



Natural Resources  
Canada

Ressources naturelles  
Canada



# The State of Canada's Forests

Annual Report

2007



Canada 

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Catalogue number: Fo1-6/2007E  
ISBN: 978-0-662-46538-6

The National Library of Canada has catalogued this publication as follows:

Main entry under title: State of Canada's Forests...

Annual.

Description based on 1991-

Issued also in French under title: L'État des forêts au Canada.

Bibliographic address varies: 1993- , Canadian Forest Service.

Issued also on the Internet. Subtitle varies.

ISSN 1196-1589

1. Forests and forestry--Canada--Periodicals.

2. Forest policy--Canada--Periodicals.

I. Canada. Forestry Canada.

II. Canadian Forest Service.

SD13.S72

634.9'0871'05

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# Minister's Message

I am pleased to present *The State of Canada's Forests* for 2006–2007. The theme for this year's report is "Confronting Challenges, Maximizing Opportunities." From the mountain pine beetle infestation in my home province of British Columbia to the ever more demanding international marketplace, our forest industry faces its share of challenges. At the same time, we know that within every challenge there is opportunity.

The Government of Canada continues to work closely with provincial and territorial governments, with communities and with the industry to meet these challenges and make the most of the opportunities they present.

Over the past year, we have launched the Forest Industry Long-Term Competitiveness Initiative and expanded our collaboration with the province of British Columbia to address the impacts of the mountain pine beetle.

Other important initiatives have come from our partners in the provinces and territories and from the industry itself. Canada's three major forest research organizations have consolidated to form FPIInnovations, giving our country the biggest public–private forest research institute in the world. Despite the challenges of the past year, all around us are signs of a strong industry determined to grow stronger—upgrading mills, modernizing business operations, taking steps to attract more skilled workers and building new business partnerships with Canada's Aboriginal communities.

This latest edition of *The State of Canada's Forests* marks another innovation. This publication, highlighting selected economic, social and environmental priorities for Canada's forests and the forest sector, is now complemented by a new Web site offering a more detailed statistical and analytical view of the sector. Look to [canadaforests.nrcan.gc.ca](http://canadaforests.nrcan.gc.ca) for access to the most up-to-date statistics and information available on topics of interest.

Of course, Canada's forests are about more than statistics. They are part of who we are as Canadians. We can all be proud that Canada continues to be a world leader in sustainable forest management.

I hope you will find this report interesting and informative and that it will provide a greater understanding of the challenges confronting our forest sector and how we are working together to maximize the opportunities.



The Honourable Gary Lunn, P.C., M.P.  
Minister of Natural Resources





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# Quick Facts

## Environment

- Canada has 402.1 million hectares of forest and other wooded land, representing 10 percent of the world's forest cover and 30 percent of the world's boreal forest.
- About eight percent of Canada's forest area is protected by legislation.
- Annually, less than one percent of forests are harvested across Canada.
- By law, all forests harvested on Canada's public land must be successfully regenerated.
- About 85 percent of harvested areas on Crown land are regenerated naturally, while the remainder is regenerated through tree planting.
- By June 2007, more than 134 million hectares of Canada's forests were certified as being sustainably managed by one or more of three globally recognized certification standards.
- A National Invasive Alien Species Strategy is being implemented to address the increased number of non-native (alien) insect species.
- Bioenergy now constitutes more than 55 percent of the total energy used by the forest industry.



## Economy

- Canada is the world's largest exporter of forest products.
- The forest industry's contribution to Canada's gross domestic product remains stable at about three percent.
- Eastern Canada's forest industry is dominated by pulp and paper, while industry in western Canada is more focused on wood products.
- Secondary manufacturing of wood products has expanded in recent years, increasing economic benefits without increasing harvests.
- The United States is by far the largest buyer of Canadian forest products.
- Forest-based foods (such as berries and wild mushrooms) contribute an estimated \$725 million to the Canadian economy.



## Society

- Most of Canada's forest land (93 percent) is publicly owned—77 percent under provincial or territorial jurisdiction and 16 percent under federal purview.
- The rest is on private property belonging to more than 450 000 private landowners.
- The provinces and territories have legislative authority over the conservation and management of the forest resources on provincial/territorial Crown lands.
- The federal government is responsible for forestry matters related to the national economy, trade and international relations, and federal lands and parks, and has constitutional, treaty, political and legal responsibilities for Aboriginal peoples.



- Canada's forest sector supports about 800 000 direct and indirect jobs—almost five percent of all jobs in Canada.
- Between January 2003 and March 2007, more than 22 000 forest jobs were lost in Canadian mills.
- For 324 communities, the forest sector makes up at least 50 percent of the economic base.
- About 80 percent of Aboriginal communities are in forested areas.
- Public participation is an important aspect of forest management planning in Canada.
- There were 12.2 million person-visits to Canada's national parks in 2006.



## Year in Review

The Government of Canada announced in its 2006 budget that it would invest **\$400 million** to address three forest-sector priorities: combatting the mountain pine beetle infestation, strengthening the sector's long-term competitiveness and supporting worker adjustment.

As part of this investment, the government announced in January 2007 that it would allocate \$200 million to the **Federal Mountain Pine Beetle Program**. The funds will assist efforts to control the spread of the beetle infestation and mitigate its impact. The first announcement under the program, in March, was \$24.8 million, primarily to control the spread of the beetle. The second, in June, was \$39.6 million to help control the spread of the infestation, recover economic value from beetle-killed trees and protect communities and forest resources in affected areas. The third, in July, was \$80 million to help affected communities in British Columbia manage the long-term economic impacts of the infestation.

