

CANADA
National Reporting to CSD-16/17
Thematic Profile: Land

Preface-

Ensuring the sustainability of Canada's land resources is integral to securing a healthy and sustainable economy that supports safe and prosperous communities. Provincial and territorial governments exercise rights over the resources within their boundaries and thus have primary responsibility for the management and protection of the land resource. This includes land-use planning legislation and regulation, which determines how parcels of land are used or developed. However, the federal government has jurisdiction and responsibilities in areas related to land, including responsibility for First Nations. Agriculture is a shared jurisdiction between federal and provincial governments, as are health and the environment. Stewardship of land resources requires cooperation and collaboration between the two levels of government, indigenous peoples and private landowners. Municipal governments also play a role in the stewardship of land, having been delegated authority from provincial governments to make land-use planning decisions.

In general, the federal government focuses its land resource-related activities on researching, understanding and working with partners to protect and conserve resources; it does not regulate land use or management. For most activities related to land, the federal government works with those that directly manage the resource and maintain its long-term economic productivity. The Prairie Farm Rehabilitation Administration (PFRA), created in 1935 to provide for the rehabilitation of drought and soil drifting areas in the prairies, is a prime example of this approach. The PFRA is charged with developing and promoting agricultural production systems that afford greater economic and environmental security.

Canada recognizes the role that land-use systems and land management practices play in the sustainability of land resource economies, and in meeting increasing expectations of consumers regarding the safety and quality of products produced on and from Canada's land. The following examples represent Canadian actions and initiatives that support and enhance the sustainable development of land.

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| <ol style="list-style-type: none">1. Planning and development of land resources involving all land stakeholders, including indigenous and landless population; strengthened role of land administration systems. |
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Inclusive planning and development processes are required if the benefits of resource development are to be enjoyed by all Canadians. For this to happen it is vital that the indigenous people living on the land are fully engaged in resource planning.

Canada's First Nation Land Management Act (FNLMA) is a sectoral-governance arrangement which provides important building blocks toward self-governance for First Nation communities in Canada. This government-to-government initiative provides participating First Nations with the opportunity to establish their own regimes to manage their lands and resources, providing for more decision making at the local level.

The initiative enables First Nations to make timely business and administrative decisions and to accelerate progress in areas like economic development. It also enables First Nations to enact and enforce sound environmental management and protection laws.

Consultative land planning and development is also a priority in forest management. Under the Canadian Council of Forest Ministers, the extent of consultation with Aboriginals in forest

management planning and in the development of policies and legislation related to forest management indicates the desire of jurisdictions in Canada to provide Aboriginal peoples with the opportunity to become greater participants in sustainable forest management, while respecting their Aboriginal and treaty rights. The forest industry has also taken positive steps in most jurisdictions to consult with and involve Aboriginal peoples in forest management planning, implementation, and harvesting in traditional territories. Furthermore, industry has greatly increased its understanding and respect of the need to protect many of the traditional values and uses of the forest. Over the past decade, there has been less confrontation, more conversation, more mutual respect, and more cooperation in business activities, yielding tangible benefits to First Nations as well as to the companies' bottom lines.

Environment Canada has collaborated with the Province of British Columbia and a number of First Nations groups to develop an innovative approach to sustainable development in the Great Bear Rainforest. Under this initiative, the Government of Canada and the Government of British Columbia will each contribute \$30 million towards sustainable development initiatives for First Nations in the project area, such as ecotourism and harvesting of traditional medicines. A group of private philanthropic organizations will also contribute \$60 million for a variety of conservation projects. Provincial land use planning in British Columbia has resulted in over 1.8 million hectares of protected areas, in addition to areas that will be carefully managed for sustainable forestry.

Internationally, Natural Resources Canada has collaborated with DFAIT and INAC in the delivery of capacity-building workshops in Philippines at the request of the National Commission of Indigenous Peoples (NCIP) to strengthen their institutional capacity to deal with Indigenous, land and mining issues. Canada's participation focused on sharing Canadian Industry-Aboriginal leading practices and information tools, such as the [Mining Information Kit for Aboriginal Communities](#).

2. Integrated assessments of socio-economic and environmental potentials of land resources

To understanding the economic and environmental potential of Canada's land resources, it is also necessary to understand the full range of impacts of resource development. [Comprehensive Community Planning](#) is an important tool to reach sustainable community development. It helps First Nation communities develop a long-term vision of their communities, and a comprehensive and integrated plan to achieve this vision. It is a planning process that is driven, designed and implemented by the community for the community. It is an ongoing process that addresses all aspects of community life, such as governance, land and resources, health, infrastructure development, culture, social issues and the economy.

