmes to facilitate contact and information sharing between domestic industrial enterprises and overseas suppliers, customers, partners.**

**26.1** The Government of Canada, through the Canadian International Development Agency (CIDA), provides trade-related technical assistance and capacity building to developing

countries to facilitate exports of products and services. This includes activities that enhance the ability of the recipient country to: formulate and implement a trade development strategy; create an enabling environment to facilitate, increase and diversify exports; enhance the ability of enterprises to participate in international trade; foster domestic and foreign investment in trade-oriented industries; and fully participate in institutions, negotiations and processes that shape national and international trade policy.

CIDA assists in facilitating contacts and information sharing between firms in developing countries and in developed countries. **Trade Facilitation Office Canada (TFOC)** was created by CIDA in 1980 in order to assist developing and transition economy countries to export to the Canadian market. It facilitates business linkages between developing country exporters and Canadian importers through: exporter courses, information on the Canadian import market, missions in potential client countries, and a database where developing country exporters can publicize their products and services.

<http://www.tfoc.ca>

- 26.2** CIDA also manages, of behalf of the Government of Canada, the **Program for Building African Capacity for Trade (PACT)**, which is financed by the Canada Fund for Africa and implemented by TFOC in collaboration with the UN International Trade Centre. PACT is implemented in seven African countries: Ethiopia, Ghana, Mali, Mozambique, Senegal, South Africa and Tanzania. It provides practical assistance to enhance the capacity of the African private sector to do business internationally and promote their exports. The program targets primarily small and medium-sized enterprises (SMEs). Activities involve export readiness assessment, trade training, market information and analysis, product development, establishment of market access and business linkages and matchmaking. Activities include exporters' missions to Canada to establish market contacts and market their respective products.-A separate gender component of PACT Program called 'Access for African Businesswomen in International Trade' specifically addresses the needs and aspects of women entrepreneurs.

<http://www.tfoc.ca/English/glance.htm>

These programs contribute in two ways to sustainable development: 1) potential partnerships with developed countries industries may involve a transfer of technology, including cleaner technologies; and 2) the development of export products and services provides new income sources for the poor population.

CIDA INC : [http://www.acdi-cida.gc.ca/cida\\_ind.nsf/0/9520EE6CC3DF15A2852568EE00519182?OpenDocument](http://www.acdi-cida.gc.ca/cida_ind.nsf/0/9520EE6CC3DF15A2852568EE00519182?OpenDocument)

Success Stories: [http://www.acdi-cida.gc.ca/cida\\_ind.nsf/vall/7B33B81912F8689185256BAC0056799D?OpenDocument](http://www.acdi-cida.gc.ca/cida_ind.nsf/vall/7B33B81912F8689185256BAC0056799D?OpenDocument)

- 26.3** The **Sustainable Cities Initiative** (SCI) is a Canadian partnership initiative aimed at enhancing the sustainability of economic development in cities, and helping its citizens in improving their quality of life without compromising their future.

An innovative partnership between the Government of Canada, non-government organizations (NGOs) and the private sector to pursue sustainable economic development, the SCI's main areas of focus are all priority areas for sustainable urban development: clean water, waste management, clean energy, transportation, housing, capacity-building, urban planning, telecommunications, urban infrastructure projects, and port development.

By partnering with cities in developing and emerging economies, the SCI helps cities meet their quality of life and sustainable development objectives. Multi-sectoral and multi-stakeholder City Teams (Canadian private sector, government and NGOs) combine forces and resources with local authorities to develop and implement city sustainable development plans.

Led by Industry Canada, the SCI has been a success from the outset, and has proven to be an innovative partnership formula bringing together, over 1500 representatives from the private sector, NGOs, and government (federal, provincial and municipal) from Canada, as well as similar participation from the SCI partner cities. The Canadian and local partners work together to prepare a Roadmap for each city defining a vision for the future and targeted initiatives in service of urban sustainability.

By showcasing Canada's expertise in sustainable development, technologies and services, the SCI demonstrates the important role the private sector can play in reducing poverty, enhancing quality of life and promoting the principles of good governance.

<http://strategis.ic.gc.ca/epic/internet/inscin-idvd.nsf/en/Home>

- 26.4** **Trade Team Canada Environment** is a public-private partnership aimed at increasing Canada's export of environmental products and services, as well as ensuring that our industry is recognized as a major global player. Our team works to identify and implement trade promotion activities accessible to the environment industry as a whole. As part of this ongoing commitment, TTCE collaborates with private sector associations and companies, federal and provincial government sector experts, as well as the International Trade Posts and geographic desks.

Within Canada, TTCE organizes many activities at domestic tradeshows and conferences such as Globe 2006 in Vancouver, and Americana 2007 in Montréal. Interested parties who are drawn to these events benefit from the many information sessions, workshops and networking opportunities we organize on their behalf.

