

**Canada's commitment to the development and adoption of new technologies and innovations has positioned us as a key player in today's global economy. Governments throughout Canada are supporting the development and dissemination of the technologies that will help us, and others around the world, reduce greenhouse gas emissions.**

## Promoting Technology Development and Innovation

### TRANSPORTATION

#### Government of Canada

Emissions Research and Measurement Division  
The Emissions Research and Measurement Division provides support to a number of industry/government programs directed at the development of new technologies for reducing greenhouse gas emissions from the transportation sector. Activities include the characterization of emissions for gasoline and diesel engines, hybrid vehicles, fuel conversion systems, fuel cells and related equipment.

Environment Canada, [www.ec.gc.ca](http://www.ec.gc.ca)  
Fred Hendren, (613) 990-5859,  
[fred.hendren@ec.gc.ca](mailto:fred.hendren@ec.gc.ca)

Transportation Energy Technologies Program (TETP)  
This program supports Canadian industry's development and deployment of technologies and fuels that provide a cleaner, more sustainable energy mix for our roadways. Key activities include the development of electric vehicles and hybrids, fuel cells, and alternative transportation fuels like natural gas, propane, ethanol, methanol and hydrogen.

Natural Resources Canada,  
[www.nrcan.gc.ca/es/etb/cetc/cetchome.htm](http://www.nrcan.gc.ca/es/etb/cetc/cetchome.htm)  
Nick Beck, (613) 996-6022, [nbeck@nrcan.gc.ca](mailto:nbeck@nrcan.gc.ca)

#### British Columbia

Ethanol Development Program  
British Columbia has provided \$300,000 to initiate a provincial Ethanol Development Program (EDP) to develop commercially viable technologies that will produce fuel ethanol from softwood residue. The EDP is a collaboration among forest companies, the Canadian Petroleum Producers Institute, and governments.

[www.elp.gov.bc.ca](http://www.elp.gov.bc.ca)  
Liz Lilly, (250) 387-4772,  
[liz.lilly@gems3.gov.bc.ca](mailto:liz.lilly@gems3.gov.bc.ca)

### ENERGY USE AND PRODUCTION

#### Government of Canada

##### *Advanced Materials*

Advanced Materials Technologies Program  
The Advanced Materials Technologies Program conducts research into innovative materials and processes that respond to environmental requirements and concerns, and contribute to climate change mitigation. Research areas include lightweight materials for transportation, fuel cells, sensors and actuators, hydroforming of aluminum and steels, and advanced metallic powders for rechargeable batteries.

Natural Resources Canada,  
[www.nrcan.gc.ca/mms/canmet-mtb/mtl/ENG/advdmat.htm](http://www.nrcan.gc.ca/mms/canmet-mtb/mtl/ENG/advdmat.htm)  
Jason Lo, (613) 992-2699, [jlo@nrcan.gc.ca](mailto:jlo@nrcan.gc.ca)

Canadian Lightweight Materials Research Initiative  
The Canadian Lightweight Materials Research Initiative (CLIMRI) is an industry-lead program for developing light and high-strength materials for conventional and advanced vehicles. (e.g. powered by fuel cells and batteries, and hybrids). Issues addressed are alloy design, thermomechanical processing, and manufacturing involving Mg, Al, high-strength steel, metal matrix composites, plastics and polymer-based composites.

Natural Resources Canada,  
<http://climri.nrcan.gc.ca/>  
Jennifer Jackman, (613) 995-8248,  
[jjackman@nrcan.gc.ca](mailto:jjackman@nrcan.gc.ca)

##### *Clean Combustion Technologies*

Advanced Combustion Technologies Laboratory  
The Advanced Combustion Technologies Laboratory researches and develops leading-edge, efficient combustion and pollution abatement technologies aimed



at increasing the effectiveness of energy utilization and reducing greenhouse gas emissions, acid rain precursors, particulates and air toxics. Stationary source applications include utility boilers, industrial processes, and residential and commercial systems fired by natural gas, oil, coal, biomass or waste fuels.

Natural Resources Canada,  
[www.nrcan.gc.ca/es/etb/cetc/cetchnome.htm](http://www.nrcan.gc.ca/es/etb/cetc/cetchnome.htm)  
Bob Fraser, (613) 996-6079,  
[bofraser@nrcan.gc.ca](mailto:bofraser@nrcan.gc.ca)

### Energy Technologies for High-Temperature Processes Program (EHTP)

This government–industry partnership reviews new technologies aimed at ensuring the sustainability of Canada's metallurgical and coal industries. The program examines technologies that reduce energy and production costs in the metals industry, and develops better products and new markets for the coal industry.

Natural Resources Canada,  
[www.nrcan.gc.ca/es/etb/cetc/cetchnome.htm](http://www.nrcan.gc.ca/es/etb/cetc/cetchnome.htm)  
John Price, (613) 996-0089, [jprice@nrcan.gc.ca](mailto:jprice@nrcan.gc.ca)

### *Energy Efficiency / Energy Management*

#### Industrial Process Engineering Program

The Industrial Process Engineering program aims to build a Canadian capacity to improve the existing dryer base for a variety of industries by improving the energy intensity of the dryer base and drying technologies to upgrade residues. The program performs audits on industrial dryers, commercializes pulse fluid bed and jet-spouted-bed dryers for the agri-food industry, develops and commercializes intelligent control systems for dispersion-type dryers, assesses the opportunity for advances controls in the drying industry, and assesses the potential of new residue upgrading technologies.

Natural Resources Canada,  
[http://cedrl.mets.nrcan.gc.ca/e/activities\\_e.html](http://cedrl.mets.nrcan.gc.ca/e/activities_e.html)  
Jean Paquette, (450) 652-5997,  
[jpaquett@nrcan.gc.ca](mailto:jpaquett@nrcan.gc.ca)

#### Industrial Process Integration Program

The Industrial Process Integration program supports the development and deployment of process integration in various industries. The program focusses on water network optimization methodologies in the agri-food, pulp and paper and textile industries; combined

heat and power optimization methodologies, total site optimization methodologies, and the building of an international calibre Canadian capacity in process integration.

Natural Resources Canada,  
[http://cedrl.mets.nrcan.gc.ca/e/activities\\_e.html](http://cedrl.mets.nrcan.gc.ca/e/activities_e.html)  
Jean Paquette, (450) 652-5997,  
[jpaquett@nrcan.gc.ca](mailto:jpaquett@nrcan.gc.ca)

#### Industry Energy Research and Development (IERD)

The Industry Energy Research and Development program supports the development and use of energy-efficient processes, products, systems and equipment by industry with a view to contributing to a cleaner environment. Technology development is conducted with all Canadian industrial sectors and is cost-shared with industry and other project participants.