The [Community Information Database](#) (CID) is a free Internet-based resource that provides communities and governments with consistent, reliable, and accessible information on economic and demographic factors at the community level. It can be used for community planning, identifying new business opportunities, creating community and regional profiles, proposal writing, and program and policy development. Launched in the fall of 2006, the CID has received excellent reviews to date from users across Canada. Future plans for the CID include the addition of more current data, negotiations with other government departments to incorporate new data that would be of interest to communities, and looking at ways to enhance the site and its accessibility.

3. Local community-based programmes to sustainably enhance the productivity of land and the efficient use of water resources.

Sustainable development and the efficient use of resources are most effective when local communities (defined socially or geographically) lead initiatives. Indian and Northern Affairs Canada provides funding to First Nations and First Nations technical organizations to support the Circuit Rider Training Program, which is the main vehicle by which most First Nations operators receive the required training to operate water systems. This program provides qualified experts who rotate through a circuit of communities, providing hands-on training for operators. This program, combined with the Safe Water Operations Program, ensures that all First Nations have access to 24-hour technical support through hotlines and hands-on oversight of water treatment plants by certified professionals.

The number of water treatment system operators who have achieved the first level of certification or greater has increased from 8% of all operators in 2003 to 37.4% of all operators in 2007, resulting in 875 water and wastewater operators who are receiving on-going training. The program is being expanded to ensure that it is available to all First Nations. Training is also being adapted to ensure that operators achieve certification under provincial regimes.

Landscape- or community-based integrated resource planning and management processes like Integrated Water Resources Management (IWRM) and Equivalent Agri-Environmental Planning (EAEP) provide the opportunity to strategically target land and water issues of importance. IWRM and EAEP allow for the local identification and strategic targeting and response to environmental issues. IWRM is a multi-stakeholder, multi-sectoral planning process usually carried out on a watershed basis to holistically manage natural resources and human systems in balance with environmental, social and economic needs. EAEP is a farmer-driven iterative planning process to identify and address agri-environmental risks within a geographic area or sector, to achieve cumulative environmental benefits. Both IWRM and EAEP processes involve education and awareness development, scanning, risk assessment, issue identification, goal setting, monitoring and evaluation. Provinces and territories have primary responsibility for managing resources and are mandated to deliver IWRM within their jurisdictions. Agriculture and Agri-Food Canada works with provinces, territories, First Nations and Environment Canada to support IWRM initiatives.

4. Development and use of land-use indicators and related monitoring systems.

Statistics Canada monitors land-related changes as a component part of the Canadian System of Environmental Resource Accounts (CSERA), which was developed to measure the relationship between the economy and the environment. The goal is to track changes in land through the development of land use/cover change matrices and indicators. Examples of these indicators include those that depict the loss of dependable agriculture land as a result of urban expansion, and the diminishing supply of dependable agriculture land in comparison to land under cultivation.

The Government of Canada established the National Agri-Environmental Health Analysis and Reporting Program (NAHARP) to help ensure that the agriculture industry is on the path to be a leader in environmentally responsible production while improving air, water and soil quality and conserving biodiversity. More than ever, achieving environmental sustainability in agriculture has become a pressing and complex challenge. In some sectors, environmental concerns pose a direct constraint to growth, and could increasingly affect the agriculture industry's ability to serve existing international markets and to compete for new ones. To manage these concerns effectively, it is important to first understand the pressures and opportunities that exist in terms of environmental sustainability. In 1993, in response to the need for agri-environmental information and to assess

the impacts of agricultural policies on the environment, AAFC began developing a set of agri-environmental indicators to determine how environmental conditions within agriculture were changing over time, and how such changes could be explained. Results of this work were published in February 2000 in a report called [Environmental Sustainability of Canadian Agriculture: Report of the Agri-Environmental Indicator Project \(2000\)](#). AAFC continues to strengthen its capacity to develop and continuously improve agri-environmental indicators, as well as the tools that use these indicators. Indicators of soil quality such as wind, water and tillage erosion, soil organic carbon and desertification are included in NAHARP. Other indicators monitor environmental farm management, water quality, air quality, biodiversity and the food and beverage industry. An interim report, [Environmental Sustainability of Canadian Agriculture: Agri-Environmental Indicator Report Series – Report #2](#), was published in 2005.

