

Goal 2:

To provide Canadians with sustainable economic, social and environmental benefits derived from natural resources for present and future generations

OBJECTIVES

- 2.1 Innovation and opportunity
- 2.2 Trade and markets
- 2.3 Sustainable communities

The natural resources sector is indispensable to job creation, economic growth, community development and Canadians' quality of life. To sustain the sector's capacity to provide both a healthy economy and a healthy environment – for generations to come – the natural resources sector must make the most efficient use of Canada's natural resources. A sustainable resources industry makes fewer demands on the environment, creates economic opportunities and provides greater stability to Canadian communities. It also strengthens Canada's competitiveness and opens up new markets abroad so that Canadians can continue to enjoy an exceptionally high standard of living.

We believe that the actions in support of this goal will “push the envelope,” so that in three years, we can truly see this integration taking hold.

2.1 Innovation and opportunity

At its heart, innovation is a response to the demand to improve, to invent, to challenge the norms. The continuous search for new and better ways to do things has driven Canada socially and economically. NRCan's stakeholders consistently emphasize the key role that the department has to play in innovation. We acknowledge this role, and will undertake actions to advance eco-efficiency, resource recovery and innovation in resource development and address the needs of all sectors of society.



Action: Promote innovation in resource development

Issue	Approach	Target
<p>Eco-efficiency enables businesses to increase productivity and competitiveness while making measurable progress towards improved environmental performance. Eco-efficient practices spur innovations in technology, production and organizational processes, and product design. The implementation of eco-efficient practices and technologies could complement government efforts to make Canadian industries more innovative and productive.</p> <p>A detailed economic and scientific rationale for moving towards eco-efficiency is necessary to raise awareness among industry, to attract investment and to drive research initiatives.</p>	<p>Work with partners to establish Canada's capacity for eco-efficiency. Ensure that the proper techniques and tools are made available to enterprises in the natural resources sector to facilitate the adoption of eco-efficient practices.</p> <p>Partners include other government departments, private sector companies, associations, research institutes and academia.</p>	<p>By 2002, complete a report, including a gap analysis, which will target investment and research and development opportunities.</p> <p>By 2003, launch an eco-efficiency toolbox, provide high profile case studies and a develop a communication strategy to promote the adoption of eco-efficiency in industry.</p> <p>By 2002, build capacity in research facilities for advanced manufacturing, material design processes and the development of innovative materials and technologies.</p> <p>By 2001, develop an eco-efficiency and Design for Environment training package for use in product development and manufacturing in the auto parts sector.</p>

Anticipated outcome

Decreased demand on Canada's natural resources due to decreased consumption in production processes.

Reduced emissions from production processes.

Eco-efficiency will enable corporate social responsibility both domestically and abroad.

Eco-efficiency

A recent interdepartmental study, led by NRCan, *The Role of Eco-efficiency: Global Challenges and Opportunities in the 21st Century*, has confirmed that eco-efficiency is equally good for the environment and the bottom line. Large firms are utilizing tools such as Environmental Management Systems, Life Cycle Analysis, Design for Environment and Supply Chain Management to deliver competitively-priced goods and services while reducing ecological impacts and resource intensity through the life cycle.

The House of Commons Standing Committee on Industry defines the concept of eco-efficiency “as an important business practice and management tool, whereby innovations in technology, production

processes, product design, and business organization and practices can lead to lower costs, improved product quality, lower environmental liability, less material usage and less adverse impact on the environment.”

While many larger businesses are already enjoying the advantages of adopting eco-efficient technologies and processes, challenges remain for small and medium-sized firms that have yet to buy in to the benefits of eco-efficiency. Priority areas to advance eco-efficiency include raising awareness of the productivity gains and economic dividends of eco-efficient practices, strengthening capacity and skills, applying the tools of eco-efficiency in the marketplace and exploring further investment opportunities.

