



Marking Canada's Progress in Sustainable Forest Management



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Ask Canadians today what they think the top priority for managing the country's forests should be and you will likely hear a three-part answer: maintain healthy forests, support and promote profitable forest-based businesses, and strengthen forest communities.

That's because most people understand that managing Canada's forests responsibly and sustainably means recognizing the close interconnections between the environment, the economy and social well-being.

This triple bottom line is what underscores sustainable forest management (SFM) in Canada. Far from the largely timber-focused management approach of the past, SFM works to address and balance a wide range of environmental, economic and social aspects so that the needs and expectations of all forest users might be met today and in the future. A comprehensive approach like this requires more than dealing with just the immediate challenges of the day, such as job losses in the industry or damage to forest resources from pest infestation. It also requires working to predict long-term trends so that Canadians can plan how best to maintain the health and well-being of the country's forests and forest economy 5, 10 and even 100 years from now.

A Vision for Canada's Forests: 2008 and Beyond, issued by the Canadian Council of Forest Ministers in 2008, clearly reaffirms the Council's ongoing support for SFM and for Canada's global leadership in this area. The two goals presented in the vision align well with the principles and practice of SFM:

- Ensure a prosperous and sustainable future for Canada's entire forest sector.
- Become a world leader in innovative policies and actions to mitigate and adapt to the effects of climate change on our forests and forest communities.

How is Canada doing in managing its forests sustainably?

***Marking Canada's Progress in Sustainable Forest Management* provides an overview of the country's progress in achieving SFM, and presents a sample of the latest data and trends for a range of environmental, economic and social indicators. The indicators are part of the national Criteria and Indicators (C&I) framework, the primary tool used in Canada for measuring progress in advancing SFM.**

As well as building on the vision document, this summary presents updates on several indicators related to the two goals set out in the vision. Such information will continue to help inform future decision-making in all areas of Canada's forest sector.

Sustainable forest management:

Management that maintains and enhances the long-term health of forest ecosystems for the benefit of all living things while providing environmental, economic, social, and cultural opportunities for present and future generations.

Canadian Council of Forest Ministers, 2008

For detailed information about sustainable forest management in Canada, visit SFMCanada.org



The SFM approach to tackling complex issues: The case of the mountain pine beetle epidemic

British Columbia's mountain pine beetle epidemic illustrates well the complexity and interconnectedness of issues—environmental, economic and social—that make sustainable forest management (SFM) as challenging as it is necessary.

A decade ago, a large inventory of mature lodgepole pine in the province, together with a succession of warmer-than-normal winters, created ideal conditions for enabling a small infestation to balloon into a massive one. By 2007, about 40% of B.C.'s mature pine had been killed by the beetle. By 2019, those losses are expected to amount to 71%. All-out efforts to salvage beetle-infested timber increased harvest rates in some forest districts by 70%, but those rates are expected to fall well below normal levels in the next few years. Both extremes have posed substantial challenges for forest industry companies, for provincial resource planners, managers and decision-makers, and for the forest workers and communities in the areas affected.

In addition, because forests play a vital role as carbon sinks in the global cycling of carbon dioxide, the damage to more than 10 million hectares of forest in B.C. means a reduced capacity to capture and store carbon. Not only that, but the huge areas of beetle-damaged forest are now beginning to emit carbon as the dead trees and debris begin to decompose. This dead wood is being considered as a potential bioenergy source. Using dead wood

Using C&I to measure and report on SFM

Canada's national framework of 6 criteria and 46 indicators has become a key tool for defining, measuring, tracking and reporting on our progress toward SFM. The C&I were developed with extensive input from stakeholders in the forest community. Together they provide:

- a common framework to monitor, assess and report on trends in forest conditions with respect to the full range of forest values and, in turn, on the progress toward SFM;
- a common conceptual framework for SFM within which forest-related policies and policy measures can be developed and reviewed; and
- a common ground on which stakeholders, public agencies and governments can work out shared objectives and collaborative actions toward SFM.