Natural Resources Canada,  
[www.nrcan.gc.ca/es/etb/cetc/cetchnome.htm](http://www.nrcan.gc.ca/es/etb/cetc/cetchnome.htm)  
Mike Burke, (613) 996-6612,  
[mburke@nrcan.gc.ca](mailto:mburke@nrcan.gc.ca)

#### Mining and Mineral Sciences Laboratories

The Mining and Mineral Sciences Laboratories conduct research in underground mine environment, and mine mechanization and automation to reduce energy use in the mining industry. Automated ventilation management and mine mechanization can substantially increase overall mining efficiency and reduce the energy used to supply underground workers with necessary air, temperature, light and space requirements. One project under this initiative, being developed by a North American consortium, is the replacement of diesel with hydrogen fuel cells in underground production vehicles. If successful, the project is projected to reduce CO<sub>2</sub> emissions by 700,000 tonnes per year and electrical consumption by 15 percent, while increasing productivity by at least 15 percent.

Natural Resources Canada,  
[www.nrcan.gc.ca/mms/sandt-e.htm](http://www.nrcan.gc.ca/mms/sandt-e.htm)  
Roy Sage, (613) 947-6604, [rsage@nrcan.gc.ca](mailto:rsage@nrcan.gc.ca)  
Michel Grenier, (705) 677-7815,  
[mgrenier@nrcan.gc.ca](mailto:mgrenier@nrcan.gc.ca)

#### National Fuel-Cell Research and Innovation Initiative

This joint Government of Canada, industry and university effort funds two initiatives: the Vancouver-based National Research Council's (NRC) National Fuel Cell

Technology Centre, a national, industrially-focused research program; and a joint NRC–Natural Sciences and Engineering Research Council (NSERC) Fuel Cell Network and Targeted Research Program. The National Fuel Cell Technology Centre conducts collaborative industrial research, technology development, demonstration and deployment related to the use of fuel cells for alternative energy production. The research fund supports collaborative Canadian university–industry research for the development of fuel cells and fuel cell systems.

National Research Council Canada, [www.nrc.ca](http://www.nrc.ca)  
Rod McMillan, (604) 221-3041,  
[rod.mcmillan@nrc.ca](mailto:rod.mcmillan@nrc.ca)

#### Program of Energy Research and Development (PERD)

This program supports and complements a wide range of energy science and technology programs related to sustainable development in the energy sector, excluding nuclear energy. Programs in Canada are being undertaken in partnership with 11 Government of Canada departments and agencies. International collaborations also provide opportunities for shared research and development (R&D) and expertise with other countries, primarily in Europe and the United States. All R&D projects focus on environmentally and economically sustainable technologies in the areas of energy production, energy end-use, renewable sources, CO<sub>2</sub> management, and R&D support for regulation of energy supply activities.

PERD projects are being undertaken to address its six main strategic intents:

1. Diversification of Canada's oil and gas  
Noël Billette, (613) 992-3738,  
[nbillett@nrcan.gc.ca](mailto:nbillett@nrcan.gc.ca)  
Sue Sim-Nadeau, (613) 996-7836,  
[ssimnade@nrcan.gc.ca](mailto:ssimnade@nrcan.gc.ca)
2. Cleaner transportation for the future  
Kathleen Hollington, (613) 947-1021,  
[kholling@nrcan.gc.ca](mailto:kholling@nrcan.gc.ca)
3. Energy-efficient buildings and communities  
Janice Zinck, (613) 992-1131, [jzinck@nrcan.gc.ca](mailto:jzinck@nrcan.gc.ca)
4. Energy-efficient industry  
John Gorjup, (613) 947-4245,  
[jgorjup@nrcan.gc.ca](mailto:jgorjup@nrcan.gc.ca)
5. Canada's electricity infrastructure  
Noël Billette, (613) 992-3738,  
[nbillett@nrcan.gc.ca](mailto:nbillett@nrcan.gc.ca)

6. Canadian energy sector's response to the impacts of climate change

Gilles Mercier, (613) 995-9454,  
[gmercier@nrcan.gc.ca](mailto:gmercier@nrcan.gc.ca)

Natural Resources Canada,  
[www.nrcan.gc.ca/es/oerd/](http://www.nrcan.gc.ca/es/oerd/)  
Graham Campbell, (613) 995-8860,  
[gcampbe@nrcan.gc.ca](mailto:gcampbe@nrcan.gc.ca)

#### *Oil and Gas*

##### Advanced Separation Technologies (AST)

This program conducts fundamental and applied research to find solutions for industrial science and technology problems. AST uses a multi-disciplinary team approach to develop and implement leading-edge separation technologies for the petroleum and environmental industries. This approach involves strategic partnerships and collaborative initiatives with industry, educational institutions, governments and the scientific community.

Natural Resources Canada,  
[www.nrcan.gc.ca/es/etb/cwrc/](http://www.nrcan.gc.ca/es/etb/cwrc/)  
Hassan Hamza, (780) 987-8617,  
[hamza@nrcan.gc.ca](mailto:hamza@nrcan.gc.ca)

##### Gas Hydrates Research Program

This program is helping to fund a joint government–industry undertaking to develop and test new exploration and production technologies in order to better understand the distribution and character of gas hydrate reserves. While these reserves represent a possible alternative energy source, they could increase greenhouse gases in the atmosphere if released naturally as a result of climate warming.

Natural Resources Canada,  
<http://sts.gsc.nrcan.gc.ca/page1/clim/>  
Scott Dallimore, (250) 363-6423,  
[sdallimo@nrcan.gc.ca](mailto:sdallimo@nrcan.gc.ca)

##### International Energy Agency (IEA) Weyburn CO<sub>2</sub> Monitoring Project

This four-year, \$35 million research program is developing a comprehensive understanding of CO<sub>2</sub> behaviour in oil-bearing geological structures. Through detailed research and measurement, an international research team will verify the effectiveness of CO<sub>2</sub>-based Enhanced Oil Recovery as a method of managing greenhouse gas emissions, providing direction and





leadership for similar projects in Canada and around the world. To date, the Government of Canada has contributed \$1 million to this project.

[www.nrcan.gc.ca/es](http://www.nrcan.gc.ca/es)  
Geoffrey Browning, (613) 996-3810,  
[browning@nrcan.gc.ca](mailto:browning@nrcan.gc.ca)

**National Centre for Upgrading Technology (NCUT)**  
This joint Canada-Alberta heavy oil and bitumen upgrading research program provides independent research and technical services to help industry reduce the operating and capital costs and greenhouse gas emissions associated with converting heavy oil and bitumen into value-added products such as transportation fuels.

Natural Resources Canada,  
[www.nrcan.gc.ca/es/etb/cwrc/canmetmain.htm](http://www.nrcan.gc.ca/es/etb/cwrc/canmetmain.htm)  
Bill Dawson, (780) 987-8656,  
[bdawson@nrcan.gc.ca](mailto:bdawson@nrcan.gc.ca)

**Petroleum Technology Research Centre (PTRC)**  
The goal of this Saskatchewan-based research and development organization is to ensure the ongoing production of oil in Saskatchewan. A joint program of the Saskatchewan Research Council, the University of Regina, Saskatchewan Energy and Mines, and the Government of Canada, PTRC works in close collaboration with industry participants to ensure that the findings of the work it supports are applied by the petroleum industry.

