

ROUNDTABLE ON CANADA RECENT ENERGY TECHNOLOGY DEVELOPMENTS

Highlights from Energy S&T in Canada include milestone achievements in our ongoing programs, new targeted collaborative work on climate change technologies, the advent of a new Foundation for technology development and demonstration aimed at climate change and air quality solutions, strategic planning initiatives to guide our future S&T investments, and the start of a national review and consultation on innovation and skills on a national and multi-sectoral basis. This multi-faceted level of activity underlines the importance of S&T and innovation investments to the sustainable development of our resource base towards economic growth in a clean and environmentally sound manner.

The established energy S&T programs provide the knowledge, expertise, networks and platforms to address current and emerging policy priorities. Recent successes in our S&T programs have been highlighted by the milestone report from the Technology Early Action Measures (TEAM) program. TEAM's objective is to support the demonstration and late stage development of climate change technologies, in close partnership with private sector companies on a project-by-project basis. A total of 86 projects have been announced to date, covering a wide range of technological areas. An impressive level of leverage of over 10:1 has been achieved on a program wide basis. TEAM has played an important role in identifying technologies which have been advanced through earlier successful R&D programs and then fostering partnerships for demonstration projects which connect companies with available funding. The TEAM progress report "Innovation for Sustainability" is available at the address below.¹ The Government of Canada Climate Change Website presents information on TEAM and the project database at: www.climatechange.gc.ca.

Fostering energy S&T collaboration amongst provincial-territorial-federal players opens up many challenges and opportunities. Our ongoing programs build linkages with laboratories, institutes and organizations across the country. An example is the Western Research Centre at Devon, Alberta, which operates on a joint basis with the provincial Alberta Department of Energy and the Alberta Research Council. Work to build national collaborative efforts on climate change technologies is being lead by the Climate Change Technology Working Group (CCTWG), convened under the auspices of Canada-wide climate change committee. The CCTWG has identified eight promising technologies for further joint work - biofuels, biomass, CO₂ capture and storage, clean coal, fuel cells, hydrogen, lower intensity oil and gas production, and wind.

Two of these technologies are already being pursued actively. CO₂ Capture and Storage is an important new technology for Canada which provides a means to reduce atmospheric emissions from fossil-fired power generation, hydrogen production and industrial operations, and to make profitable use of the CO₂ for enhanced oil recovery and coalbed methane production, or for subsurface storage in deep geological reservoirs. A suite of projects are underway now covering the spectrum from research and demonstration of capture technologies, oxy-fuel combustion, CO₂-enhanced methane extraction from coal beds and on to studies of the geological resource potential for storage in abandoned oil and gas reservoirs and deep-seated, sealed geological beds. Second, the Weyburn project is a flagship internationally-funded study to predict and verify the ability of an oil reservoir to securely store and economically contain CO₂. This four-year

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project will develop a comprehensive understanding of the storage integrity, migration and fate of CO₂ injected into oil-bearing geological structure.

One year ago, the government of Canada announced a 15-year \$260M programme called 'New Production Incentive for Renewable Energy'. This programme provides monetary incentives for electricity produced from qualifying wind energy projects commissioned after 31 March 2002 and before April 2007. The incentive will cover the first 10 years of production.

The Government of Canada Action Plan 2000 on Climate Change, is a 5-year \$500 million investment on measures to reduce greenhouse gas emissions that was announced in 2001. The Plan includes a number of measures to develop and deploy emerging renewable and alternative energy sources. Some programmes to advance renewable and alternative energy technologies include: 'Renewable Energy and Hybrid Systems for Remote Communities' which is a programme to develop and implement photovoltaic technologies; and 'Renewable Energy Technologies Program' which support Canadian industry efforts to develop renewable energy technologies, including active solar, wind energy, small hydro and bioenergy.

A new foundation has recently been announced which will add a new component and much-needed incremental funding, initially \$100M, to the energy S&T innovation system. The *Canada Foundation for Sustainable Development Technology* will provide funding for technology development and demonstration projects aimed at climate change and air quality solutions. The Foundation will operate as an independent organization, at arm's length from government, headed up by a Chairperson and a Board of Directors, and Members of the Foundation. Applicants will be alliances of players from the private sector, universities and research institutes. Operations will begin in mid-2002, starting with a call for expressions of interest and then preparation of formal proposals for selected technology projects. The Foundation's website can be found at: www.fsdtc.ca.

Strategic planning of our future S&T investments starts with an assessment of the emerging policy factors set in a sustainable development frame, then identifies current and emerging issues such as climate change and air quality, energy security and safety issues which will influence future research directions. Key areas of priority for investments identified to date include: energy supply, energy conversion and energy use. Consultations with the energy S&T community will continue over the next few months towards a *Strategic Plan for Innovation in Canadian Energy*, to be issued in September, 2002.

Canada has recently launched a national consultation process on innovation and related skills, initiated by the publication of two discussion papers on "*Canada's Innovation Strategy: Achieving Excellence: Investing in People, Knowledge and Opportunity*" and "*Knowledge Matters: Skills and Learning for Canadians*". The complete texts of these discussion papers can be downloaded from the following site: <http://www.innovationstrategy.gc.ca/cmb/innovation.nsf/pages/index>. Consultations on the two papers are being undertaken in parallel under the leadership of Industry Canada (IC) and Human Resources Development Canada (HRDC), respectively. The goals are to engage industry and universities to work in collaboration with governments to improve Canada's innovation system. The consultations will seek to identify synergies, partnerships and commitments to future actions, and will take place across Canada during the spring and summer of 2002. While IC and HRDC are setting up regional conferences and satellite meetings to cover most urban centres across Canada, other government departments were invited to take the lead on sectoral consultations that reflect their departmental mandates. In recognition of the importance of the natural resource sector to Canada's innovation system, a consultation plan for an "*Energy Framework*" is being developed.