### B.C./Alberta—Managing, Mitigating the Beetle Invasion

British Columbia has been hit hard by the mountain pine beetle. By fall 2006, 9.2 million hectares of the province's forest were infested. The volume of infested trees rose from 411 million cubic metres in 2005 to 582 million in 2006.

The epidemic also moved into parts of Alberta in 2006. An unusual weather event coincided with the peak of beetle flight, which caused a mass migration of the beetle from British Columbia's Peace Forest District into Alberta, reaching as far east as Slave Lake. An estimated minimum of 3 million trees in Alberta had been infested by early 2007, largely in the Grande Prairie area, up from about 20 000 in 2005.

Both provinces have action plans in place. British Columbia's plan focuses on economic stability for affected communities, public and worker health and safety, value from dead timber, conserving long-term forest values, restoring forest resources in affected areas and protecting susceptible areas.

Alberta's action plan centres on removing as many infested trees as possible before the next beetle flight in July/August. Governments and the forest industry are taking steps to survey and aggressively control the beetle. Single-tree treatments, such as felling and burning or mulching, and harvesting of infested stands, began immediately. Fourteen helicopters have been dedicated to identifying infested trees in densely forested areas from the air and transporting crews to destroy the infested trees and set pheromone baits. Prescribed fire is also being used.



Another \$127.5 million was announced in February 2007 to contribute to the forest industry's **long-term competitiveness**. The funds will be used to promote innovation and investment, expand market opportunities, develop a national forest pest strategy, and identify and address sectoral job skills and adjustment issues. As well, \$72.5 million will be invested in measures to address the issues facing older workers. This includes the \$70-million **Targeted Initiative for Older Workers**, which helps unemployed workers, aged 55–64, in communities with high unemployment and/or which rely heavily on a single industry affected by downsizing, to get the training and experience they need to find work.

Two major research events occurred in 2006 and early 2007. In March 2006, Natural Resources Canada launched the **Canadian Wood Fibre Centre** to gain better insight into several areas: wood fibre quality; best ways to inventory, produce and use Canadian fibre; and ways to capitalize on fibre quality in the long term.

On April 1, 2007, **FPIInnovations** went into operation. The new research institute was formed when the expertise in Canada's three forest research institutes, Forest Engineering Research Institute of Canada (FERIC), the Pulp and Paper Research Institute of Canada (Paprican) and Forintek Canada Corp., was merged. FPIInnovations was created to strengthen forest research, integrate innovation along the value chain and support industry renewal in the short term and diversification in the long term. The Canadian Wood Fibre Centre makes up the fourth division of FPIInnovations, now the largest public/private forest research institute in the world.

A new federal program was announced in July 2007 to help forest communities develop strategies to respond to the new challenges facing Canada's forest sector. The \$25-million, five-year **Forest Communities Program** will fund 11 sites across Canada and encourage community-level partnerships to take advantage of emerging resource-based economic opportunities. It will encourage innovative approaches to accommodating competing land uses, set up projects to demonstrate innovative forest management, and create community ventures based on new types of forest products.



The Forest Communities Program is patterned on the successes of the Model Forest Program which began in 1992 and ends in 2007.

The **Softwood Lumber Agreement** between Canada and the United States took effect on October 12, 2006. Under the agreement, Canadian exports of softwood lumber are no longer subject to U.S. countervailing and anti-dumping duties, and more than (CAN)\$5 billion in duties collected by the United States since 2002 has been returned to Canadian exporters. The agreement, which has a seven-year term with an option to renew for two additional years, imposes export taxes and quota limits on shipments of softwood lumber to the United States that become more restrictive as the market price of lumber falls. The Atlantic provinces and the territories, as well as 32 companies in Quebec and Ontario, are exempt from the border measures.

By late 2006, the Forest Products Association of Canada had honoured its pledge, made four years earlier, that all of its members would be certified under one of the country's three leading **certification** systems by the end of 2006. The achievement of this commitment means that Canada has the largest area of independently certified forest in the world. The association has now made another pledge—that all of its members would be able to trace their fibre supplies back to the forest of origin by the end of 2008, thus allowing customers to know that the wood they purchase comes from legal, sustainable sources.

# Sustainable Forest Management in Canada

It has been 15 years since forests emerged as a significant item on the international agenda at the United Nations Conference on Environment and Development (UNCED) in 1992. Since then, major progress has been made toward sustainable forest management. Developments have stimulated changes in Canadian forest policy, legislation and management practices that will continue to evolve in response to challenges and changing values.

Canada has adopted a vision for the sustainable management of its forests: “The long-term health of Canada’s forest will be maintained and enhanced, for the benefit of all living things, and for the social, cultural, environmental and economic well-being of all Canadians now and in the future.” *National Forest Strategy (2003–2008)*

In other words, sustainable forest management respects society’s increasing demands for forest products and benefits, as well as the need to preserve forest health and diversity. The future of our forests and of forest-dependent communities centres on innovative technologies, approaches and tools.

## SFM is public-driven

Most of Canada’s forest land (93 percent) is publicly owned. As a result, governments, on behalf of the Canadian people, have set legislation and regulations based on the latest knowledge in sustainable forest management on nearly all of the country’s forest, and are monitoring progress toward achieving it.