Issue	Approach	Target	Anticipated outcome
<p>Domestic and global demand for recycling and recycled products has been steadily increasing. There is now need for a coordinated approach to increase the efficiency of materials recovery and recycling across Canada, and to use Canadian expertise and technology internationally.</p> <p>A Canada-wide initiative to encourage increased recycling will not only have significant environmental benefits, but will benefit all levels of government, industry, research institutions and the general public, creating jobs and new partnership opportunities.</p>	<p>Implement a federal resource recovery strategy to identify policy drivers and inhibitors, to enhance and encourage increased recycling of resource materials in Canada, to support climate change objectives, create business opportunities and facilitate trade in recyclables.</p> <p>Partners include other government departments, provincial governments, municipalities along with industry.</p>	<p>By 2003, develop an information infrastructure to properly identify consumers of recyclable materials and to track consumption patterns of Canadian recyclable resources.</p> <p>By 2003, undertake research and development activities on recycling and resource recovery technologies to: identify policy drivers and inhibitors; identify areas needing infrastructure change and technology development; and support the testing and evaluation of recycling and resource recovery processes.</p> <p>By 2003, coordinate mechanisms for the exchange of technologies domestically and to contribute to capacity building globally.</p> <p>By 2003, support, develop and implement a mix of regulatory, voluntary and fiscal instruments to permit increased uptake of recycling, in conjunction with other government departments.</p>	<p><i>Increased material recovery and conservation, energy reduction, public awareness of recycling and reduced burden on landfill.</i></p>

Issue	Approach	Target
<p>The natural resources sector ranks among the most innovative in Canada. It has increased its productivity by adopting innovative solutions and sustainable development practices and has, as a result, held its ground against global competitors. But holding ground is not enough; if Canadian natural resource industries want to capture emerging and rapidly evolving global markets, they must develop and implement world-first innovations.</p>	<p>Conduct and sponsor scientific research that will enhance the competitiveness of the Canadian mining industry through development of innovative mechanization and automation technologies.</p> <p>Partners include mining companies, equipment manufacturers, research organizations and regulators throughout North America.</p>	<p>By 2003, develop and test water-powered mining equipment to replace less efficient compressed air equivalents.</p> <p>By 2003, elaborate innovative concepts and systems for removing ore from narrow-vein deposits.</p> <p>By 2003, complete demonstration projects to develop and apply hydrogen fuel cell technologies for underground hardrock mining.</p>

Anticipated outcome

Decreased operating costs for Canadian mines leading to extended mine life with associated employment opportunities. New economic opportunities for Canadian industry through establishment of world leadership in mining technologies.

Innovation in the Natural Resources Sector

The Government of Canada has committed to accelerate innovation in established and emerging sectors of the economy in partnership with the private sector, provinces, territories and academia. Innovation – vital to the natural resources sector in Canada – results in world class products, access to global markets, and underpins the quality of life for all Canadians.

Growth opportunities in resource-related areas are impressive. From 1996 to 2010, paper and paperboard products should grow by close to 40%; geomatics industries in Canada are growing at 20% per year; oil sands production is expected to increase by over 50% per year from 2001-04; and in the mining industry, robotics

could grow by as much as 50% per year. Only by developing and implementing world-first innovations will Canadians be able to capitalize on these new opportunities.

NRCan is helping to transform Canada's natural resources industry into one of the most productive, sophisticated and environmentally-friendly in the world through its investments in science and technology, and its transfer of knowledge and expertise. A long-term vision and strategy to achieve sustainable development further support this transformation. However, to truly advance sustainable development, the integration of social, economic and environmental considerations must become second nature – not an afterthought.