To learn more about the C&I framework, go to ccfm.org

allows us to capture the energy contained in the wood. Although the use of dead trees for bioenergy will accelerate the release of carbon to the atmosphere, over time this carbon would be released through decomposition anyway. Moreover, the use of bioenergy reduces fossil carbon emissions. To address concerns about the potential impacts of large-scale removal of woody biomass on wildlife habitat, biodiversity, water quality and soil productivity, site selection and harvest practices need to be designed within the guidelines of sustainable forest management.

Working through issues and varying opinions like these has taken time and considerable effort on the part of all levels of government and key stakeholders. However, *British Columbia's Mountain Pine Beetle Action Plan 2006–2011* sets a course aimed both at mitigating the impacts of the epidemic in the short term and ensuring sustainability in the long term. This plan reflects the value of SFM processes—such as broad public dialogue and adaptive, science-based decision-making—that take into account the best interests of all three parts of a healthy forest sector: the environment, the economy and social well-being.





Canada's Progress in SFM: Overview

Canada is the world's largest exporter of forest products, contributing more than \$20 billion to Canada's balance of trade in 2008. The country's forest industry contributed 1.9% of the national GDP in 2008 and directly employed more than 270 000 people.

Harvest rates across Canada are set at levels to ensure long-term ecosystem sustainability. As a result, the country's forests are able to support species diversity and resilience over vast landscapes with dynamic, ever-evolving ecosystems. Compliance with forest regulations that work to conserve and protect soil and fresh water is high throughout all jurisdictions and also contributes to sustainability. And today in Canada, renewable bioenergy from forests accounts for more than 55% of the total energy used by the forest sector, thus helping to reduce greenhouse gas emissions.

Across Canada, forests support hundreds of communities, most of which are rural. Many Aboriginal people depend on forest-based activities to secure their economic and social well-being. And forests are valued by Canadians as part of their cultural identity and as a favoured place of recreation.

Canada is currently a world leader in sustainable forest management. However, continued success will require ongoing diligence. In particular, challenges remain in terms of overcoming low rates of return on capital investments and becoming more competitive in the international marketplace. There is an ongoing need to respond and adapt to changing public demands for alternative forest uses, as well as to continue to address impacts of pollution and invasive species on forests. Further progress in increasing Aboriginal participation in sustainable forest management, and improving the resilience and well-being of our forest-dependent communities will help move the vision for Canada's forests forward. Continuing to manage our forests to maintain the resilience of forest ecosystems will be an ongoing challenge as climate change and other stressors continue to cause impacts.

A selection of indicators used to measure and report on SFM is summarized here.

To learn more about other indicators, visit canadaforests.nrcan.gc.ca/indicator



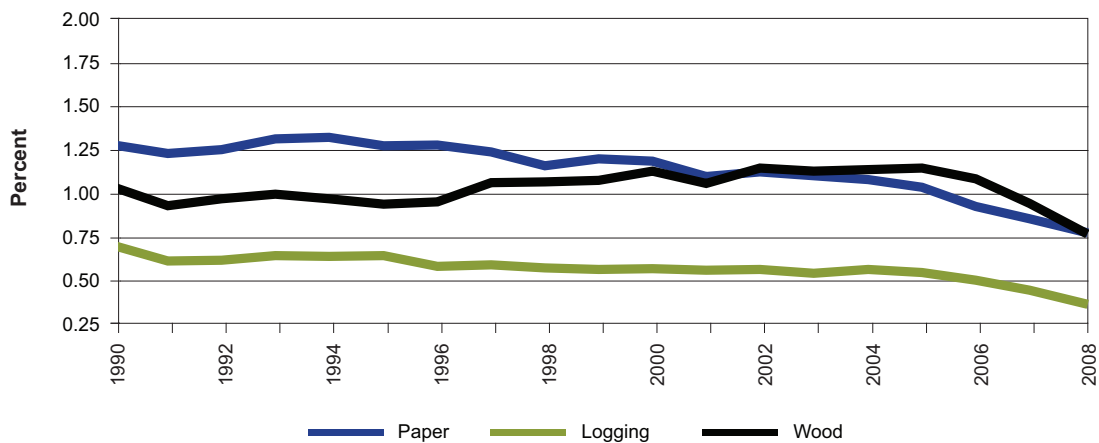
Contribution of timber products to GDP

Comparing the gross domestic product (GDP) of the timber products sector with the GDP of the Canadian economy as a whole provides insight into the contribution of Canada's timber products to the country's economy.