Since the 1990s, forest managers and federal, provincial and territorial governments have increasingly consulted with stakeholders and other interested parties (forest owners, industries, Aboriginal peoples, local communities, etc.) to identify appropriate forest strategies, legislation and management plans. This has enlivened the debate within the forest community about sustainability and has increased stakeholders’ participation in decision making.

Approaches to forest management that incorporate a broader array of values, such as ecosystem management and landscape management, are now widely accepted and implemented.





## Measuring SFM

An ongoing challenge for forest planners and legislators has been how to translate the concept of sustainable forestry into real and measurable goals. We may know what sustainable forest management is, but how do we evaluate our progress toward it?

Grappling with this question led the Canadian Council of Forest Ministers to develop, in 1995, a set of science-based criteria and indicators for sustainable forest management. The criteria and indicators provide a framework to describe and measure the state of Canada's forests, management practices, values and progress toward sustainability.

Independent third-party forest certification can also serve as a measure of sustainable forest management, and is an important tool for those seeking to ensure that the paper and wood products they purchase and use come from forests that are well-managed and legally harvested. Three globally recognized standards (those of the Canadian Standards Association, Forest Stewardship Council and Sustainable Forestry Initiative) are used in Canada, all of which support sustainable forest management. In fact, Canada now has more independently certified forest land than any other country.

## A leader in SFM

When we look at the international milestones in sustainable forest management, Canada's leadership stands out.

- 1992: Canada was the first country to adopt a national forest strategy.
- 1992: Canada unveiled one of the largest, most innovative SFM experiments ever—the Canadian Model Forest Network. An international network followed in 1995.



“Canada’s forest regulations and laws are among the strictest in the world, and Canada is a world leader in improving sustainable forest practices.”

*Global Environmental Forest Policies: Canada as a Constant Case Comparison of Select Forest Practice Regulations (2004)*

- 1994: Canada was a founding member of the Montréal Process, established to formulate international criteria and indicators for SFM.
- 2002: The Forest Products Association of Canada was the first national trade association to commit its members to achieving forest certification.
- 2006: Canada now has the largest area of independently certified forests in the world.
- 2007: Canada announced the Forest Communities Program, patterned on the successes of Canada's Model Forest Program. The new program will help communities make the most of new resource-based economic opportunities.
- 2007: FPInnovations was formed, the largest public/private forest research institute in the world.





The road to sustainable forest management is continually changing, as foresters grapple with the shifting values, demands and environment that influence the forest landscape. In recent years, the reality of a changing climate has emerged as one of the most difficult challenges for balancing the economic, environmental and social aspects of forest management.

Forest management itself will need to change, and strategies to help forests and society adapt to a changing climate are needed. But climate change awareness has also brought an additional set of forest values, as the potential for forests to sequester and store carbon introduces yet another demand on the forest that needs to be part of the balance.

As a forest nation committed to continual improvement, Canada recognizes that these and other challenges require that sustainable forest management in Canada continue to evolve and adapt. Innovation, through the development and implementation of new technologies, tools and approaches, will continue to be central to this evolution.





## Focus on Climate Change

This past year, climate change became an immediate concern for many Canadians. Mainstream media coverage and high-profile activists and speakers helped publicize the issue, and reports from the Intergovernmental Panel on Climate Change helped validate it.

Even more pressing is the fact that Canada may already be feeling the effects of climate change. Higher temperatures, drought, floods, windstorms and other severe weather events, if they persist, are sure signs that climate change is real and underway. So are phenomena like the unprecedented mountain pine beetle epidemic sweeping through British Columbia, and now making inroads in Alberta—an infestation influenced by warmer winters.

It is hardly surprising that the public has demanded action on climate change and has ranked the issue a top priority for the country. All levels of government, as well as the private sector, are responding by setting goals and plans to cut greenhouse gases and air pollution.

### How do forests fit in?

Forests are a carbon sink—they take in carbon dioxide and convert it to wood, leaves and roots. They are also a carbon source—they release stored carbon into the atmosphere when they decompose or burn. Because of this ability to both absorb and release huge amounts of carbon dioxide (a major greenhouse gas), forests play a major role in the global carbon cycle—the exchange of carbon between the atmosphere and the biosphere. Large changes in forest carbon sinks and sources, whether due to human or natural causes, can affect the climate by altering the amount of carbon dioxide in the atmosphere.

As the climate changes, forest carbon storage will be affected. A warmer climate can speed up vegetation growth, which means more carbon storage. However, it can also accelerate decomposition, resulting in more carbon emissions, and boost the risk of drought, pest outbreaks and fire, all of which can significantly reduce carbon storage. The extent of these effects will also be influenced by the amount and/or timing of precipitation changes.

A rapidly changing climate has important implications for the forest sector and the more than 300 communities whose livelihood is closely associated with forests. Effects on timber supply are one example. Growth and yield databases used in timber supply forecasting will need to be re-evaluated because of changing tree growth and productivity. Long-term timber supply planning may also need to consider changes in species composition over time. More frequent large-scale disturbances will cause timber supply fluctuations, and result in more salvage harvesting of trees killed by disturbances, which affects fibre quality.

The complex relationship between forests and climate makes it difficult to know how all of this will play out. But here are some things we *do* know.

### Some facts ...

- Globally, there is more carbon stored in forest biomass (trees and other living plants), dead organic matter and soil than is contained in the atmosphere. This is why forests are a key part of the global carbon cycle.