Issue	Approach	Target
<p>It is anticipated that Canada and the world will continue to utilize hydrocarbon-based fuels for the foreseeable future.</p> <p>A sustainable future includes energy that contributes to socio-economic growth while minimizing risks to the environment.</p>	<p>NRCan will provide the tools to reduce capital and operating costs and GHG emissions of producing clean, dry bitumen and heavy oil from Canada's oil sands and heavy oil resources by evaluating and developing new or improved technologies.</p> <p>This initiative will be pursued as part of a consolidated federal energy S&T program. International linkages include the International Energy Agency and the US Department of the Environment.</p>	<p>By 2001, NRCan will identify new field upgrading processes to produce pipeline-able bitumen and heavy oil to increase the contribution of oil sands and heavy oil to Canada's oil supply while reducing the associated environmental impact.</p> <p>By 2003, NRCan will establish new management regimes for new frontier (off- and on-shore) areas to ensure the responsible development of resources and to advance sustainable development policy in all frontier areas.</p>
<p>Geoscience information is fundamental to the discovery and sustainable development of new mineral and energy resources. Canada's geoscience knowledge base is also one of the country's key advantages in attracting investment in an increasingly competitive global exploration market.</p> <p>Much of Canada's current geoscience coverage was compiled more than 20 years ago and does not incorporate ideas, techniques and technologies of today. This contributes to the recent decline in investment by the exploration industry. Also, information that currently exists is housed in federal, provincial and territorial agencies in various formats, without national standards or coordinated access and distribution policies.</p>	<p>Stimulate new investment in mineral exploration through the Targeted Geoscience Initiative (TGI) by: expanding and upgrading geoscience information in targeted areas of mineral deposits potential across Canada through geological, geophysical and geochemical mapping; and, by making strategic investments to enhance the Canadian Geoscience Knowledge Network (CGKN), providing online access to Canada's integrated geoscience knowledge base as part of Government On-Line.</p>	<p>By 2001, release initial reports, publications, maps, database compilations from 22 Targeted Geoscience Initiative projects across Canada, in collaboration with provincial and territorial geoscience agencies.</p> <p>By 2002, complete years 2 and 3 of the Targeted Geoscience Initiative.</p> <p>By 2002, develop the Canadian Geoscience Knowledge Network geoscience data model to facilitate the discovery, mutual understanding and exchange of geoscience data.</p>

Anticipated outcome

Reduced environmental impact of bitumen production and processing, and of offshore heavy oil and natural gas production.

Anticipated outcome

Ensure the sustainable development of Canada's mining and energy sectors through the discovery of new economic reserves of minerals, oil and natural gas.

2.2 Trade and markets

The global economy requires natural resources, in both raw and processed forms. Canada is increasingly providing more value-added products. We also export the knowledge, technology and services that are more and more in demand around the globe. Canada's contributions are two-fold: selling higher-value, more environmentally-friendly products (and thereby developing our domestic economy); and, marketing the information, skills and processes that allow other countries to move toward their own sustainable development goals. As globalization increases competitive pressures, it will be essential to not just maintain, but expand, Canada's market niche.



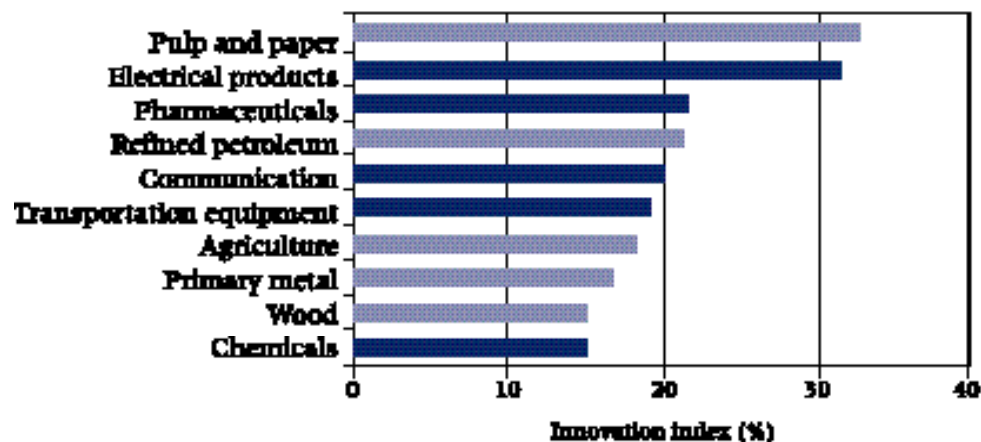
Action: Increase market access for Canadian resource-related industries

Issue	Approach	Target
Canada's resource-related industries depend on exports for their continuing success. Barriers to markets and trade are crucial issues for Canadian companies. The sector must be assured of a fair playing field internationally in order to maintain and expand markets.	Support negotiation to maintain and expand market access and encourage improvements in the business climate abroad for Canadian companies, so they can continue to contribute to Canada's prosperity. NRCan will pursue this objective in cooperation with other federal departments and the private sector.	By 2003, undertake new bilateral and multilateral engagement to address regulatory and policy initiatives and to encourage trade liberalization in the minerals and metals industry, the forest products sector, and the energy sector.