Canada's new plot-based [National Forest Inventory](#) provides timely and accurate measurement and monitoring of the sustainable development of Canada's national forests. By collecting and reporting information to a set of uniform standards, consistent reporting across the country is possible. The information will provide a baseline of where forests are and how they are changing over time. National Forest Inventory also provides a framework for collecting additional data about forest health and productivity, biodiversity, and the social and economic values supported by forests.

5. Long-term land conservation and rehabilitation programmes to arrest land degradation.

The Government of Canada has many land-related research projects underway across the country aimed at understanding and improving the health and sustainability of Canada's landscapes. The federal government also currently supports and delivers many land-related programs aimed at encouraging the sustainable or appropriate use and management of land-based resources in Canada and overseas.

The passage of the Prairie Farm Rehabilitation Act in 1935 led to the formation of the Prairie Farm Rehabilitation Administration. The Act provides for the adoption of land management methods to secure the rehabilitation of lands affected by drought and the subsequent soil drifting. One of the early steps taken by PFRA to address the severe soil erosion problem was the creation of the Community Pasture Program. This was done with the cooperation of the Governments of Saskatchewan and Manitoba. Today the Community Pasture Program encompasses 85 pastures comprising 930,000 hectares.

The primary intent of the Community Pasture Program is to conserve the land resource, protect it from future deterioration due to drought, while utilizing the land primarily for the breeding and grazing of livestock. The Community Pasture Program's mission is to manage a productive, bio-diverse rangeland and to promote environmentally responsible land use and practices. The program does this by utilizing the valuable land resource to complement livestock production. In addition, this program provides stakeholders with expertise and services for the sustainable use of land and water by developing and communicating the best practices in agriculture.

The AAFC-PFRA [Prairie Shelterbelt Program](#) provides technical support to enhance farm sustainability and the protection of soil and water resources. Tree and shrub seedlings are available to prairie landowners for farm, field, and wildlife shelterbelts, and conservation and other agroforestry plantings. Over the last ten years the Prairie Shelterbelt Program has enabled the establishment of 7,539 km of field shelterbelts, protecting over 143,000 ha of agricultural soil from wind erosion. The Program provides technical assistance to show how tree plantings can support sustainable agriculture by improving soil moisture and reducing soil erosion and energy

requirements. Agroforestry researchers at the Shelterbelt Centre develop new types of trees and uses for new and existing species.

The [National Environmental Farm Planning \(EFP\) Initiative](#) assists the agriculture sector in identifying its impacts on the environment and promoting the growth of stewardship activities. Individual farmers use these plans to systematically identify environmental risks and benefits from their own farming operations, and to develop action plans to mitigate the risks. The EFP process allows farmers to set priorities for actions that address on-farm environmental concerns, as well as those serving the public interest. Producers who develop EFP's may be eligible for technical and financial assistance to implement their on-farm action plans through the National Farm Stewardship Program. To date, 70,000 Canadian farmers have participated in the EFP ;, over 49,000 have developed and implemented EFP's on their farms.

The [Greencover Canada](#) program is an initiative to help producers improve grassland-management practices, protect water quality, reduce greenhouse-gas emissions, and enhance biodiversity and wildlife habitat. It contains four components: converting environmentally sensitive land to perennial cover; improving management of agricultural land near water bodies; technical assistance to help producers adopt beneficial management practices; and planting trees on agricultural land. This program is the latest in a series of permanent cover and conservation programs focussed mainly on the conversion of sensitive crop lands to perennial cover; it has resulted in the conversion of 185,00 ha of land into perennial cover.

The [National Farm Stewardship Program](#) (NFSP) provides technical and financial assistance to support the adoption of beneficial management practices by agricultural producers and land managers. Beneficial management practices (BMPs) are farm management practices that: minimize and mitigate impacts and risks to the environment, by maintaining or improving the quality of soil, water, air and biodiversity; ensure the long term health and sustainability of natural resources used for agricultural production; and support the long-term economic and environmental viability of the agriculture industry. Recognizing that agricultural landscapes, farming practices and potential environmental risks vary across Canada, the National Farm Stewardship Program has been designed to allow provinces the flexibility to support BMPs that address regional priorities. By ensuring that the thirty BMPs eligible under the program are nationally acceptable and regionally appropriate, the NFSP supports Canada's objective to be recognized as a leader in environmentally responsible agricultural production. To date, the NFSP has supported over 20,000 BMP projects across Canada.