Outside Canada, there are a great many opportunities to be found all over the world. The Canadian embassies and consulate offices are extremely helpful in identifying upcoming events, activities and potential business leads. However, business and government alike have limited resources and time, so it is often necessary to focus our activities in specific areas. Mission events are based on priorities established through consultation with stakeholders and are focused primarily in places where government assistance would facilitate greater market access. As a result of a series of consultations in the early part of 2004, TTCE is currently focused on the emerging markets of China and India.

[http://strategis.ic.gc.ca/epic/internet/inenva.nsf/en/h\\_eg02184e.html](http://strategis.ic.gc.ca/epic/internet/inenva.nsf/en/h_eg02184e.html)

- 26.5 Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development.** The Global Dialogue was one of a number of Partnership Initiatives aimed at promoting the implementation of the Johannesburg World Summit Plan of Implementation. Co-sponsored by South Africa and Canada, it was specifically designed to fulfill the priorities for the mining, minerals and metals sector as identified in the Johannesburg World Summit Plan of Implementation. Paragraph 46 of the Plan identifies a number of priorities for the sector.

The Global Dialogue was for national Governments with an interest in the mining, minerals and metals sector. Fifty-three countries participated in the Global Dialogue. Together, they decided that the objectives of the Global Dialogue would be best achieved through the establishment of an Intergovernmental Forum for the mining, minerals and metals sector.

In February 2005, the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development came into effect when twenty-five national governments had confirmed their membership.

Canada will act as the Forum Secretariat for the initial five-year period, after which an assessment of whether or not the Forum should continue will be made. The inaugural meeting of the Forum took place November 7-9, 2005 in Geneva.

<http://www.globaldialogue.info/>

- 27. Programmes to facilitate regional cooperation in the creation of a policy environment conducive to region-wide industrial development (e.g. harmonization of corporate tax regimes, regional trade agreements).**

- 27.1 Regional Programs.** The Government of Canada, through the Canadian International Development Agency (CIDA) is supporting several initiatives to facilitate regional cooperation between developing countries, as well as to assist them in taking part in

international trade. CIDA is providing financing to the *Organization of Eastern Caribbean States (OECS)* in order to strengthen, through policy and institutional development, the region's capacity to participate in and benefit from regional and international trade liberalization. Similar programs exist for the Commonwealth Caribbean, as well as Central and South America.

In Asia, CIDA supports the *APEC Economic Integration Program*, which helps government agencies and ministries in six Southeast Asian economies (four APEC members: Thailand, Philippines, Indonesia, Vietnam, and two non-APEC members: Cambodia and Laos PDR), to function more effectively in WTO fora, to meet their obligations under WTO agreements and to facilitate regional and global trading relations. To help ensure sustainability, the program is developing partnerships with Southeast Asian institutions that have the potential to become regional centres of excellence for economic integration, and is supporting the constructive engagement of the private sector and civil society in this trade-related capacity-building effort.

<http://www.apec-eip.ca/>

Finally, Canada supports the West Africa Regional Financial Market Development Program through a trust fund managed by the World Bank. The main objective is to develop capital markets in the West Africa Economic and Monetary Union (WAEMU) region, and to mobilize public and private financing for the region's infrastructure development. The project is expected to contribute to the WAEMU countries' efforts to achieve sustainable regional economic growth through the provision of efficient, region-wide infrastructure services and greater financial market integration. Canada's contribution will serve to fund the technical assistance component, which deals with implementing the actions contained in the market revitalization plan.

<http://www.uemoa.int/>

- 27.2 The North American Free Trade Agreement (NAFTA)** has brought economic growth and rising standards of living for the people of Canada, the United States and Mexico since 1994. As well, by strengthening the rules and procedures governing trade and investment throughout the continent, NAFTA has proved to be a solid foundation for building Canada's future prosperity.

Manufacturers in all three countries are better able to realize their full potential by operating in a larger, more integrated and efficient North American economy. In 2002, Canada was the most important destination for merchandise exports from 39 of the 50 U.S. states.

**United Nations Commission for Sustainable Development (CSD)14**  
**National Report for Industrial Development**

Canada is a successful trading nation: our exports account for over 40% of total gross domestic product—a higher proportion than for any other G7 country. An estimated one in four jobs in Canada is linked to our success in global markets.

NAFTA has played a significant role in that achievement. Today, 86.6% of total merchandise exports go to our NAFTA partners. And close to 2.3 million jobs have been created in Canada since 1994, representing an increase of 17.5% over pre-NAFTA employment levels. NAFTA is clearly a key to Canada's continued economic success.

For Canadians, it is important that trade and investment liberalization proceed hand in hand with efforts to protect the environment and improve working conditions. Under NAFTA, our three countries have been able to introduce the highly successful approach of parallel environmental and labour cooperation agreements.

The economic integration promoted by NAFTA has spurred better environmental performance across the region. Through the North American Agreement on Environmental Cooperation, the three partners are promoting the effective enforcement of environmental laws. Through the North American Agreement on Labour Cooperation, Mexico and the United States are working together to protect, enhance and enforce basic workers' rights.