Petroleum Technology Research Centre,  
[www.ptrc.ca](http://www.ptrc.ca)  
Roland Moberg, (306) 787-8290,  
[moberg@src.sk.ca](mailto:moberg@src.sk.ca)

**Processing and Environmental Catalysis Program**  
The Processing and Environmental Catalysis program focuses on the development of environmentally sound and economically viable technologies for the production of alternative and renewable transportation fuels, fuel additives and petrochemicals from natural gas, light hydrocarbons and renewable sources. Advanced catalytic systems and technologies are being developed for the conversion of natural gas to liquids, the re-refining of used oil, the reduction of mobile emissions, the blending of bio-fuels and the conversion of low-grade heat to electricity.

Natural Resources Canada,  
[www.nrcan.gc.ca/es/etb/cetc/cetchome.htm](http://www.nrcan.gc.ca/es/etb/cetc/cetchome.htm)  
Safaa Fouda, (613) 995-6392,  
[sfouda@nrcan.gc.ca](mailto:sfouda@nrcan.gc.ca)

### *Renewable Energy*

#### Energy for the Forest (ENFOR)

The Energy for the Forest program funds research relating to Canadian biomass energy production. ENFOR projects advance our understanding of the role of biomass production in the global carbon cycle and generate knowledge and technology on forest biomass production. Projects include determining: the viability of using forest ecosystems for energy, the potential for off-setting the fossil fuel energy supply with bioenergy, and forest options for reducing atmospheric concentrations of carbon dioxide.

Natural Resources Canada,  
<http://nofc.cfs.nrcan.gc.ca/climate/>  
Dave Winston, (613) 947-8986,  
[dwinston@nrcan.gc.ca](mailto:dwinston@nrcan.gc.ca)

#### Renewable Energy and Hybrid Systems for Remote Communities (RERC)

The Renewable Energy and Hybrid Systems for Remote Communities program accelerates the deployment of renewable energy technologies to more than 300 remote Canadian communities that are not connected to the main electricity grid or to natural gas networks. The program provides a platform to coordinate the activities of federal, provincial, and territorial government departments and electric utilities. For example, the program is collaborating with the Government of Canada's Department of Indian and Northern Affairs, the Canadian Electrical Association, and Aboriginal organizations to develop strategies for increasing the deployment of renewable energy technologies in remote communities. Using RETScreen, a computerized project assessment tool for renewable energy technologies, RERC provides community decision makers with the tools, information, knowledge, and part of the funding needed to assess the feasibility of renewable energy systems, select the most cost-effective technologies and implement projects. The program also focusses on the development, implementation and promotion of photovoltaic (PV) technologies for domestic and international markets. Private sector and other organizations eligible for RERC funding may

receive contributions of 40 percent of the purchase and installation costs of authorized systems, to a maximum of \$50,000.

Natural Resources Canada,  
<http://cedrl.mets.nrcan.gc.ca>  
 André Filion, (450) 652-5995,  
[afilion@nrcan.gc.ca](mailto:afilion@nrcan.gc.ca)

**Renewable Energy Technologies Program (RETP)**  
 The Renewable Energy Technologies Program supports Canadian industry's development and commercialization of cost-effective and environmentally responsible advanced renewable energy technologies that can serve as alternatives to conventional energy generation. These technologies include active solar energy, wind energy, small hydro (less than 20 megawatts) and bioenergy.

Natural Resources Canada,  
[www.nrcan.gc.ca/es/etb/cetc/cetchome.htm](http://www.nrcan.gc.ca/es/etb/cetc/cetchome.htm)  
 Claude Barraud, (613) 996-6087,  
[cbarraud@nrcan.gc.ca](mailto:cbarraud@nrcan.gc.ca)

## Alberta

**Geological Sequestration of CO<sub>2</sub> in Alberta Project**  
 This project, jointly funded by the Government of Alberta and the Government of Canada under the Western Economic Partnership Agreement, is assessing the suitability of Alberta's subsurface for CO<sub>2</sub> sequestration in one of five ways: use in enhanced oil recovery; use in enhanced coal bed methane recovery; storage in depleted oil and gas reservoirs; injection and sequestration in deep saline formations; and storage in salt caverns.

[www.ags.gov.ab.ca](http://www.ags.gov.ab.ca)  
 Stefan Bachu, (780) 427-1517,  
[stefan.bachu@gov.ab.ca](mailto:stefan.bachu@gov.ab.ca)

**Improved Coal Combustion Research**  
 The Government of Alberta participates in an ongoing project to evaluate the combustion, heat transfer and pollutant characteristics of coal combustion in an enriched oxygen medium with recycled CO<sub>2</sub> from flue gas. Research is aimed at providing a credible database for the development of more energy-efficient fossil-fired power generation cycles, which can produce a purified stream of CO<sub>2</sub> for direct removal from a power plant.

Rick Nelson, (780) 427-0286,  
[richard.nelson@gov.ab.ca](mailto:richard.nelson@gov.ab.ca)

**Injection of CO<sub>2</sub> into Deep Alberta Coal Beds for the Production of Methane**

Current research is directed towards developing synergies with O<sub>2</sub> / CO<sub>2</sub> recycling technology. For example, a coal-fired power plant would utilize the O<sub>2</sub> / CO<sub>2</sub> combination furnace to produce a pure CO<sub>2</sub> flue gas that would be captured and used in the coal bed methane technology for the recovery of methane. This would result in a zero-emission scenario.

Rick Nelson, (780) 427-0286,  
[richard.nelson@gov.ab.ca](mailto:richard.nelson@gov.ab.ca)

## Saskatchewan

**International Test Centre for Carbon Dioxide Capture**  
 The centre will develop technologies to capture carbon dioxide produced by the energy sector. Instead of allowing carbon dioxide to be released into the atmosphere, the centre will investigate new capture methods and new industrial uses for the gas. This could reduce the cost of CO<sub>2</sub> capture from coal-fired power plants to around \$20 per tonne, and the potential for atmospheric emissions from power plants to zero, except for nitrogen.

[www.gov.sk.ca/enermine](http://www.gov.sk.ca/enermine)  
 Malcolm Wilson, (306) 787-2618,  
[malcolm.wilson@sem.gov.sk.ca](mailto:malcolm.wilson@sem.gov.sk.ca)

**Weyburn CO<sub>2</sub> Injection Monitoring Project**  
 This monitoring project is a four-year research program to develop a comprehensive understanding of CO<sub>2</sub> injection into oil bearing geological structures. Through detailed research and measurement, an international research team will verify the effectiveness of Enhanced Oil Recovery (EOR) as a method of managing greenhouse gas emissions, providing direction and leadership for similar projects in Canada and around the world.

[www.gov.sk.ca/enermine](http://www.gov.sk.ca/enermine)  
 Malcolm Wilson, (306) 787-2618,  
[malcolm.wilson@sem.gov.sk.ca](mailto:malcolm.wilson@sem.gov.sk.ca)

## Prince Edward Island

**Atlantic Wind Test Site, North Cape, PEI**  
 The Atlantic Wind Test Site (AWTS) facilitates the evaluation, development and demonstration of wind energy systems and equipment. AWTS is an integral part of Canada's wind energy development program. Established in 1980 on the western tip of Prince Edward





Island, AWTS continues to develop and test wind energy designs, including wind/diesel hybrid systems.