The relative contribution of the timber products sector to the GDP fell to a record low in 2008, contributing \$28 billion, or 1.9% of the GDP. This drop reflects a contraction of the forest industry due to both long-term structural declines in timber product demand and a short-term, sharp, temporary drop in demand associated with the global recession.

In the long run, the contribution of timber products to Canada's GDP will depend in part on how well Canadian producers can position themselves to take advantage of emerging marketplace opportunities.

Contribution of the timber products sector to GDP by subsector



Source: Statistics Canada

Direct, indirect and induced employment

Canada's forest industry has long been an important source of jobs across the country, especially in many rural communities where the industry is the primary source of income. In addition to direct employment, the forest industry provides indirect and induced employment:

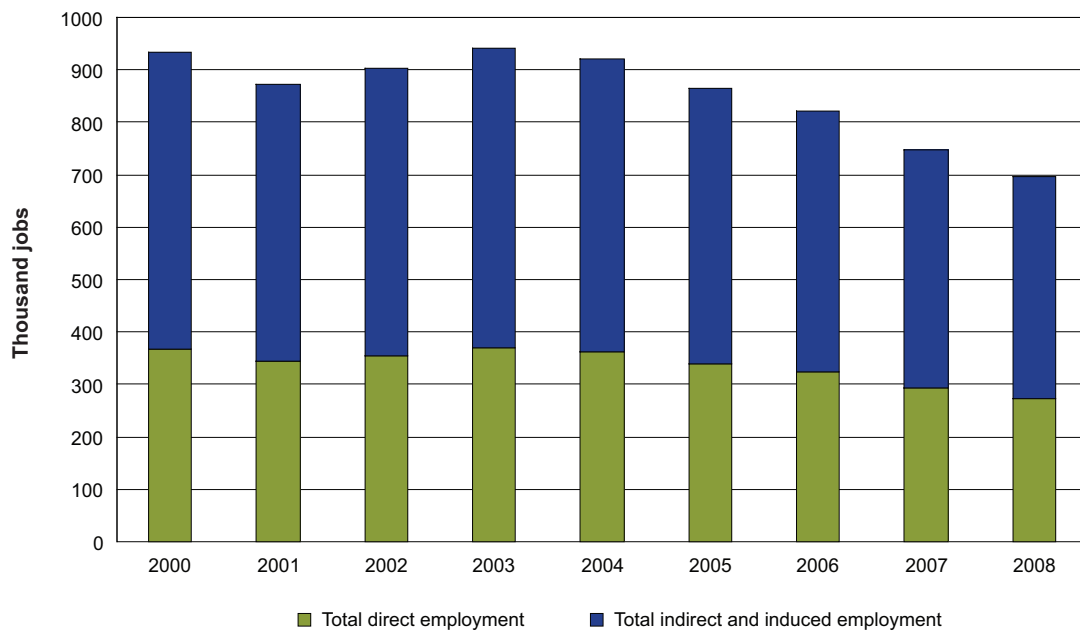
- indirect employment—jobs created by forest activity but outside the industry (e.g., from capital investment, transportation of products to markets, purchases of intermediate goods)
- induced employment—jobs created when forest industry workers or those employed in forest-related activities purchase consumer goods.

Canada's forest industry employment has been declining since 2004. In 2008, the industry directly employed 273 700 people, a drop of 6.9% from 2007 employment numbers and the lowest level of forest industry employment in the last 20 years. The primary areas of decline were in wood products manufacturing (down by 11.9%) and forestry, logging and support activities (down by 10.7%).

Direct, indirect and induced employment are expected to continue declining in 2009 as a result of:

- continued softening of the U.S. housing industry and, with it, weakening of demand for Canadian wood products; and
- continued growth in the use of electronic media and a decline in traditional print media (such as newspapers), causing demand for pulp and paper products to fall.