<http://www.dfait-maeci.gc.ca/nafta-alena/over-en.asp>



**Annex 1: Corporate Social Responsibility (CSR) and Sustainable Development (SD) related initiatives that have been collectively developed by industry sectors.**

*Responsible Care Program by the Canadian Chemical Producer's Association (CCPA)*

The Canadian Chemical Producer's Association demonstrates a commitment to corporate responsibility and sustainability through the Responsible Care program. All member companies are required to participate in the initiative, and commit to the responsible management of chemicals, chemical products, processes and operations. The program aims to manage chemicals throughout the product life cycles. Environmental protection, health, and safety are key integral features of the Responsible Care program. All member companies commit to implementing the guiding principles and codes of practice, which include community awareness and emergency response, research and development, protection from manufacturing hazards, minimizing transportation risks, distribution codes and hazardous waste management. Stakeholder rights are addressed as member companies publicly report on environmental performance in the annual Emissions Report. For more information on the Responsible Care program please visit the CCPA website.

<http://www.ccpa.ca/>

*Environmental, Health and Safety Stewardship Program by the Canadian Association of Petroleum Producers (CAPP)*

The Canadian Association of Petroleum Producers has established a voluntary environmental, health and safety initiative for companies in the petroleum sector. The Environment, Health and Safety Stewardship program encourages its members to improve its performance in certain areas, engage stakeholders in their reporting process, and to produce an annual Environmental, Health and Safety Stewardship Progress Report. The program addresses five key components: company commitments, public consultation, benchmarking, operating practices, and verification. For more information on this initiative and other initiatives (e.g. respecting Aboriginal communities) within the association please visit the CAPP website.

<http://www.capp.ca/>

*Statement of Commitment and Action Regarding Environmental Protection by the Canadian Steel Producers' Association (CSPA)*

The Canadian Steel Producers' Association has responded to environmental performance targets by developing the Statement of Commitment and Action Regarding Environmental Protection.

Under this voluntary initiative, participating companies seek to reduce environmental impacts and supply appropriate information to stakeholders. The statement provides a framework for applying sound environmental management systems. Member companies pursue pollution prevention through the Accelerated Reduction/Elimination of Toxic program, Codes of Practice for emissions/effluents, a verification process, and public reporting. The Statement outlines the priorities and objectives of the association with respect to reductions in air emissions, water discharge limits, and waste management. For more information, see the Canadian Steel Producers' Association web site.

<http://www.canadiansteel.ca/splash.htm>

*Environmental Commitment and Responsibility Program by the Canadian Electricity Association (CEA)*

The Canadian Electricity Association has developed the Environmental Commitment and Responsibility (ECR) program to strengthen environmental management systems and guide progress within the electricity industry. The ECR program is a voluntary environmental initiative developed and implemented by the electric utility members of the Canadian Electricity Association (SEA). All utility members of the SEA are committed to continual improvement of environmental performance, including tracking and reporting on environmental indicators, and implementing environmental management systems equivalent to the ISO 14001 standard. For more information, please visit the CEA site.

<http://www.canelect.ca/>

*Sustainable Mining Initiative by the Mining Association of Canada (MAC)*

The Mining Association of Canada incorporates sustainable development and corporate responsibility objectives into their business through the Sustainable Mining Initiative and the Guidelines for Corporate Crises Management Planning. The latter initiative is a reference guide aimed to address stakeholder concerns about potential mining accidents and incidents, and assists industry companies in developing and improving plans for responding to, and communicating, during a crises. The Sustainable Mining Initiative integrates social, economic and environmental goals of the Canadian mining industry. The initiative outlines commitments on such fronts as human rights, business ethics, community participation, and environmental, health and safety standards. For more information, visit Towards Sustainable Mining website.

<http://www.mining.ca/english/tsm>

*Environmental Statement and Guiding Principles for the Management of Occupational Health and Safety by the Forest Products Association of Canada (FPAC)*

The Forest Products Association of Canada (FPAC) uses vehicles such as the Environmental Statement and Guiding Principals for the Management of Occupational Health and Safety to guide member companies. The Environmental Statement encourages companies to commit to sound environmental practices, including sustained yield forestry and environmental management, environmental regulation compliance, environmental protection, and environmental impact reduction, environmental awareness among employees and the public, and scientific research. Occupational health and safety is also a key priority for FPAC and health and safety performance is monitored and measured, and relevant research is supported. For more information, visit the website of Forest Products Association of Canada.

<http://www.fpac.ca/>

*Environmental Management Program by the Vinyl Council of Canada (VCC)*

The Vinyl Council of Canada has established a voluntary Environmental Management Program (EMP), which incorporates environmental management practices and performance measures. The EMP was developed in partnership with stakeholders and representatives from the environmental and health sectors. The EMP consists of six guiding principals that call for integration, stakeholder dialogue, a corporate environmental management system, environmental protection and economic priorities, environmental compliance, and environmental performance improvements. An annual report on progress, containing relevant information on performance, waste reduction and conservation is published and made available to key stakeholders. For more information, please see the Environmental Management Program Progress Report on the website of the Vinyl Council of Canada.

<http://www.plastics.ca/vinyl/newsroom/default.php?ID=494>