[www.gov.pe.ca/photos/original/wind\\_test\\_site.pdf](http://www.gov.pe.ca/photos/original/wind_test_site.pdf)  
Carl Brothers, (902) 882-2746

### Yukon

#### Green Power Initiative

This initiative encourages the production of energy from renewable sources in an environmentally sustainable manner. It has four key objectives: to displace diesel electricity production and reduce emissions of greenhouse and other gases, especially in communities served only by diesel-generated electrical power; to provide consumers with a green power option; to expand the technical capability to develop green power alternatives; and to improve the long-term cost effectiveness of green power alternatives. The initiative will achieve these objectives through research and development, demonstration, targeted technical information, development of standards, and youth education projects.

[www.gov.yk.ca/pubs/green\\_power.pdf](http://www.gov.yk.ca/pubs/green_power.pdf)  
Duncan Sinclair, (867) 393-5334,  
[duncan.sinclair@gov.yk.ca](mailto:duncan.sinclair@gov.yk.ca)

#### Wind Power Program

The Yukon Development Corporation is conducting pilot scale applied research and development on wind energy. It has four test sites located throughout the Yukon to determine the wind regime, and a commercial scale wind turbine in production located on Haeckel Hill near Whitehorse. A second, larger commercial scale wind turbine is being installed August 2000. The goal of this program is to overcome the technical barriers (primarily ice accumulation) to commercial scale wind energy production.

Duncan Sinclair, (867) 393-5334,  
[duncan.sinclair@yec.yk.ca](mailto:duncan.sinclair@yec.yk.ca)

## BUILDINGS

### Government of Canada

#### Buildings Energy Technology Advancement Plan (BETA)

The Buildings Energy Technology Advancement Plan is a cost-sharing program aimed at developing, commercializing and encouraging the adoption by industry of a new generation of technologies and residential and

large buildings with improved energy efficiency and indoor air quality.

Natural Resources Canada,  
[www.nrcan.gc.ca/es/etb/cetc/cethome.htm](http://www.nrcan.gc.ca/es/etb/cetc/cethome.htm)  
Mark Riley, (613) 996-8151, [mriley@nrcan.gc.ca](mailto:mriley@nrcan.gc.ca)

#### Refrigeration and Intelligent Buildings

This program focuses on the development and deployment of technologies in the areas of ground source heat pumps, refrigeration and intelligent buildings.

Natural Resources Canada,  
<http://cedrl.mets.nrcan.gc.ca>  
Andre Filion, (450) 652-5995,  
[afilion@nrcan.gc.ca](mailto:afilion@nrcan.gc.ca)

## SUPPORTING TECHNOLOGY DEVELOPMENT

### Government of Canada

#### Canadian Climate Change Solutions

Canadian Climate Change Solutions is an interactive multimedia information tool designed to provide an instant response to specific climate change related problems encountered by all sectors of the economy, in both domestic and international markets. Canadian Climate Change Solutions is available on CD-ROM and through the Internet providing a compendium of problems encountered world wide and the products, technologies and services that Canadian companies can deliver to resolve them.

Industry Canada, <http://strategis.ic.gc.ca/ces>  
Tom Wright, (613) 954-3080,  
[tom.wright@ic.gc.ca](mailto:tom.wright@ic.gc.ca)

#### Canadian Environmental Technology Advancement Centres (CETACs)

The Government of Canada supports the operations of three CETACs strategically located in Quebec, Ontario, and Alberta, with offices in each major city to serve all Canadians. The CETACs work in partnership with provincial governments, environmental industry associations and the private sector. The CETACs are private sector, not-for-profit corporations, operating at arm's length from government. Each Centre's goal is to help small- and medium-sized enterprises commercialize environmental technologies by providing comprehensive

technical services, access to investment capital, business counseling, and regulatory and market analysis.

Environment Canada  
 Enviro-Access Inc., [www.enviroaccess.ca](http://www.enviroaccess.ca)  
 Ontario Centre for Environmental Technology  
 Advancement (OCETA), [www.oceta.on.ca](http://www.oceta.on.ca)  
 CETAC-West Inc., [www.cetacwest.com](http://www.cetacwest.com)  
 Abe Finkelstein, (819) 953-0226,  
[abe.finkelstein@ec.gc.ca](mailto:abe.finkelstein@ec.gc.ca)  
 Fred Hendren, (819) 990-5859,  
[fred.hendren@ec.gc.ca](mailto:fred.hendren@ec.gc.ca)

#### Climate Technology Initiative (CTI)

The Climate Technology Initiative, a multilateral initiative under the auspices of the United Nations Framework Convention on Climate Control (UNFCCC), promotes activities to: improve the transfer of technology for building the capacity to assess and implement new technologies; foster international cooperation for accelerated development and deployment of climate-friendly technologies and practices for all activities; and help reduce greenhouse gas emissions.

Natural Resources Canada,  
[www.climatetech.net/](http://www.climatetech.net/)  
 Graham Campbell, (613) 995-8860,  
[grcampbe@nrcan.gc.ca](mailto:grcampbe@nrcan.gc.ca)

#### Environmental Technology Advancement Program

The Environmental Technology Advancement Program develops, uses and transfers Canadian know-how and technologies to help protect and enhance the environment at home and abroad. It accomplishes this by addressing key environmental issues such as climate change, clean air and clean water, while contributing to Canada's sustainable development objectives. The program supports the development and application of scientific support tools, technologies and know-how to address environmental priorities; partners with other experts and stakeholders to maximize resources in addressing key environmental issues domestically and globally; and enhances private sector capacity to respond to environmental challenges.

Environment Canada  
 Ed Norrena, (819) 953-3090,  
[ed.norrena@ec.gc.ca](mailto:ed.norrena@ec.gc.ca)

#### Environmental Technology Verification Program

The Environmental Technology Verification (ETV) Program fosters the growth and marketability of Canada's environmental industry by providing validation and independent third-party verification of performance claims. The ETV Program promotes the credibility of Canada's environmental industry both domestically and internationally while building sustainable industry capacity at home. Companies receiving the Government of Canada "Certificate of Authenticity," are considered industry leaders, innovators and are usually able to access markets more effectively.

Environment Canada, [www.etvcanada.com](http://www.etvcanada.com)  
 Abe Finkelstein, (819) 953-0226,  
[abe.finkelstein@ec.gc.ca](mailto:abe.finkelstein@ec.gc.ca)

#### Industrial Research Assistance Program (IRAP)

The Industrial Research Assistance Program will stimulate innovation in Canadian small and medium-sized enterprises, helping them to develop and adapt technologies. IRAP offers technical and business advice through a network of more than 250 advisors in 90 communities across Canada, and links companies to the appropriate resources and expertise to proceed in their innovation. IRAP can also offer financial support for research and development projects of Canadian small and medium-sized enterprises.