- Deforestation, the permanent clearing of forest for other uses like agriculture and urban development, is a serious global issue. World-wide, deforestation creates about 20 percent of human-generated greenhouse gas emissions—more than is produced by the global transportation sector. Curbing deforestation is the subject of intense international concern and negotiations. (While deforestation is the permanent removal of the forest, harvesting, when it is part of sustainable forest management, is followed by regeneration of the forest.)
- In Canada, deforestation accounts for less than three percent of national emissions, a figure that is declining.
- Because wood continues to store carbon even after it is made into products (such as lumber and paper), only a fraction of the carbon removed from the forest is actually emitted into the atmosphere. As well, some of the wood-waste from manufacturing products is burned to produce energy, offsetting fossil fuel use. After harvest, 40 to 60 percent of the carbon remains in the forest in the roots, branches and soil, and decomposes slowly to provide nutrients for the newly regenerating forest.
- Environmentally speaking, wood is an excellent construction material (as shown in studies by agencies like the Athena Institute). Wood products take far less energy to produce than concrete, plastics, metals and other materials, and their production has fewer impacts on air and water quality.
- Natural disturbances like forest fires and insect infestations release large amounts of carbon dioxide into the atmosphere, although the area affected and emissions can vary considerably from year to year. The area of forest burned each year is on average 2.5 times the area harvested, and is projected to increase under warmer, drier climate scenarios. A significant difference between fires and harvesting is that with harvesting much of the carbon ends up being stored in long-lived products while with fires the carbon goes into the atmosphere.

According to an analysis using the Canadian Forest Service's Carbon Budget Model of the Canadian Forest Sector (see inset), Canada's managed forests were a net carbon sink in most years between 1990 and 2005. But in some years they were a source—mostly because of wildfires.

### Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3)

With emission reductions high on Canada's agenda, carbon management is becoming an important part of sustainable forest management. Thanks to scientists at the Canadian Forest Service of Natural Resources Canada, governments and forest managers have a valuable tool to help them. The CBM-CFS3, which the Canadian Forest Service began developing more than 15 years ago, integrates scientific knowledge with forest information to analyze the forest's carbon balance. The model also projects how that balance might change in response to natural disturbances and different management practices.



As the world pieces together the puzzle of climate change, Canada's forest researchers, managers and policy makers must work on two fronts. The first is mitigating climate change—reducing carbon emissions or increasing sinks through actions such as managing forest fire, protecting against insects, reducing deforestation and managing forests and forest products to lower the human impact on the carbon. The second is adapting to climate change—that is, understanding and preparing for the impacts that a changing climate will have on our forests at the operational, planning and strategic levels. The new Forest Communities Program is one way to empower forest-dependent communities to integrate a changing forest base into their local economy. Sound science, and sound policies based on science, will be critical at every step for both mitigation and adaptation activities.





# Integrated Landscape Management

## What is it?

Integrated landscape management, or ILM, is a way of planning how land will be used and resources will be managed. It goes beyond the forest sector to include other industries and other uses of the forested landscape. It looks at planning from the “whole landscape” perspective, taking into account all activities, in order to reduce cumulative impacts. Planning and managing at the landscape scale allows people with diverse interests to develop a shared vision for their public lands and resources, a vision that includes environmental, economic, social, cultural, aesthetic and recreational objectives.

## Why is it important?

Canadians look to the forest to provide many things such as habitat for wildlife, economic stability for communities, culture and history for First Nations, beauty and recreation for all. The forest also provides ecological benefits that are often taken for granted: climate stabilization, disease and pest control, water supply and regulation, air purification and carbon sequestration. In the past, decisions about land use and allocation were too often made in isolation, focusing on one sector or use without regard for other interests. This approach bred conflict between industry, First Nations, communities and environmental groups, and contributed to ecological degradation and habitat fragmentation. ILM is a mechanism for

making comprehensive decisions based on multiple objectives—decisions that result in healthy forests and communities.

## How does it work?

Collaboration is the key ingredient of ILM. The process brings together many voices, which may include forest owners, forest managers and forest users, including the various industries that work in the forest such as forestry, mining, and oil and gas energy. Together, the parties gather information, set objectives, explore land management strategies and decide on a process for monitoring and reviewing progress. This approach enables all users to take into account the potential activities of others and to incorporate these aspects into their planning. For example, forest companies might use oil company roads instead of building their own, or they might use the wood cleared from seismic lines to meet their fibre needs.

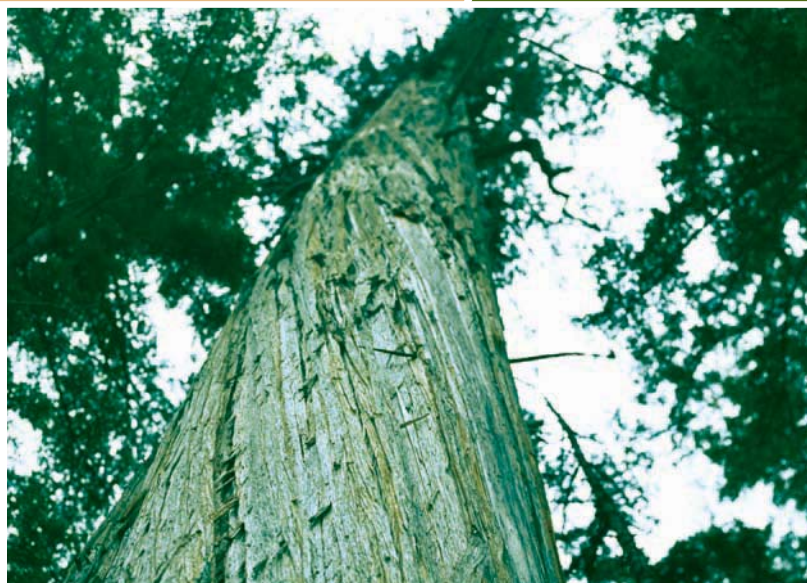
## Where is it happening?