Anticipated outcome

Increased market access contributes to viability of Canadian industry and its ability to contribute to sustainable development here and abroad.

Ten Most Innovative Industries in Canada, 1993-1997



[(Machinery and equipment + R. and D.)/Value added]*100
Source: Industry Canada



Action: Expand efforts to promote international business development

Issue	Approach	Target
<p>Canada's resource-related industries depend on exports for their long-term viability. Globalization, technology and concerns about the environment are challenges facing Canadian resource companies competing internationally.</p> <p>Efforts to assist industry to expand exports will help the sector stay competitive and will contribute to employment.</p>	<p>NRCan will expand efforts to promote international business development, in partnership with Team Canada Inc, other government departments, provinces and the private sector.</p>	<p>Throughout 2001-03, continue to undertake trade missions as appropriate, and when possible, led by the Minister.</p> <p>By 2001, establish a specialist at the Canadian Embassy in Beijing to assist Canadian natural resource companies with business opportunities.</p> <p>By 2002, implement Trade and Investment Strategy.</p> <p>By 2002, place climate change specialists in targeted embassies to help Canadian natural resource companies pursue business opportunities in designated markets.</p>

Anticipated outcome

The maintenance and expansion of resource-related exports in traditional and emerging markets.

Contribute to sustainable development at home and abroad through expanded export of products, services and technologies developed by the resource-related sectors.



Priority Areas for Sustainable Community Initiatives

Sustainable Communities Initiative – provides remote, rural, northern and Aboriginal communities with Internet access to data and analytical tools for decision-making

Aboriginal Participation in the Resource-Based Economy – increases Aboriginal participation in and benefits from the resource-based economy through partnerships and capacity building.

Energy Efficiency, Renewable Energy & Community Energy Systems – emphasizes working with communities to increase awareness of options available to meet future energy needs

Green Municipal Infrastructure – encourages advances in environmental technology & innovation

Environmental Management Systems – commits the Department to sustainable development by keeping our own house in order.

2.3 Sustainable communities

Those most aware of, and anxious to advance, sustainable development are people whose communities are confronting complex social, environmental and economic challenges – including economic “boom-or-bust” cycles in rural and resource-reliant communities, changing demographics, and concerns over environmental degradation.

Citizens consulted by NRCan have expressed their desire to be part of the solution. They want to participate openly in decision-making that will, ultimately, impact their quality of life. They expect governments to provide seamless access to the various programs and services they require to make the right choices. A consistent message heard at citizens’ forums is the importance of engaging the community in the process of determining their needs and values, and in developing, defining and ranking their own indicators of community sustainability.

Government departments are rethinking traditional roles in support of community development. Sustainable community development brings the instruments of government (policies, programs, services and regulations) into alignment with the needs of, and challenges facing, communities. It must address people’s social, cultural, and environmental priorities and concerns as well as economic ones. The principal challenge is to increase the potential success of integrated, community-based approaches that render sustainable economic, social and environmental benefits while fostering greater community interdependence, empowerment and viability.

NRCan recognizes that strong communities are a key contributor to the quality of life of Canadians. The Department is actively engaged in fostering sustainable communities through initiatives aimed at:

- fostering community leadership and capacity-building
- supporting skills and learning
- ensuring access to knowledge and tools for decisions
- engaging in partnerships for community development



Action: Develop and disseminate information for community capacity

Issue	Approach	Target
<p>Aboriginal, northern, rural and coastal communities require information and skills to improve their ability to plan, make decisions, and create partnerships.</p> <p>The Sustainable Communities Initiative, launched as a pilot in 1997, provides key information to these communities via the Internet – natural resources, environmental, and non-confidential social and economic data – at the community, regional, and national scales.</p> <p>Building sustainable communities requires partnerships among government, industry and communities.</p>	<p>Expand the Sustainable Communities Initiative to reach more communities. Improve access to information sources and information processing methods, enable improved communication and consultation, and promote partnerships.</p> <p>Partners include federal departments, industry, Aboriginal organizations, non-government organizations, and provincial governments</p>	<p>By 2003, implement Sustainable Communities Initiative in 60 communities.</p>
<p>A number of federal departments have programs that are specifically for the North, a sparsely populated area that covers more than 40% of the country. Some departments with major northern programs have a regional presence, but many service the North from other parts of the country or on an ad hoc basis.</p> <p>A common federal vision for the North is required, given the diverse mandates of federal departments.</p>	<p>Contribute to the development of a Federal Northern Sustainable Development Strategy.</p>	<p>By 2001, in partnership with other government departments, participate in the development of an action plan as part of a Federal Northern Sustainable Development Strategy.</p>