National Research Council, [www.nrc.ca/irap](http://www.nrc.ca/irap)  
 Jim Rollefson, (613) 993-7025,  
[jim.rollefson@nrc.ca](mailto:jim.rollefson@nrc.ca)

#### Technology Partnerships Canada (TPC)

TPC is a Government of Canada investment fund, investing in research and technology development to help strengthen Canada's technological capabilities in a range of critical areas. TPC invests in projects in three major areas: environmental technologies, enabling technologies, and the aerospace and defence industry. Environmental projects include the development of technologies related to pollution prevention, protection and abatement; water treatment; clean processes; recycling; clean cars; and renewable energy and energy efficiency.

Technology Partnerships Canada,  
<http://tpc.ic.gc.ca>  
 Bruce Stuart, (613) 941-4671,  
[stuart.bruce@ic.gc.ca](mailto:stuart.bruce@ic.gc.ca)





### Wastewater Technology Centre

The Wastewater Technology Centre is actively involved in climate change-related activities through their work in Clean Production and Pollution Prevention. For example, the Microwave-Assisted Processes MAPTM) are a family of clean processing technologies that were developed and patented by Environment Canada as part of Canada's commitment to sustainable development. Other potential technologies are currently being evaluated for greenhouse gas reduction potentials as well as a hands-on program for validating greenhouse gas reduction claims.

Environment Canada, [www.ec.gc.ca](http://www.ec.gc.ca)  
Jocelyn Paré, (613) 990-9122,  
[jocelyn.pare2@ec.gc.ca](mailto:jocelyn.pare2@ec.gc.ca)

### British Columbia

#### British Columbia Scientific Research and Experimental Development Tax Credit

In 1999, the Government of British Columbia implemented a 10 percent tax credit for eligible research and development, including for greenhouse gas technology.

[www.fin.gov.bc.ca/itb/sred/sredbulletins/01-99R2.htm](http://www.fin.gov.bc.ca/itb/sred/sredbulletins/01-99R2.htm)  
Joann Cain, (250) 387-9002,  
[joann.cain@gems2.gov.bc.ca](mailto:joann.cain@gems2.gov.bc.ca)

#### Fuel Cell Technology

British Columbia is continuing its investment in the development of BC's fuel cell manufacturing industry, fuel cell technology and fuelling infrastructure, and applications of fuel cell technologies to a wide range of consumer products. This builds on BC's past investment of \$21 million since 1990 in support of the demonstration and commercialization of fuel cells. On-going discussions between governments, universities and private industry are exploring new projects using operational data and technical developments from the Greater Vancouver Fuel Cell Bus Demonstration Project completed in June 2000.

[www.scitech.gov.bc.ca/](http://www.scitech.gov.bc.ca/)  
Dave Shepherd, (250) 356-9569,  
[dave.shepherd@gems5.gov.bc.ca](mailto:dave.shepherd@gems5.gov.bc.ca)

#### Green Economy Development Fund

BC's \$3-million Green Economy Development Fund is providing contributions to green technology demon-

stration projects that are between the research and development stage and the commercialization stage.

[www.gov.bc.ca/ges/](http://www.gov.bc.ca/ges/)  
Ken Baker, (250) 387-1947,  
[ken.baker@gems7.gov.bc.ca](mailto:ken.baker@gems7.gov.bc.ca)

#### Green Venture Capital Program

BC's \$1-million Green Venture Capital Program is helping small businesses raise money for developing and selling new environmental technologies and services. Investors in participating venture-capital corporations will receive a 30 percent provincial tax credit and will be required to hold their investments for at least five years.

[www.gov.bc.ca/ges/](http://www.gov.bc.ca/ges/)  
Ken Baker, (250) 387-1947,  
[ken.baker@gems7.gov.bc.ca](mailto:ken.baker@gems7.gov.bc.ca)

### Alberta

#### Climate Change Technology Strategy

Alberta's Technology Strategy for the Management of Greenhouse Gas Emissions is now the responsibility of Climate Change Central, a public-private partnership. The strategy has two main objectives: to ensure effective development of technologies within Alberta to mitigate greenhouse gas emissions; and to capitalize on global opportunities for exporting climate-friendly technology solutions developed and adapted in Alberta. These objectives are to be accomplished by creating an enabling environment within Alberta, ensuring timely availability of required technologies. Through Climate Change Central, Alberta companies are working with government and academia on technological advances that will lead to improved competitiveness and lower environment impacts.

- Carbon Management: Government and industry are working on initiatives for capturing and disposing of CO<sub>2</sub> in sites, such as depleted oil wells. Participants agree any such system must be proven safe, environmentally benign, effective, economical, and publicly acceptable.
- Sinks: Alberta scientists and other public and private sector staff played a major role in understanding agricultural sinks. Sinks remove greenhouse gases from the atmosphere, by converting them through chemical processes or storing them in some other form.

[www.climatechange.gov.ab.ca](http://www.climatechange.gov.ab.ca)  
Allan Amey, (403) 517-2700



## Saskatchewan

### Saskatchewan Petroleum Research Incentive

One of the main purposes of this incentive is to reduce the environmental impact of oil and natural gas production, which includes greenhouse gas emissions reduction. The financial support provided by the incentive is in the form of oil and natural gas royalty and tax credits which enable producers to deduct a portion of their companies' approved costs for research from their oil and natural gas royalty and tax payments.

[www.gov.sk.ca/enemine](http://www.gov.sk.ca/enemine)  
Howard Loseth, (306) 787-3379,  
[howard.loseth@sem.gov.sk.ca](mailto:howard.loseth@sem.gov.sk.ca)

## CLIMATE CHANGE ACTION FUND – TECHNOLOGY EARLY ACTION MEASURES

The Government of Canada's Technology Early Action Measures (TEAM) component of the Climate Change Action Fund (CCAF) supports federal government programs that fund technology projects to reduce greenhouse gas emissions nationally and internationally, while sustaining economic and social development. TEAM projects will lead to significant reductions in greenhouse gas emissions and help Canada meet its commitments under the Kyoto Protocol. The CCAF has announced funding of \$31 million to TEAM projects. Partners have contributed another \$159 million in leveraged funding, resulting in a total commitment of nearly \$190 million. Partners have included provincial and territorial governments, as well as business and industry, community organizations, and municipalities. The projects listed below have received funding from CCAF-TEAM.

Natural Resources Canada  
Wayne Richardson, (613) 996-5419,  
[wsrichar@nrcc.gc.ca](mailto:wsrichar@nrcc.gc.ca)

### Alternative Transportation Fuels

#### Domestic Projects

- The Electric Vehicle Project – Montreal 2000 is using some 15 to 20 organizations to evaluate 30–40 electric vehicles of different models and makes to determine the viability of using battery-powered cars and light trucks to replace vehicles powered by internal combustion

engines. The project evaluates various technical aspects, components and user acceptance levels.

Environment Canada,  
[www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=59](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=59)  
Pierre Sylvestre, (514) 496-2657,  
[pierre.sylvestre@ec.gc.ca](mailto:pierre.sylvestre@ec.gc.ca)

- The Personal Fuel Appliance project is helping Stuart Energy Systems Inc. develop and test two prototype water electrolysers, hydrogen refuelling appliances that produce hydrogen for zero emission fuel-cell vehicles. Ford Motor Co. will independently evaluate and test the appliance for possible use in its P2000 fuel-cell vehicles, expected to be on the market in 2004.