ILM is still evolving, but it has taken root in many parts of Canada. The approach is meeting with success in Alberta and British Columbia (see insets). In Saskatchewan, the North Central Land Use Plan proposes to divide an area of boreal forest into zones with different degrees of protection and development. ILM may prove especially valuable in Canada’s forests with their complex social, economic and ecological interactions.



## ILM and Woodland Caribou

Considering all values in landscape planning and management is especially important in areas that shelter species at risk, such as the woodland caribou. The Caribou Landscape Management Association, based in the Foothills Model Forest in west-central Alberta, has brought together local forest operators, oil and gas companies, and First Nations to develop a coordinated plan to conserve the habitat of the area's Little Smoky and A La Peche caribou herds.



## The Spirit Bear Rainforest: ILM at Work

The Spirit Bear Rainforest is the largest stretch of coastal temperate rainforest left in the world. It spans 6.4 million hectares along the central and north Pacific coast of British Columbia and includes the Queen Charlotte Islands. The rainforest is home to forests of Sitka spruce and cedars, as well as thousands of plant and animal species.

Forestry and other resource industries have long been the mainstay of communities in the region, many of them First Nations. But through the mid-1990s, protests against industrial activity, especially logging, escalated, highlighting the need to focus on the impact of industrial activity on the environment.

The outcome has been called a “conflict to consensus” story. Various parties, many with competing interests, worked together to create an integrated vision for the rainforest, one that takes into account environmental health and the needs of those who live and work there. The consensus agreements that emerged created 1.2 million hectares of new protected areas, and additional “biodiversity areas” where logging is prohibited and industrial activity severely limited. The remaining two-thirds of the land will be managed for a full range of economic activities using an ILM approach that ensures both healthy ecosystems and healthy communities.



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## Staying Competitive

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Canada's social and economic well-being is closely tied to the forest industry. The sector supports about 800 000 jobs directly and indirectly, not to mention more than 300 communities, many in rural and remote areas. Forest products make up close to 10 percent of Canada's merchandise exports and contribute three percent to the country's gross domestic product.

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Canada's forest sector supports about 800 000 direct and indirect jobs—almost five percent of all jobs in Canada.

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### Competitive pressures

This key economic sector has been hard hit in recent years. Although global demand for forest products is on the rise, the Canadian industry, despite increasing productivity, is not reaping the full benefits. The reasons, which are many and complex, include the appreciation of the Canadian dollar, high fibre costs, stiffer competition from international producers (some of which benefit from government incentives unmatched in Canada), trade barriers, aging and uncompetitive mills, and environmental, regulatory and policy challenges (for example, the interprovincial movement of logs).

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Between January 2003 and March 2007, more than 22 000 forest jobs were lost in Canadian mills.

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Some subsectors of the industry have fared better than others. The volume of lumber and engineered wood exports and production have stayed generally healthy by historical standards, despite the softwood lumber dispute and, more recently, falling housing starts in the United States. That said, the decline in the U.S. housing market translated into lower prices for softwood lumber producers in 2006. Pulp exports have been stagnant for a decade, and newsprint production has dropped off significantly in reaction to weak North American demand. The result—mill closures and job losses that have sorely tested the industry and Canada's forest-dependent communities.

### The way ahead

The question for industry and governments alike is how to respond to this mounting pressure. Three major reports in 2006 and early 2007 offer suggestions:

- *Facing the Challenge of Forest Industry Restructuring*, Canadian Council of Forest Ministers (October 2006)
- *Mission Possible (Volume II)*, Conference Board of Canada (January 2007)
- *Industry at a Crossroads: Choosing the Path to Renewal*, Forest Products Industry Competitiveness Task Force (May 2007)

All three reports present similar recommendations: embrace R&D and innovation, the keys to both long-term competitiveness and sustainable development; develop new products and market opportunities; reform tax and trade regulations to encourage investment; reduce input costs (fibre, energy, labour, transportation); develop the industry's human resources. Underlying these recommendations is a single resounding message: the status quo is not an option.

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To compete effectively, Canada's forest products sector must invest in both renewal and transformation.

*Mission Possible (Volume II),*  
The Conference Board of Canada

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## Meeting the challenges

Given the myriad of challenges facing the forest industry, jurisdictions across Canada are re-examining their strategic approach to the sector. Questions have been raised regarding issues such as stumpage and tenure policies, workers and skills, economic framework policy (for example, taxation) and approaches to market development. Industry is also working to address competitiveness challenges. Over the past year, governments and industry have taken important actions to set the stage for a more prosperous future for the Canadian forest sector.

**Federal action:** To pave the way for a more robust forest industry, in February 2007 the federal government unveiled its Forest Industry Long-Term Competitiveness Initiative. A total of \$127.5 million will go to address sectoral priorities such as product and market diversification, innovation and human resource challenges.