Anticipated outcome

Enable Aboriginal, rural, coastal and northern communities to be in better control of their future, to seek and seize opportunities and address environmental, social and economic pressures, through improved planning, consultation and use of Internet and mapping technologies.

Anticipated outcome

A North where collective decision-making processes, recognition of land claims settlements and excellence in resource management are achieved through policies and programs that will serve as models both domestically and internationally.



Action: Build Aboriginal and community capacity to practice sustainable natural resources management

Issue	Approach	Target
<p>Aboriginal people see the forest as vital to both their traditional way of life and their economic future.</p> <p>Further to the success of the First Nation Forestry Program, NRCan has been studying approaches to extend similar methodology and principles for the participation of Métis and off-reserve Aboriginal communities in the sustainable forest management economy.</p> <p>The Model Forest Program enabled forests to become living laboratories where people with a direct interest in the forest, supported by the most up-to-date science and technology, could participate in decisions about how the forest could be sustainably managed.</p>	<p>NRCan will undertake further policy research and pilot projects for the Métis and off-reserve Aboriginal people.</p> <p>Transfer the know-how, skills and methodologies developed by and within the model forests, and apply in forest operations and in resource-based communities, to share locally-driven solutions for the sustainability of forest-based regions and communities.</p>	<p>By 2001, launch renewed First Nations Forestry Program.</p> <p>By 2001, conduct four pilot projects to assess the potential of Métis and off-reserve Aboriginal participation in forest-based economy on a regional basis.</p> <p>By 2001, host a series of six outreach workshops across the country to share the model forest experience with local level indicators.</p> <p>By 2002, launch renewed Model Forest Program.</p>
<p>Many Aboriginal communities are not adequately prepared to take full advantage of minerals and metals-related opportunities. Capacities, skills, knowledge and experience can be built through partnerships to assist in accessing these opportunities.</p>	<p>NRCan will work in partnership with the mineral industries, governments and Aboriginal communities to implement activities that support Aboriginal peoples and communities, such as producing a series of maps of Aboriginal communities near mineral and metal development activities; encouraging the development of key stakeholder working groups and other initiatives that flow from building relationships between Aboriginal communities and the industry; and exploring possible activities and initiatives that build capacities of Aboriginal communities related to mineral and metal activities.</p>	<p>By 2001, initiate a multi-stakeholder working group and begin discussion towards an Aboriginal minerals and metal partnering initiative.</p> <p>By 2001, launch the Aboriginal communities near minerals and metals map series to the public.</p>

Anticipated outcome

Aboriginal and rural communities with increased capacity to sustainably manage forest-based resources, adapted to specific regional/local circumstances and values.

Anticipated outcome

Increased dialogue among Aboriginal communities, industry and governments; a solid foundation for contributing to building capacity, knowledge, skills and expertise of Aboriginal peoples about the mining industry; and, increased awareness and mutual understanding between Aboriginal communities and the mining industry.