Employment in the forest industry



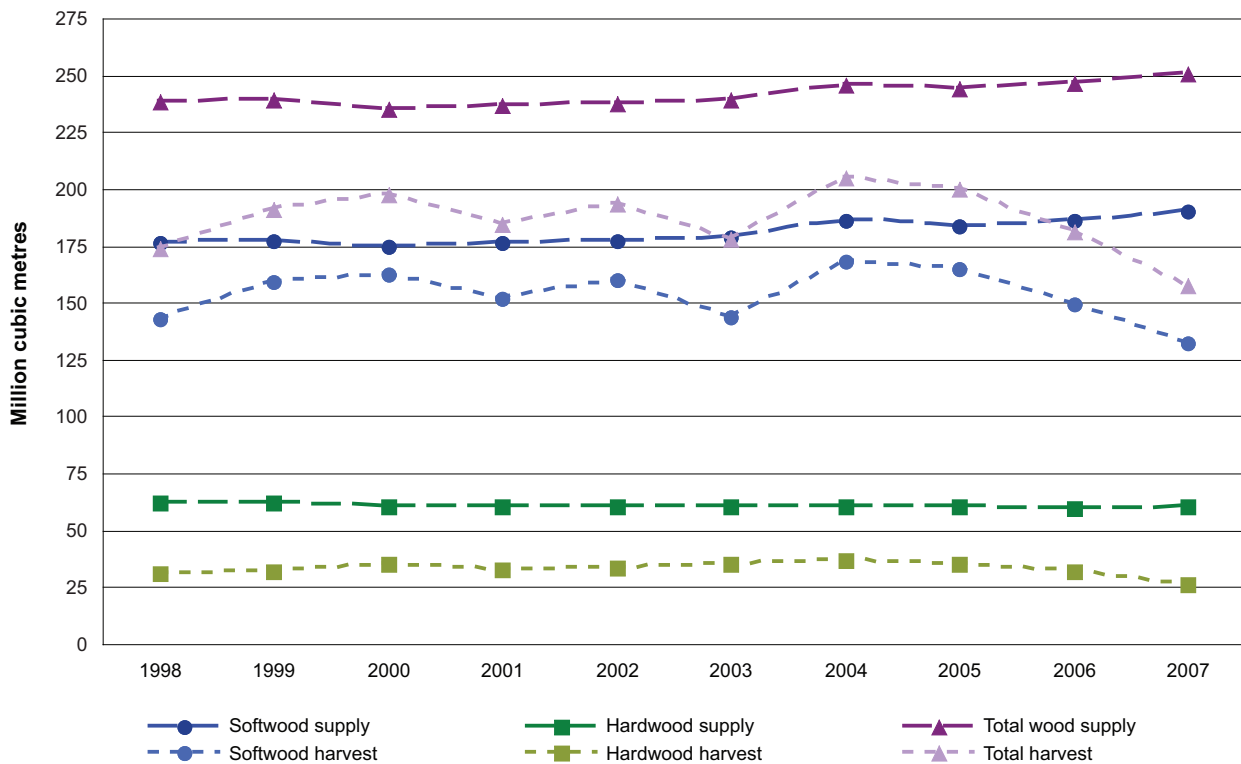
Source: Statistics Canada, Labour Force Survey, January 2009 (special extraction)

Annual harvest of timber relative to the level of harvest deemed to be sustainable

This indicator compares the amount of wood harvested with the amount that could be harvested without affecting the long-term sustainability of the forest resource. Tracking the amount of timber actually harvested in Canada compared with the country's estimated wood supply shows how we are doing in terms of maintaining a flow of benefits to society relative to the productive capacity of the forest.

Canada's wood supply has remained relatively stable since 1990, reaching 250 million m³ in 2007, including 190 million m³ of softwoods and 60 million m³ of hardwoods. Harvests, meanwhile, have been below supply over the past 10 years. Softwood harvests have stayed around 153 million m³ per year over the past decade—about 15% below the estimated wood supply. Hardwood harvests have remained relatively constant over the same period at about 33 million m³ per year, well below the estimated wood supply of 60 million m³ per year.