**Provincial action:** Here is a sample of recent actions by Canada's major forest provinces.

- In 2005 and 2006, Quebec announced a series of measures totalling \$1.4 billion over five years to help the forest sector address challenges and to contribute to its revitalization.
- British Columbia is taking a market-oriented approach to the sector and has introduced

policies to remove unnecessary barriers to competitiveness and to enable firms to become more efficient and thereby more competitive. As well, the provincial government's Forest Innovation Investment Ltd. is spending \$11.5 million on marketing initiatives to expand access to new markets.

- Since June 2005, Ontario has announced a series of measures to help restore the forest sector's competitiveness and to assist rural and northern communities. The programs, totalling more than \$1 billion over five years, will help to stimulate new forest-sector investments in value-added manufacturing and in co-generation.

**Industry action:** For several years, the forest industry has been consolidating, restructuring and closing mills in an attempt to remain competitive. It has also been looking at new technologies that may expand the sector's products and markets. Biorefineries, bioenergy and biochemicals hold promise, as do developments in engineered wood and other value-added products (see insets).

## A competitive future

Canada's forest products sector has many natural advantages, including diverse, high-quality fibre, and environmentally responsible operations. If managed wisely, these advantages will place Canadian industry in a leading position in the global market.

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By embracing the opportunities that a changing global environment offers and making the difficult changes needed to realize them, the Task Force strongly believes that Canada can be at the forefront in re-defining social, environmental and competitive excellence in the forest products industry of the 21<sup>st</sup> century.

*Industry at a Crossroads*, Forest Products Industry Competitiveness Task Force

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## Diversifying Products and Markets

Industry analysts agree—to secure its future, Canada's forest industry must both defend its traditional and current markets and look beyond them. That means developing new high-value products like engineered hybrid building systems. It also means seeking out new geographic markets and matching products to those markets.

The federal Forest Industry Long-Term Competitiveness Initiative includes three programs aimed at diversifying market opportunities.

- **Value to Wood Program**

(launched 2002, renewed in 2007)

**What:** Development of products, manufacturing processes, market knowledge and technical assistance for the value-added sector.

**Why:** To improve the competitiveness of the Canadian value-added wood products sector.

- **Canada Wood Program**

(launched 2002, renewed in 2007)

**What:** Development of offshore markets.

**Why:** To expand export opportunities for Canadian wood products.

- **North American Wood First Initiative**

(new in 2007)

**What:** Education, awareness, R&D and technology transfer concerning the benefits of using wood in non-residential applications.

**Why:** To increase the use of wood in commercial construction in North America.

## Innovation and R&D—Joining Forces

Innovation is key to the future viability and profitability of Canada's forest industry. Investment in forest R&D has been low in recent years, while the industry has struggled with competitiveness challenges, and has tended to focus on shorter-term cost-cutting objectives. There is now, however, recognition that longer-term R&D—aimed at developing and adapting emerging and transformative technologies—is key to transforming the industry and better positioning it to offer a greater diversity of products. To maximize the economic value from Canada's forests in the future, research will need to look at opportunities for new products, processes and technologies along the whole value chain from the tree to the marketplace.

The first step toward a renewed climate of innovation is to harness forest research efforts so they can support common goals. Here are some recent initiatives designed to help.

- **Canadian Wood Fibre Centre:** Launched in March 2006 by Natural Resources Canada.

Focuses on improving forest productivity and fibre quality as well as increasing the value of the forest resource. Staffed by Canadian Forest Service researchers.

- **FPIInnovations:** Formed in April 2007 when Canada's three forest research institutes merged. Created to harmonize forest research, integrate innovation along the value chain and support industry renewal in the short term and diversification in the long term. Combined with the Canadian Wood Fibre Centre (the fourth division), FPIInnovations is the largest public/private forest research institute in the world.

- **Canadian Biomass Innovation Network:** Coordinates the federal government's R&D in the area of bioenergy, biofuels, industrial bioproducts and bioprocesses. Involves several science-based federal departments. Reports to Natural Resources Canada's Office of Energy R&D.



## Bioproducts and Other Emerging Technologies

Under the federal Forest Industry Long-Term Competitiveness Initiative, \$70 million is earmarked for forest innovation through the new FPIInnovations (including \$10 million to create the Canadian Wood Fibre Centre). The money will fund R&D in breakthrough technologies such as forest biotechnology. Some emerging technologies being studied:

- Bioenergy from wood waste (synthesis gas, bio-oil, liquid alcohols)
- Forest biorefinery processes (thermochemical conversion, fermentation)
- Biochemicals and materials from fibre (bioplastics, fibre-reinforced composites, nanocrystalline cellulose)
- Application of nanomaterials to the manufacturing process
- Next-generation building solutions for sustainable construction
- New ultra-lightweight paper grades for communication and packaging



## Investment and Taxation

Too many Canadian mills are small and inefficient compared to the super-mills set up in parts of South America and Asia. Modernizing Canada's mills, building new ones and converting to new product lines all require huge capital expenditures—billions of dollars, according to a recent report from the Forest Products Industry Competitiveness Task Force. Attracting investment is therefore critical if the sector is to turn itself around.