Natural Resources Canada,  
[www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=88](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=88)  
Nick Beck, (613) 996-6022, [nbeck@nrcc.gc.ca](mailto:nbeck@nrcc.gc.ca)

- The Technology Development for use in Natural Gas and Fuel-Cell Vehicles project is developing intelligent control systems software that will make natural gas and fuel cell vehicles more cost competitive with conventional vehicles. The software can perform a number of individual processes simultaneously, including monitoring and controlling the gaseous injection and fuel storage systems. The software makes the conversion of conventionally fuelled vehicles to natural gas simpler and, therefore, less costly. The adoption of natural gas and fuel-cell vehicles by consumers could reduce CO<sub>2</sub> emissions by 0.4 megatonnes by 2005 and 1.5 megatonnes by 2010.

Natural Resources Canada, [www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=392](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=392)  
Andy Bergszasz, (613) 995-8557,  
[abergszasz@nrcc.gc.ca](mailto:abergszasz@nrcc.gc.ca)

#### International Projects

- The Natural Gas Auto-Rickshaws in Pakistan project is helping fund Ontario-based Yugo-Tech Inc.'s conversion of 30–45 auto-rickshaws to natural gas in Pakistan, using leading-edge natural-gas conversion technology. The conversion is expected to reduce CO<sub>2</sub> emissions by 76.5 tonnes or 21 percent per year. Yugo-Tech will also help Pakistan develop a natural





gas vehicle conversion centre, a government emissions test centre and will train technicians, drivers and emissions control officials.

Environment Canada,  
[www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=89](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=89)  
Fred Hendren, (613) 990-5859,  
[fred.hendren@ec.gc.ca](mailto:fred.hendren@ec.gc.ca)

- The Natural Gas Motorcycles in Egypt project is helping fund Canadian-based Yugo-Tech Inc.'s development and refining of technology that will be used in a demonstration project in Egypt to convert gasoline-operated two-stroke motorcycle engines to run on compressed natural gas (CNG). Given the large number of two-stroke engine motorcycles in Egypt, converting these motorcycles to operate using CNG is expected to reduce annual CO<sub>2</sub> emissions by 21 percent, or a 1.0 tonne CO<sub>2</sub> reduction per motorcycle per year. Replication potential over a ten-year period in Egypt is expected to reduce total CO<sub>2</sub> emissions by 173,250 tonnes per year.

Industry Canada,  
[www2.climatechange.gc.ca/search\\_e.cfm](http://www2.climatechange.gc.ca/search_e.cfm)  
Nancy Hamzawi, (613) 952-1572,  
[hamzawi.nancy@ic.gc.ca](mailto:hamzawi.nancy@ic.gc.ca)

- The Natural Gas Vehicles in Romania project is helping fund the conversion of automobiles in Romania, using a bi-fuel natural gas fuel-injection system developed by the Saskatchewan Research Council. Initially five vehicles will be converted and tested. Mass production of these vehicles is expected to begin in 2001. The vehicles being tested or produced will reduce greenhouse gas emissions by about 16 tonnes per year, while the mass production of bi-fuel vehicles is projected to reduce greenhouse gas emissions by over 8,000 tonnes per year.

Natural Resources Canada, [www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=87](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=87)  
Andy Bergszaszy, (613) 995-8557,  
[abergszaszy@nrcan.gc.ca](mailto:abergszaszy@nrcan.gc.ca)

### *Buildings Technologies*

- The Advanced Integrated Mechanical Systems (AIMS) project is a joint government – industry initiative designed to help manufacturers develop products and the market infrastructure for natural gas-fuelled appli-

ances that integrate ventilation, space and hot-water heating into a single system. As many as six Canadian manufacturers are expected to develop AIMS products, with many others developing components. The project has the potential to increase the availability and affordability of high-performance mechanical ventilation systems in Canada. Using AIMS, instead of traditional products, is expected to reduce annual greenhouse gas emissions associated with ventilation, and space and water heating by an average of 25 percent in the 150 Canadian homes participating in a field trial.

Natural Resources Canada,  
[www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=212](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=212)  
James Glouchkow, (613) 943-9235,  
[jglouchkow@nrcan.gc.ca](mailto:jglouchkow@nrcan.gc.ca)

### *Community Energy Systems*

- The Sudbury District Energy Project is building a district energy system in downtown Sudbury, Ontario that uses a single heating and cooling system in several public buildings. The system will use a variety of energy sources, including heat produced by industrial processes, residual heat from power plants and renewable energy such as biomass to replace the city's individual heating and cooling systems and decrease the city's dependence on fossil fuels. The initial project is expected to result in a reduction of 21,000 tonnes of CO<sub>2</sub> emissions per year. Full expansion of the system could reduce emissions by up to 51,000 tonnes per year.

Natural Resources Canada,  
[www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=212](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=212)  
Michael Wiggin, (613) 996-8870,  
[mwiggin@nrcan.gc.ca](mailto:mwiggin@nrcan.gc.ca)

### *Energy Management*

- The Greenhouse Gas Emissions Reduction Through Energy Management in Brazil project, a joint Government of Canada–private sector project, involves the development and implementation of seven energy management demonstration projects in seven industry sectors, representing about 50 percent of total manufacturing establishments in Brazil. The sectors include food processing, metal mechanics, textiles and leather, plastics, ceramics foundries, automotive parts and furniture manufacturing. If successful, the technology will be transferred to some 3,000 companies in the

target sectors, potentially reducing CO<sub>2</sub> emissions by 10,000 tonnes per year.

Industry Canada,  
[www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=221](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=221)  
 Heather Schoemaker, (613) 954-3434,  
[schoemaker.heather@ic.gc.ca](mailto:schoemaker.heather@ic.gc.ca)

### *Fuel Cells and Hydrogen*

- The Micro-Turbine / Cogeneration Heating and Power System project is helping fund Suncurrent Industries' development of guidelines that optimize the performance of distributed cogeneration systems. Suncurrent is using the Walker Court condominium project in Calgary, Alberta, a combined residential and commercial building of 12 units, to monitor and analyze the effectiveness of a micro-turbine cogeneration system that provides heat and electrical power to the building. The company will use the data from this project to expand the application of cogeneration systems through efficient networks run under a central dispatch and control facility. The high-efficiency use of natural gas to provide both electricity and heat locally is expected to significantly reduce greenhouse gas emissions.

National Research Council  
 (Industrial Research Assistance Program),  
[www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=219](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=219)  
 Raymond Lowry, (403) 210-5226,  
[raymond.lowry@nrc.ca](mailto:raymond.lowry@nrc.ca)

- The Solid Oxide Fuel Cell Development project is helping fund Global Thermoelectric Inc.'s development of technology to create new levels of performance, cost effectiveness and durability for solid oxide fuel cells. The technology uses higher power density levels at lower temperatures (700°C). If successful, the technology will be applied in the oil, gas, telecommunications, residential and automotive markets.