Annual harvest versus supply deemed sustainable for harvest



Source: National Forestry Database



C&I framework: A useful tool

The C&I framework offers an important tool when considering progress in the two main priority areas set out in *A Vision for Canada's Forests: 2008 and Beyond*—forest sector transformation and climate change mitigation and adaptation.

Many of the same indicators used to measure and report on SFM through the C&I framework present valuable information pertinent to the goals of the vision. Several examples are shown here.

To learn more about other indicators pertinent to the two goals, visit canadaforests.nrcan.gc.ca/indicator

Ensure a prosperous and sustainable future for Canada's forest sector

Transforming Canada's forest sector so that it maintains global economic competitiveness is a key step toward forest community prosperity and sustainability and contributing to the country's economic well-being now and into the future. What efforts are required to help Canada successfully achieve this goal? Examples include promoting innovation in the sector, expanding the way in which forest resources are used, increasing Aboriginal participation, and advancing creative changes in public policies that apply to resource management.

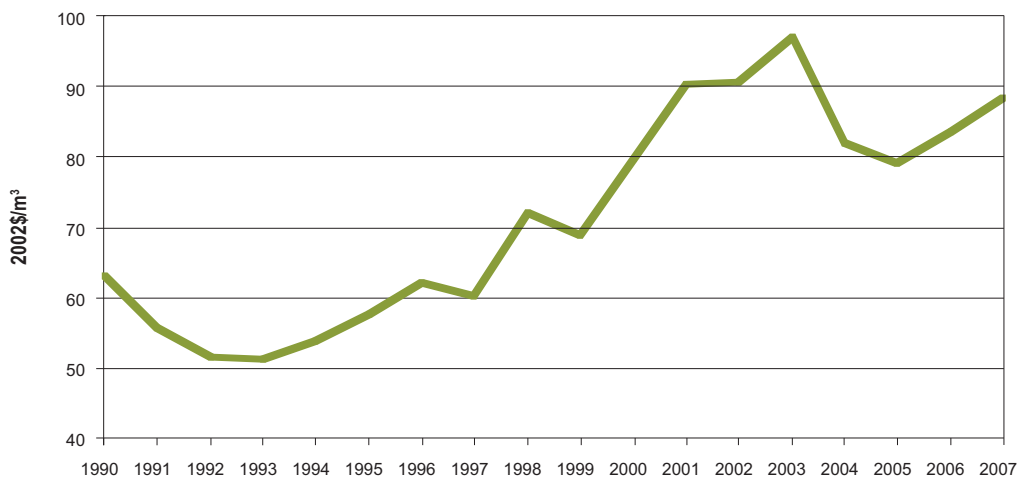


Value of secondary manufacturing of timber products per volume harvested

Secondary manufacturing of timber products is a way of increasing the economic impact of the forest industry without increasing the harvest. This indicator tracks the value of secondary manufacturing of timber products in Canada.

The sales value of secondary manufacturing of timber products per cubic metre of harvested wood rose by 75% between 1993 and 2007 (from \$51/m³ to \$89/m³). Secondary manufacturing industries have expanded more quickly than primary manufacturing industries, with the former accounting for 35% of the total contribution of timber products manufacturing to the economy in 2007, up from 15% in 1995. Ontario has the most secondary manufacturing industries of all jurisdictions in Canada. In 2007, 40% of the overall value that was added by Canadian secondary manufacturing of timber products was generated in Ontario. Quebec followed with 31% and British Columbia with 13%.

Value of secondary manufacturing of timber products per volume harvested



Source: Statistics Canada

Contribution of non-timber forest products, forest bioproducts and forest-based services to GDP

Comparing the gross domestic product (GDP) of the non-timber products sector, forest bioproducts sector (including bioenergy) and forest-based services with the GDP of the Canadian economy as a whole provides insight into their contribution to Canada's economy.

Non-timber forest products (NTFP) include more than 500 botanical products and all products generated directly or indirectly from organisms living in forest ecosystems. Forest services include wildlife viewing, hunting and recreational activities in Canadian forests.