With depreciation currently outstripping capital expenditures—a situation that has eroded the sector's capital stock for a decade now—industry is calling on governments to restructure tax measures in order to encourage capital investment. According to the Forest Products Association of Canada, the Canadian forest industry bears a higher tax burden than any of its major competitors, and it does not benefit from the kinds of tax credits that bolster other industries, including oil and gas and mining.

The Forest Products Industry Competitiveness Task Force, in the report *Industry at a Crossroads*, has called on government to introduce specific tax reforms that will make the sector more appealing to investors. Says the Task Force, "The single most important role for governments in the industry renewal process is to avoid impeding new investment into the sector."



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# Forest Workers: The New Generation

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Databases, computer modelling, satellite imagery, digital processing. Lumber, logging, planting, paper mills. Different worlds? Not at all. Today's forest sector is more high-tech all the time—in fact, it is now the largest consumer of new technology in Canada. *And* it offers workers higher-than-average pay.

Yet despite these attractions, the industry faces a looming skills shortage, particularly for technical and professional forestry staff. Other occupations in forest product manufacturing may also be at risk. The scramble for workers is more than a managerial inconvenience. It could jeopardize the sector's productivity and long-range planning.

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## Forestry is High Tech!

Gone are the days of horse logging and bush whacking through the forest. Forest professionals use mapping tools like GIS and GPS to create a picture of the forest ecosystem that can be used to develop integrated forest management plans. They also use satellite imagery to monitor forest fires and pests like the mountain pine beetle.

Web site recruitment page, Association of BC Forest Professionals

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## The trends

- As in other sectors, the forest sector's workforce is aging. More than 41 percent of its employees are over 45.
- The sector will lose many experienced workers to retirement in the next 10 to 15 years. The British Columbia Ministry of Forests and Range, for one, predicts having to replace 80 percent of its technical and professional workforce within 10 years.
- The forest sector is facing stiff competition for workers (for example, skilled trades people) from other sectors.
- Forestry graduates are in high demand in Canada. According to some sources, the employment rate upon graduation is second only to medicine.
- Despite this strong demand, the number of graduates from university forestry programs in Canada fell by almost 30 percent in the first half of this decade.

## The image

Attracting young, skilled workers to the industry has been difficult largely because people's image of the sector has not kept pace with reality.

- People still view the forest industry as low-tech, when in fact it is becoming more technology-intensive all the time.
- People think of the forest industry as a "sunset" or dying industry, limited in scope and opportunities for advancement, when in fact it is a dynamic, cutting-edge sector that covers aspects of science, policy making, economics, sociology, conservation, business and technology.
- Messages about forest careers are weak and uncoordinated and are often perceived as anti-environmental, when in fact environmental concerns are front and centre.
- Efforts to recruit workers make poor use of new technologies (like the Internet), keeping the industry disconnected from potential students and young workers.

## The new generation

To combat falling recruitment, many university and college forestry programs are revamping their public image. Schools like Lakehead University, Malaspina College and the Maritime College of Forest Technology actively target students who care about the environment, love the outdoors and want the challenges of a fast-changing, high-tech field. Joining the effort, the Canadian Institute of Forestry has called for a national marketing program for post-secondary forestry programs, one that corrects misperceptions and focuses on the many paths open to graduates.

The transition currently underway on the manufacturing side of the industry will have a significant impact on the skill sets required by the forest industry of tomorrow. As the focus on emerging technologies in areas such as bioenergy, bioproducts and building systems increases, the industry will require highly trained individuals with the appropriate skills to process this next generation of forest products.

When we talk to high school students, teachers, and the public, we find that most people have little or no knowledge about forestry or what a career in forestry entails. Those who have some knowledge about forestry stereotypically equate it with low technology and low-brow work; they think of it as a "sunset" career dealing only with the cutting and planting of trees. Another misconception is that forestry is for males, when actually over 30% of our students are female, and the share is continually increasing.

Reino Pulkki, Dean, Faculty of Forestry and the Forest Environment, Lakehead University, *Lakehead University Magazine, Spring/Summer 2005*



Photo: Courtesy of the University of New Brunswick, Forest Engineering Program



An especially promising source of new workers is Canada's Aboriginal communities. Many are already located in productive forest areas and have close ties to the sector. Another plus—the Aboriginal population, hence the pool of nearby workers, is growing.

To prepare that pool for today's skills-rich forest industry, organizations like the Forest Products Association of Canada are encouraging Aboriginal students to stay in school. The University of British Columbia's forestry faculty, through its First Nations Initiative, is encouraging Aboriginal people to enter forestry professions and is building Aboriginal issues and approaches into the faculty's curriculum and research. As well, forest companies and policy makers are forging more partnerships with First Nations (see "Aboriginal Partnerships in the Forest" article).

In February 2007, the federal government rolled out the **Forest Industry Long-Term Competitiveness Initiative**, a funding package to help the industry compete on a global scale. Of that funding, \$5 million will go toward establishing a Human Resource Forest Sector Council, a body that will assess the skills and human resource issues in today's forest industry. Government and industry are working together to set up the council.





# Aboriginal Partnerships in the Forest

Canada's Aboriginal people have an age-old cultural and spiritual relationship with the forest. And, with more than three-quarters of their communities in forested areas, they have a long history of contact with the forest industry. In the past, not all of this contact has been positive. But in recent times, growing recognition of indigenous rights to land and natural resources has resulted in more Aboriginal involvement in forest management and more company/Aboriginal partnerships in forest business.