National Research Council, [www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=220](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=220)  
 Alex Dickson, (403) 210-4239,  
[alex.dickson@nrc.ca](mailto:alex.dickson@nrc.ca)

- The Solid Oxide Fuel Cell Combined Heat & Power Demonstration Plant project, initiated by Kinectrics Inc. (formerly Ontario Power Technologies), is building and demonstrating a prototype solid oxide fuel cell

combined heat and power plant — the world's largest such plant. When completed, the plant will generate 250 kilowatts of electricity, enough to provide heat and electricity to about 50 homes, provide higher fuel conversion efficiency, eliminate energy losses due to power transmission/distribution, and reduce CO<sub>2</sub> emissions by 57 percent per year. With modifications, the plant is capable of using alternative fuels, such as propane or diesel.

Natural Resources Canada, [www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=401](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=401)  
 Norm Benoit, (613) 996-6165,  
[nbenoit@nrcan.gc.ca](mailto:nbenoit@nrcan.gc.ca)

- The Solid Oxide Fuel Cell Combined Heat & Power Demonstration Plant – Balance-of-Plant Development project is helping fund Kinectrics Inc.'s (formerly Ontario Power Technologies) testing and improvement of prototype balance-of-systems components (i.e. fuel processors, compressors, heat exchangers) that will be used in the plant.

Natural Resources Canada, [www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=402](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=402)  
 Jim Rollefson, (613) 993-7025,  
[jim.rollefson@nrc.ca](mailto:jim.rollefson@nrc.ca)

### *Oil and Gas Production*

- The Sustainable Development of Coal Bed Methane: A Life-Cycle Approach to the Production of Fossil Energy project is developing a new technology process that increases the production of coal bed methane while storing CO<sub>2</sub>. An international consortium, led by the Alberta Research Council, will test the process that injects CO<sub>2</sub> from industrial point sources into Alberta's vast, deep and unmineable coal bed gas reserves, that are rich in valuable methane. As the CO<sub>2</sub> is injected into a coal bed, it is stored in coal seams, displacing the methane gas. If adopted by the utility and petroleum production industries, this new process could lead to development of an unconventional natural gas resource and significantly reduce CO<sub>2</sub> emissions.

Environment Canada, [www2.climatechange.gc.ca/ccaf/show\\_e.cfm?id=216](http://www2.climatechange.gc.ca/ccaf/show_e.cfm?id=216)  
 Tom Foote, (819) 994-1821, [tom.foote@ec.gc.ca](mailto:tom.foote@ec.gc.ca)

### *Renewable Energy*

- The Automated Turbine Controls Project in China will help fund Powerbase Automation Systems Inc.'s transfer and testing of five of its small automated turbine control





units at five small-hydro plants in China. The five demonstration sites are expected to reduce CO<sub>2</sub> emissions by about 30,000 tonnes per year through improved energy efficiency and the displacement of energy produced by coal. If testing is successful, Powerbase will retrofit another 55 sites in China by 2001.

Natural Resources Canada,  
www2.climatechange.gc.ca/ccaf/  
show\_e.cfm?id=58  
Tony Tung, (613) 996-6119, ttung@nrcan.gc.ca

- The Building Integrated Photovoltaics (BIPV) Demonstration project, a one-year (2000–2001) demonstration project being undertaken by the British Columbia Institute of Technology (BCIT) and its partners, is using building-integrated photovoltaic (BIPV) technology (solar energy) to generate electricity for commercial, industrial and residential buildings. If successful, the technology could lead to the installation of 0.5 megawatts of peak capacity photovoltaic power in Canada by 2010, offsetting about 350 tonnes of greenhouse gas emissions annually.

Canada Mortgage and Housing Corporation,  
www2.climatechange.gc.ca/ccaf/  
show\_e.cfm?id=358  
Chris Ives, (613) 748-2312,  
cives@cmhc-schl.gc.ca

- The Developing Photovoltaic Module Production Lines for Export project will help fund Ontario-based ATS Automation Tooling Systems Inc.'s development and testing of automated assembly lines to produce photovoltaic (PV) panels for export. Initially, test sites will be set up in Canada and China, where fully functional PV panels will be installed and monitored. The PV panels at the test sites are expected to reduce CO<sub>2</sub> emissions by up to 130 tonnes annually.

Natural Resources Canada, www2.  
climatechange.gc.ca/ccaf/show\_e.cfm?id=356  
Lisa Dignard, (450) 652-5161,  
ldignard@nrcan.gc.ca

- The Development and Commercialization of Char into Activated Carbon project is developing and commercializing a new process that converts char, a co-product of Ensyn Technologies Inc.'s patented Rapid Thermal Processing of biomass materials, into a high-value activated carbon. If successful, this carbon could be used as a charcoal filter in a variety of applications,

including water treatment, and replace coal currently used as a feedstock for activated carbon.

Natural Resources Canada, www2.  
climatechange.gc.ca/ccaf/show\_e.cfm?id=217  
Ed Hogan, (613) 996-6226, ehogan@nrcan.gc.ca

- The “Green Diesel” from Biomass Pyrolysis Oil project is optimizing and deploying a microemulsion technology that will enable bio-oils produced from Ensyn Technologies Inc.'s patented Rapid Thermal Processing of cellulosic materials to be mixed with diesel. The use of bio-oil can produce heat and power and, as a 10 percent blend in diesel fuel, is expected to significantly reduce greenhouse gas emissions.

Natural Resources Canada, www2.  
climatechange.gc.ca/ccaf/show\_e.cfm?id=218  
Ed Hogan, (613) 996-6226, ehogan@nrcan.gc.ca

- The Green Power Turbine project is funding the installation of two waterfront windmills in downtown Toronto to provide an alternative to coal-fired electricity generation. Each wind turbine will provide 1400 megawatt hours of energy per turbine, enough to power 250–300 households per year. The green power will be sold directly to Toronto customers.

Environment Canada,  
www2.climatechange.gc.ca/ccaf/  
show\_e.cfm?id=158  
Les Welsh, (613) 953-1127, les.welsh@ec.gc.ca

- The Use of Microwave Energy to Extract Cooking Oils From Plant Materials project is helping fund implementation by CanAmera Foods and BC Research Inc. of Environment Canada's MAP™ technology to extract edible oils from agricultural material such as canola, flax and soya. The technology uses microwaves to selectively heat the residual moisture in plant materials, causing edible oils to be released into the surrounding unheated hexane solvent. The project will also assess the effectiveness and viability of using other solvents such as butane or propane. If successful, the project could result in the reduction of 120,000 tonnes of CO<sub>2</sub> emissions per year. Once all 10 Canadian CanAmera plants are converted to this process, the annual reduction of CO<sub>2</sub> emissions is predicted to be 1.2 megatonnes.