Forest bioproducts is an emerging sector that is expected to contribute substantially to GDP in the near future. The traditional NTFP sector is a highly diverse sector that has been estimated to contribute as much as \$1 billion to the Canadian economy. Spending on outdoor nature-related activities, last surveyed in 1999, was estimated to be \$11 billion, leading to a total contribution of \$12.1 billion to Canada's GDP. Overall, notwithstanding the deleterious effects of changing weather patterns on some products (such as maple syrup), the NTFP, forest bioproducts and forest-based services sectors are expected to grow as forest-based communities and the forest industry look to diversify their economic opportunities.

Examples of non-timber forest products (NTFP), forest bioproducts and forest-based services produced in Canada

Category	Examples
Wild edible food products	Functional foods, mushrooms, berries, herbs, vegetables and spices, honey, tree saps, tree nuts, wild rice, understory plants, essential oils, seeds, teas, flavouring agents
Decorative and aesthetic products	Florals and greenery (e.g., salal), craft products, Christmas trees, native crafts, specialty wood products and carvings, cones
Landscape and garden products	Transplants (trees, shrubs, wildflowers, grasses), mulches, soil amendments
Health and personal care products	Pharmaceuticals, nutraceuticals, cosmeceuticals, aromatherapy oils, herbal health products, fragrances
Forest bioproducts	Bioenergy (including biofuels), biochemicals, biopesticides
Forest-based services	Carbon storage, tourism and education, biodiversity conservation, recreation, water quality

Take action to mitigate and adapt to the effects of climate change on our forests and forest communities

Maintaining a healthy, sustainable forest sector in this period of changing climate patterns requires looking to new and innovative strategies to both mitigate and adapt to the effects of the changes on forest and forest-dependent communities. For example, reducing

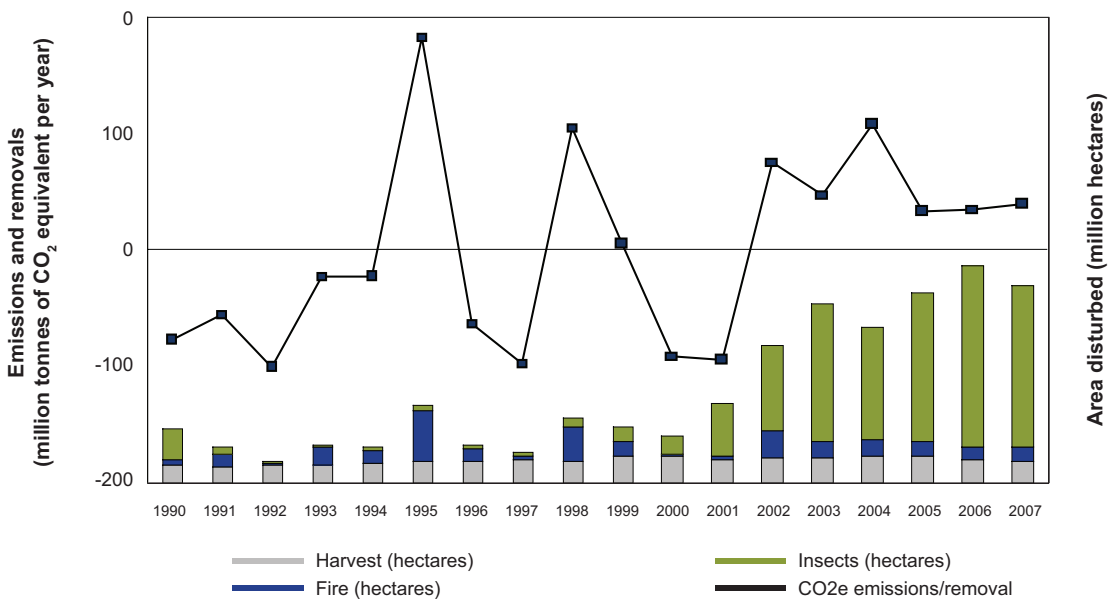
the conversion of forested lands to other uses is one way to maintain or increase carbon stocks. It also contributes to creating a sustainable supply of timber and fibre for industry use. Another example is helping forest-based communities diversify economically so that they are better able to adapt to shifts in industry circumstances that may result from forest resources influenced by climate change.