The Government of Canada routinely uses its internal expertise to further Canada's foreign policy and trade objectives. For example, land and water management expertise has been provided to assist CIDA and AAFC in various international endeavours. These projects have from small initiatives valued at a few hundred thousand dollars and lasting several weeks or months, to multi-million dollar projects that span 8 to 10 years. To date, PFRA has operated in over 20 countries.

- **Ethiopia.** PFRA is the Canadian Executing Agency (CEA) for a \$7.5 million CIDA project. The theme is water harvesting and institutional strengthening. The project began in 1998 and concluded in March,2007. CIDA and the Government of Ethiopia have deemed that the project was successful despite having to overcome a number of severe obstacles.
- **Sri Lanka and the Maldives.** CIDA and PFRA is now delivering soil and water management training to the Governments of Sri Lanka and the Maldives so that they can better manage the soil and ground water aquifers that were contaminated by the tsunami.
- **China.** PFRA is providing significant levels of technical expertise to the Sustainable Agriculture Development Project, a multi-million dollar CIDA initiative. Expertise is primarily related to

rangeland management, and PFRA is providing training in China and in Canada. Most recently, a PFRA technical manager was seconded by MISB as the in-China manager for the project.

6. Promoting women's equal access to and full participation in land decision-making; gender mainstreaming of all land policies and strategies.

The International Development Research Centre (IDRC) works with the [International Land Coalition](#) (ILC) to improve rural poor women's access to and ownership over land and other productive resources. Emphasis is on understanding gender, social and power relations that govern tenure, to support secure access to resources in practice. IDRC commissioned ILC to conduct sub-regional studies of existing laws and policies related to land tenure, and processes of decentralization, and their impact on gender inequities in land title, use/ownership and decision-making. Work also examines how women gain access to land and resources in practice, and gathers evidence on how access to land changes women's economic position.

7. Strengthened information systems and use of GIS for integrated planning and management of land resources.

The Earth Sciences Sector (ESS) of Natural Resources Canada has been working internationally to increase the effectiveness of its contributions to achieving the Millennium Development Goals. For example, the seven-year, \$50M geoscience project entitled "[Multi-Andean Project - Geoscience for Andean Communities \(MAP:GAC\) initiative](#)" undertaken by ESS with the Andean nations to address natural hazards management has been hugely successful. Canada's dialogue with the Andean region was strengthened and institutionalized through the project, which addressed cross-national/regional issues such as natural hazard mitigation, disaster preparedness, land use planning, governance, migration, and social and economic development.

Canada's National Agroclimate Information Service (NAIS) was established in 2001 to monitor and analyze agroclimate conditions in order to help the agricultural industry better prepare and cope with weather. NAIS monitors drought and other conditions brought about on agricultural land by weather and climate extremes, and provides near-real-time Internet updates. It also monitors and assesses present and potential drought conditions in Canada, assesses regional drought triggers, interprets weather forecasts for agriculture, and develops national databases for assessment of historic climate trends and probable scenarios of future variability under a changing climate. NAIS also works with other government agencies and initiatives to provide agro-climate related tools for decision and policy support.

The [National Land and Water Information Service](#) (NLWIS) is an Internet-based service being developed to provide on-line access to agri-environmental information to help Canadians make responsible land-use decisions. The project is being led by AAFC, in close collaboration with other federal departments, provincial, territorial and municipal governments, non-government organizations, producer and industry groups, and academic institutions. NLWIS will link agri-environmental information from these dispersed sources and make it available on the Internet.

By providing geospatial information, decision-support tools, and improvements in national data collection, analysis and reporting, the NLWIS will support a number of environmental programs. This service will benefit the agricultural sector and all Canadians by contributing to the development of better agri-environmental policies. It will increase public awareness of the relationship between agriculture and the environment, and improve land-use decision making and risk management.

Development of the NLWIS will build on other efforts to reduce agricultural risks and better use Canada's land, soil, water, and biodiversity resources. Among these efforts are initiatives to identify beneficial management practices that protect land from wind and water erosion, improve water supply and quality, and enhance biodiversity and increase carbon sequestration in the soil; help producers adopt these practices for soil, nutrient and livestock management; and measure and track the environmental performance of Canadian agriculture.