Issue	Approach	Target
<p>NRCan has the legislated responsibility to regulate all legal surveys on Canada Lands. Canada Lands include Indian Reserves, national and historical parks, the Territories, Canada's off-shore area and other Aboriginal lands. Legal or cadastral surveys delineate the boundaries that define the extent of ownership interests in land. Plans of legal surveys are used in legal documents that transfer these interests.</p> <p>Land and resource management functions are being transferred to Aboriginal people at a rapid pace. Consequently, these groups need to develop the skills they need to manage their land and resources.</p> <p>The foundation for the sustainable development of land resources is a stable, robust and effective property rights infrastructure. NRCan has well-established working relationships with many Aboriginal communities that enables it to work with these communities to identify and develop the skills they need for property rights management.</p>	<p>Establish an effective and efficient property rights infrastructure for First Nations and Aboriginal groups under the Canada Lands Survey System. The Blood Tribe of southern Alberta has the largest population of all First Nations in Canada.</p> <p>Partners include various federal, provincial and territorial government departments, Aboriginal businesses, Aboriginal groups, and various colleges and universities.</p>	<p>By 2001, transfer geomatics knowledge and build capacity for the Blood Tribe to improve land and resource management.</p> <p>By 2001, complete a study on the social and economic impacts of having a land survey and registry system, two elements of a property rights infrastructure.</p> <p>By 2001, complete an issue paper on <i>Property Rights Infrastructure</i> as part of an information package for Federal Land Claims Negotiators.</p> <p>By 2002, develop a strategy to acquire additional funds for an ongoing geomatics knowledge transfer and capacity building to other First Nations communities.</p>
<p>Aboriginal community capacity building, including governance, for sustainable natural resources management, has emerged as a priority for both a majority of Aboriginal communities and Canada's natural resource industries. The challenge is to accelerate the adoption of community-based approaches that render sustainable economic, social and environmental benefits while fostering greater community self-sufficiency, viability and empowerment.</p>	<p>Facilitate the development of Aboriginal capacity for land and resource management and related economic opportunities, and promote integrated knowledge-based decision making.</p>	<p>By 2003, launch a strategic package of initiatives to increase Aboriginal participation in, and benefits from, the resource-based economy, in partnership with other government departments.</p>

Anticipated outcome

Flexible and reliable property rights infrastructure to support the sustainable development of Aboriginal communities for current and future generations.

Anticipated outcome

Build partnerships for sustainable development of natural resources, enhance the knowledge base, and build S&T capacity in order to develop self-reliant Aboriginal communities.



Action: Enable communities to determine their energy future

Issue	Approach	Target
<p>Energy in northern and remote communities (many of which are Aboriginal and rural) is often much more expensive than in other Canadian communities, and is a major community expense.</p> <p>Communities can benefit from knowing the options available to them to develop and use energy wisely. Communities that identify their future energy needs and options well in advance will have more flexibility in planning paths that best suit their needs.</p>	<p>Develop a comprehensive approach to provide communities (leaders and energy engineers/ technicians) with information necessary for them to understand and plan their future energy requirements and the viable renewable energy and energy efficiency options available to meet those needs.</p> <p>This will build upon the Renewable energy project analysis tool (RETScreen) to facilitate broader option identification and assessment (i.e., including energy efficiency processes and systems tools).</p> <p>The approach will provide information to enable communities to identify relevant social, environmental and economic benefits/ costs associated with each option. Communities will be able to decide for themselves which option (or mix of options) reflects their needs.</p> <p>Partners include the Department of Indian Affairs and Northern Development, Human Resources Development Canada, the Federation of Canadian Municipalities and communities.</p>	<p>By 2001, develop a comprehensive, integrated energy systems approach that encompasses renewable energy and energy efficiency technologies and management practices/systems.</p>

Anticipated outcome

Through the use of local energy resources and using energy more efficiently in northern and remote communities, keep money in the local economy, create local employment, and develop the community skills base through training and employment.



Action: Build infrastructure for sustainable communities

Issue	Approach	Target
<p>As aging municipal infrastructure deteriorates, there is an opportunity to rebuild with innovative, environmentally-friendly technology that advances sustainable development through urban infrastructure renewal.</p>	<p>The department is co-governing the Green Municipal Fund with Environment Canada, Transport Canada and the Federation of Canadian Municipalities to encourage advances in environmental technology and innovation in municipal operations.</p> <p>Projects approved under these funds must demonstrate the highest quality and highest levels of innovation. They will serve as a living laboratory and will provide data and analysis to share with communities across the country.</p>	<p>By 2003, approve projects that have demonstrated environmental or energy improvements of 35% – 50%.</p>

Anticipated outcome

Through state-of-the-art technology and research, improve the quality of citizens' lives in their communities and protect the environment.

Foster more interdisciplinary and collaborative research in areas of national importance and develop new skill sets to help Canada advance sustainable development.

Accelerate the transfer of know-how and technology throughout communities.