Net change in forest ecosystem carbon

Monitoring trends in carbon emissions and removals in Canada's managed forests enables the future role of the forests in the global carbon cycle to be anticipated and the success of the sector's mitigation activities to be tracked.

Canada's managed forests have acted as net carbon sinks in 11 of the 18 years between 1990 and 2007. It is difficult, however, to discern an overall trend given the large yearly variations of emissions and removals. Projections of future carbon emissions and removals indicate that Canada's managed forests will likely act as net carbon sources during the period 2008–2012. Although emissions from natural disturbances, such as wildfires and insect infestations (see the sidebar on page 3), will continue to release carbon, improvements in carbon uptake can be achieved through forest management.

Carbon emissions/removals in Canada's managed forests



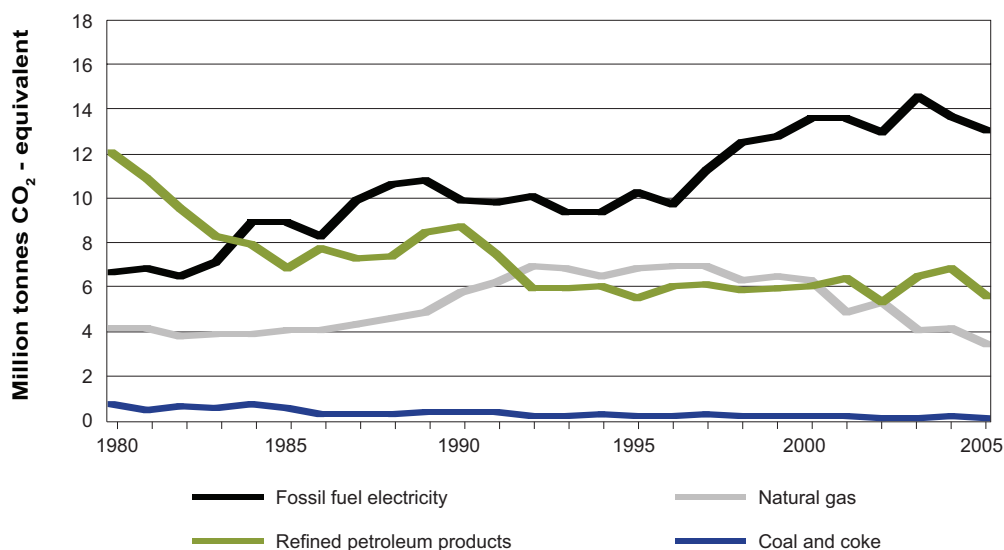
Source: National Inventory Report 2007, Environment Canada (based on CFS data/analysis)

Forest sector carbon emissions

The Canadian forest sector uses large quantities of energy from a range of sources in harvesting, transporting and processing timber to produce pulp, paper, lumber and other wood products.

Tracking the sector's emissions of carbon dioxide (CO₂) and other greenhouse gases (GHGs) provides a means of assessing how effectively the forest sector is contributing to the national goal of reducing atmospheric GHG concentrations. By switching from fossil fuels to other energy sources, the forestry sector has achieved a substantial drop in overall fossil fuel GHG emissions at a time when energy use in the sector has increased. Significant improvement in energy efficiency is also helping to limit growth in both energy use and emissions despite an increase of almost 50% in pulp and paper production between 1980 and 2005.