Environment Canada,  
www.climatechange.gc.ca/ccaf/  
show\_e.cfm?id=396

Jocelyn Paré, (613) 990-9122,  
jocelyn.pare2@ec.gc.ca

### *Waste Treatment*

- The Methane Recovery from Landfills – Bioreactor Landfill Cells Demonstration Project in Cairo, Egypt is demonstrating the recovery of landfill gas (mainly methane), for generating power. The project is divided into two phases: detailed site assessment and construction of two bioreactor cells (where waste will be treated and gases captured), and evaluation of the system's performance. The process's by-product can be used as compost material. This project has the potential for combined reduction of greenhouse gas emissions of about 4 million tonnes per year.

Industry Canada,  
www2.climatechange.gc.ca/ccaf/  
show\_e.cfm?id=394  
Nancy Hamzawi, (613) 952-1572,  
hamzawi.nancy@ic.gc.ca

### *Technology Early Action Measures / Technology Partnerships Canada*

- The Bio-Fuel Turbine Power Generation System project is helping fund Orenda Aerospace Corporation's development and testing of systems for operating engines on liquid bio-oil fuel derived from feedstocks, such as wood, grasses, waste paper and agricultural residues. Under the project, Orenda will also redesign and refine the combustion system, and develop specifications for a full-scale power generation system. If successful, the technology is expected to reduce CO<sub>2</sub> emissions by 1.25 million tonnes per year by 2010.

Technology Partnerships Canada, www2.  
climatechange.gc.ca/ccaf/show\_e.cfm?id=160  
Michael Lenihan, (613) 946-8194,  
lenihan.michael@ic.gc.ca

- The Enhanced Anaerobic Digestion of Municipal Solid Waste project is helping fund Eastern Power Limited's development and demonstration of an innovative approach for treating the non-recyclable biomass components of municipal solid waste, recovered from "blue-box" recycling programs. The project is using a three-step modified anaerobic digestion process to create methane-rich biogas for power generation, and solid residue for use as compost or soil enhancement. The

process is expected to reduce greenhouse gas emissions by 10.6 million tonnes of CO<sub>2</sub> per year by 2010.

Technology Partnerships Canada, www2.  
climatechange.gc.ca/ccaf/show\_e.cfm?id=214  
Kash Ram, (613) 954-5043, ram.kash@ic.gc.ca

- The Ethanol from Biomass project is helping fund Logen Corporation's development and demonstration of a cost-effective process for the production of ethanol from a wide variety of biomass, including farm waste products such as straw and oat hulls. Blending 10 percent ethanol into all Canadian gasoline would decrease CO<sub>2</sub> emissions by 6.6 megatonnes by 2010.

Technology Partnerships Canada,  
www2.climatechange.gc.ca/ccaf/search\_e.cfm  
Kash Ram, (613) 954-5043, ram.kash@ic.gc.ca

- The Gas Separation Technology project is helping fund QuestAir Industries Inc.'s development of a unique gas separation technology that strips nitrogen and other gases from an air stream leaving pure oxygen. The technology will allow oxygen separation to occur over 200 times faster than traditional systems and result in smaller industrial oxygen plants. QuestAir is also exploring the use of this technology to increase the efficiency of fuel cells in automotive applications. The technology has the potential to reduce CO<sub>2</sub> emissions in Canada by 85,000 tonnes per year by 2006.

Technology Partnerships Canada, www2.  
climatechange.gc.ca/ccaf/show\_cfm?id=157  
Michael Hayes, (613) 954-4266,  
hayes.michael@ic.gc.ca

- The Hydrogen Fleet Fuel Appliance project is helping fund Stuart Energy Systems Inc.'s development and demonstration of a cost-effective system for improving the refuelling of hydrogen fuel-cell powered buses and other vehicles. The high-volume refuelling system enables bus companies operating fuel-cell vehicles to refuel more vehicles overnight, taking advantage of off-peak electricity rates. If successful, the technology has the potential to reduce greenhouse gas emissions by 123,000 tonnes per year by 2010.

Technology Partnerships Canada,  
www2.climatechange.gc.ca/ccaf/search\_e.cfm  
Michael Hayes, (613) 954-4266,  
hayes.michael@ic.gc.ca





## SUSTAINABLE DEVELOPMENT

### Government of Canada

Centre for Research in Cleaner Manufacturing  
The Centre for Research in Cleaner Manufacturing, established in early 1999, develops scientific and engineering platforms for evaluating and guiding innovation in clean, commercially viable technologies and production processes, including those that help reduce greenhouse gas emissions.

National Research Council,  
Don Singleton, (613) 993-4041

International Centre for Sustainable Development of Cement and Concrete (ICON)  
The International Centre for Sustainable Development of Cement and Concrete conducts research and development, demonstration projects, transfer of technology and networking for the sustainable development of cement and concrete. The program aims to optimize the use of supplementary cementing materials (e.g. fly ash, slag, silica fume), recycled materials and other industrial by-products in concrete to reduce greenhouse gas emissions and consume high-volume waste product.

Natural Resources Canada,  
[www.nrcan.gc.ca/mms/canmet-mtb/mtl/ENG/advcdcon.htm](http://www.nrcan.gc.ca/mms/canmet-mtb/mtl/ENG/advcdcon.htm)  
Benoit Fournier, (613) 992-8394,  
[bfournie@nrcan.gc.ca](mailto:bfournie@nrcan.gc.ca)

Sustainable Development Technology Fund (SDTF)  
This fund will support private sector-led projects aimed at accelerating the development and demonstration of new sustainable development technologies, with a particular emphasis on technologies that reduce CO<sub>2</sub> and other greenhouse gas emissions and provide air quality solutions. Projects related to climate change could include the development of technologies to improve energy efficiency, diversify Canada's energy supply mix to include more renewable sources and alternatives fuels, capture and store CO<sub>2</sub>, and, for air quality solutions, reduce or remove particulates and

other pollutants, such as ground-level ozone, toxins and heavy metals. The Government of Canada allocated an initial \$100 million to this fund in the 2000 Budget. The fund is scheduled for implementation by March 31, 2001.

Natural Resources Canada  
Graham Campbell, (613) 995-8860,  
[grcampbe@nrcan.gc.ca](mailto:grcampbe@nrcan.gc.ca)

## OTHER

### British Columbia

#### Beehive Burner Tax Shift Pilot

The Province is implementing a tax shift pilot project to encourage value-added uses for softwood residue, including the development of technologies to produce fuel ethanol, bio-oils, other chemical by-products and electricity. This project is revenue neutral to government by using increased waste management fees to provide rebates of permit fees to operators who invest in alternatives leading to the phase-out of their burners.

Brian Currie, (250) 387-9632,  
[Brian.Currie@gems3.gov.bc.ca](mailto:Brian.Currie@gems3.gov.bc.ca)

### Alberta

#### CO<sub>2</sub> Synergies

The Government of Alberta participates in the "CO<sub>2</sub> Synergies" initiative. This initiative, which is led by the Alberta Chamber of Resources, focuses on developing commercial uses for CO<sub>2</sub> through research and development projects. A broad range of industry and government stakeholders participates in this initiative.

Rick Nelson, (780) 427-0286,  
[richard.nelson@gov.ab.ca](mailto:richard.nelson@gov.ab.ca)