The maintenance, development and public distribution of soil resource data for Canada is a major area of activity within AAFC. These data are housed within the National Soil Database as part of the Canadian Soil Information System (CanSIS). The NSDB contains digital soil maps and data for all regions of Canada at various scales, and includes the Soil Landscapes of Canada information products, the Ecological Framework for Canada, regional soil maps and reports, and a site-specific database. In addition, the CanSIS-NLWIS Web site presents several interactive on-line applications, with hundreds of historical soil survey reports, technical manuals and non-digital maps available as PDF files for viewing and downloading.

8. Strategic urban planning approaches aimed at managing urban growth, limiting urban sprawl and reducing the number of people living in poverty in urban and rural areas.

Urban sprawl and the loss and fragmentation of agricultural land are important issues in many areas of Canada. To address these, AAFC supports land-use planning authorities, provincial and local government land-use planning initiatives, and local informal decision-makers with expertise, decision support tools, and environmental and economic data about the agriculture sector, including:

- environmental systems (e.g., air, biodiversity, soil, water and their interactions);
- sustainable agricultural production systems;
- rural systems (e.g., communication, program delivery, measuring and evaluating impacts on rural communities and their economic well-being);
- land-use planning partnerships;
- development of tools and environmental information that supports and informs local and regional agricultural land-use planning decision makers;
- knowledge and information systems

9. National research on the local land resource system and on environmentally sound, site-specific, low-cost technologies, and provision of related extension services.

In light of the many opportunities and challenges facing Canada's agricultural sector at the beginning of the 21st century, and recognizing that responsibility for agriculture is shared by governments, the federal government announced in June 2002 Canada's Agricultural Policy Framework (APF), a joint federal– provincial–territorial initiative. All provinces and territories entered into implementation agreements with the federal government under that framework Which is designed to move Canadian agriculture to a position of world leadership in food safety, innovation, and environmentally responsible food production. The APF comprises five elements: business risk management, food safety and quality, science and innovation, environment, and renewal.

With respect to land, the environment chapter of the APF sets out targets for the reduction of soil erosion and an increase in soil carbon. The APF also commits the federal, provincial and territorial governments to make available to land use decision-makers tools and environmental information that support and inform local and regional land-use planning and management.

Initial discussions regarding the next generation of agriculture and agri-food policy for Canada recognize the role that agricultural land-use systems and land management practices play in generating both positive and negative impacts on the environment in general, and sustainability of the land resource in particular. The role that these systems and practices will play in meeting the ever-increasing expectations of consumers regarding the safety and quality of food produced on Canada's agricultural land has also been recognized.

The Agriculture Policy Framework expires in 2008. In June 2007, Ministers of Agriculture from the Government of Canada, provinces and territories agreed in principle on a vision for its successor, entitled [Growing Forward](#). It forms the basis for federal, provincial and territorial governments to work toward a new agriculture policy framework

AAFC is currently developing a Strategy for Agricultural Land to inform the development of future policies and programs aimed at ensuring that the natural capital inherent in the agricultural landscapes is managed in a manner that sustains its productive capacity into the future. To achieve this, the Strategy identifies the priority issues impacting the sustainability of agricultural land in Canada, and strategic outcomes to work towards.

The Watershed Evaluation of Beneficial Management Practices program is measuring the economic and environmental performance of BMPs at the micro-watershed scale at seven regional sites in Canada. This will provide valuable information on the relationship between common farm management practices (e.g., permanent cover crops and manure management techniques) and key environmental indicators (e.g., water quality).

10. Environmentally sound, effective and efficient use of soil fertility improvement practices and agricultural pest control.

There are many land and soil-related research projects underway in Canada aimed at understanding and improving the health and sustainability of Canada's soils and agricultural landscapes. Some specific research projects include: development of fertigation techniques (fertilization with irrigation water) to optimize soil quality in the root zone; establishing methods for efficient, sustainable and environmentally-responsible use of nutrients applied to soil; developing efficient manure application techniques which improve soil quality and avoid nutrient loading in the surrounding ecosystem; developing improved procedures and interpretations for soil tests; evaluating the effectiveness of erosion control practices in reducing runoff and soil loss; and measuring impacts of heavy metals on the soil ecosystem.

The Pesticide Risk Reduction Program, a joint initiative of AAFC and Health Canada's Pest Management Regulatory Agency, works to reduce the risks from pesticides used in the agriculture and agri-food industry. These include risks to human health, risks to biodiversity resulting from impacts on non-target organisms, and risks to air, water and soil. The program creates a framework through which growers develop and implement pesticide risk reduction strategies. It focuses on selected crops and priority pest management issues that are determined through stakeholder consultations at a national level. The Program provides funding and regulatory support for the implementation of developed strategies.