Forest sector fossil fuel GHG emissions (expressed in CO₂-equivalent tonnes) annually, by fuel type, 1980–2005



Source: Natural Resources Canada



Steps for Sustainable Forest Management

The examples below show how members of the **Canadian Council of Forest Ministers** are collaborating with others to achieve **SFM** while at the same time advancing the goals of forest sector transformation and climate change considerations:

- **Research and development:** In a joint forest research and development initiative, the **Natural Sciences and Engineering Research Council of Canada (NSERC)**, **FPIInnovations** and **Natural Resources Canada** are working to identify commercially relevant research that could lead to the creation of new market opportunities for the Canadian forest sector.
- **Forestry Industry Diversification Fund: Newfoundland and Labrador** has established a diversification program that will help the forest industry develop new forest products and gain access to new global markets.
- **Reforestation incentives:** As part of its strategy to help reduce the effects of climate change, **Prince Edward Island** will be providing incentives for landowners to remove marginal land from agricultural production, coupled with a program of reforestation with approved Management Plans.
- **Forestry-related commitments:** The **Nova Scotia** government has committed to establishing a Community Land Trust to enable Nova Scotians to participate in the purchase of lands for conservation, forestry and outdoor recreation.
- **Business New Brunswick:** Business New Brunswick has been working with industry, Efficiency NB and NB Power to help mills in **New Brunswick** be more productive and energy efficient. Recent investments in forestry sector companies have helped the industry gain access to capital and develop co-generation capacity, adding green power to the grid and reducing dependency on fossil fuels.
- **Development of value-added products:** A program has been introduced in **Quebec** to develop new production activities in the province's forest sector, notably in secondary and tertiary wood processing businesses and in pulp and paper mills. The investment is intended to result in the transfer of innovative technologies, commercialization of forest products in foreign markets, and increased use of wood in areas such as non-residential construction.
- **Review of Ontario's forest tenure and pricing systems:** **Ontario** is working with industry, environmental groups, Aboriginal communities and the broader public to help create the best environment possible for the success of Ontario's forest product businesses, while balancing this with sustainable practices.
- **Trees for Tomorrow program:** **Manitoba** created the Trees for Tomorrow program in 2008 with the goal of planting five million trees over the next five years as part of Manitoba's Beyond Kyoto initiative. This program contributes to the United Nations' Billion Tree Campaign, while offsetting carbon emissions that contribute to climate change.
- **Value-added production—Bioproducts and bioenergy:** **Saskatchewan's** new forest industry framework is helping the sector to diversify outward from export commodity production only, by adding market-driven, value-added and bioenergy production. Included are engineered and composite products (e.g. "Ready to Move" modular homes, truss-joists and composite panels), bioenergy (e.g. district heating, biomass-based electricity, solid fuels such as pellets, and liquid fuels), non-timber products (e.g., resins, wild foods and game), and services (e.g., tourism and recreational pursuits).
- **Alberta Biomaterials Development Centre:** This new centre in **Alberta** will help the province's agriculture and forestry industries develop new ways to make products from plant fibre and other bio-based feedstock.

- *Carbon emission reduction:* **British Columbia's** Bioenergy Strategy aims to turn the challenges of the mountain pine beetle infestation into new opportunities through future bioenergy technologies. The strategy also supports the province's energy plan and is a key contributor to the emission reduction goals of the Western Climate Initiative.
- *Forest Resources Act:* The key feature of the new *Forest Resources Act* in **Yukon** is a new regime of forest practices and tenure opportunities to support forest industries and protect diverse forest values.
- *Bioenergy investments:* The **Northwest Territories** is providing funding to develop alternative energy supplies and investigate the potential of emerging technologies such as biomass and geothermal heating and to install wood pellet boilers in government buildings.

The Canadian Council of Forest Ministers

CCFM was established in 1985 to provide a forum for federal, provincial and territorial governments to work cooperatively to address issues of common interest to Canadians. The CCFM provides leadership on national and international issues and sets direction for the

stewardship and sustainable management of Canada's forests.

More information about the Council is available at ccfm.org

International reporting on temperate and boreal forests

Canada is a member of the Montréal Process, a 12-country initiative to use criteria and indicators to define, measure, and report on progress toward the conservation and sustainable management of temperate and boreal forests. Together, these 12 countries represent 60% of the world's forests and account for nearly half of the world trade in forest products.

Canada uses the C&I framework developed by the CCFM to meet its Montréal Process reporting obligations. The two frameworks are compatible and reflect considerable alignment in the values important to both. Membership in the Montréal Process is part of Canada's overall commitment to promote sustainable forest management.

More information on the Montréal Process is available at mpci.org