The forest industry has in fact become one of the most important commercial sectors for Aboriginal people, who are more likely than other Canadians to work in the sector. The forest products industry directly or indirectly employs more than 17 000 Aboriginal people, mostly in silviculture and woodland operations, and does business with more than 1400 Aboriginal firms. These firms (some directly related to forestry

and some not) typically employ 10 to 30 people and often earn revenues exceeding \$1 million a year.

## Partnership makes sense

In forest commerce and forest planning, partnerships between industry and Aboriginal people yield benefits for both.

For Aboriginal people:

- Economic opportunities: jobs, businesses, revenue for communities
- Local jobs, so people can stay in their communities
- More meaningful economic involvement (joint ventures, company ownership)
- More control over forest management; greater say in activities on or near Aboriginal lands

For the forest sector:

- More secure access to timber in areas subject to land claims and negotiations
- Better forest relations: less conflict, more consensus
- An expanding supply of local workers (the Aboriginal population is growing faster than the national average)
- A key criterion for sustainable forest management, social responsibility, forest certification and international confidence

## Aboriginal People and Canada's Forests: A Snapshot

- About 80 percent of Aboriginal communities are in forested areas.
- Some 1000 forestry operations are owned by Aboriginal people.
- Proportionally, Aboriginal people are more likely to work in the forest sector than non-Aboriginal Canadians.
- Aboriginal forest workers are still concentrated in lower-skilled, part-time and seasonal positions.

## Overcoming challenges

Aboriginal people and the forest sector are more strongly allied today than ever before. Still, Aboriginal participation in the sector is variable across the country.

One challenge to full participation is continued uncertainty over jurisdictional responsibilities. In a survey on First Nations forest partnerships, released in 2005 by the Sustainable Forest Management Network, respondents—both First Nations and industry—made it clear that to move ahead with forest partnerships, the government must first “clarify the responsibilities of federal and provincial governments regarding First Nations and natural resources.”

Complicating matters further are the many unresolved land claims and treaty negotiations that apply to forest areas. Again, those surveyed by the Sustainable Forest Management Network stated overwhelmingly that land claims and treaty entitlement processes must be resolved.

These difficulties are real. And there are others. One is the need to build skills and capacity (financial, technical, educational, organizational) within Aboriginal communities and, conversely, to build skills and capacity (for working with Aboriginal people) within forest companies.



## But partnership is increasing

Yet the fact remains that partnership is both desirable and on the rise. British Columbia is a case in point. Since 2002, the provincial government has reached forest agreements with 127 First Nations, giving them rights to 24.4 million cubic metres of timber and sharing eight percent of the annual allowable cut and almost \$166.5 million in revenue. Although British Columbia's approach has drawn some criticism for its revenue-sharing formula, it nonetheless illustrates how First Nations can have access to resources, develop economic opportunities and build capacity in their communities without waiting for land claims to be resolved.

## Encouraging Partnership

Some government initiatives that promote Aboriginal involvement in Canada's forests:

**First Nations Forestry Program.** Federal program to help First Nations develop capacity to sustainably manage their forests and participate in forest opportunities. Since 1996, some 1900 projects funded in more than 460 communities; roughly 9000 First Nation workers given forest-related job experience.

**Forest Communities Program.** A new federal program from Natural Resources Canada. Will work with local groups in forest communities, including Aboriginal communities, to share forest-related knowledge, tools and practices.









**New Brunswick Aboriginal Forestry Initiative.** Jointly sponsored by federal and provincial governments, industry and Aboriginal partners. Goals include skills development and long-term forestry jobs for local Aboriginal people.



## Tables: Selected Forestry Statistics

# Forests

Several factors, both natural and human, affect forest ecosystems. Natural factors include, for example, fire and insects. Human factors include, for instance, tree harvesting, other economic pursuits and atmospheric changes such as climate change. Both natural and human factors affect the forest in positive and negative ways.

		Annual change increased ▲ OR decreased ▼
Area defoliated by insects and beetle-killed trees (2005)	16.0 million hectares	2004  2005
Fire – area burned <sup>1</sup> (2006)	2.1 million hectares	2005  2006
Fires – number (2006)	9713	2005  2006
Area planted and seeded (2005)	429 072 hectares	2004  2005
Harvest (area) – (2005)	903 009 hectares	2004  2005
Harvest (volume) – industrial roundwood (2005)	188.1 million m <sup>3</sup>	2004  2005
Wood supply <sup>2</sup> (2005)	245.8 million m <sup>3</sup>	2004  2005
Forest area certified (June 2007)	134 million hectares	2006  2007
Net carbon sequestered <sup>3</sup> (2005)	26 million tonnes CO <sub>2</sub> e/yr <sup>4</sup>	
Deforestation – forest area (2005)	56 000 hectares	
Afforestation – forest area (2005)	9000 hectares	
CO <sub>2</sub> emissions due to deforestation (2005)	21 million tonnes	
CO <sub>2</sub> removals from the atmosphere due to afforestation (2005)	1 million tonnes	

<sup>1</sup> All of Canada's forests

<sup>2</sup> Information on annual allowable cut (AAC) is reported as a proxy for wood supply

<sup>3</sup> Managed forest only (236 million hectares)

<sup>4</sup> Equivalent per year

Sources: Canadian Council of Forest Ministers (National Forestry Database); Canadian Interagency Forest Fire Centre; National Forest Carbon Monitoring, Accounting, and Reporting System and *National Inventory Report, 1990–2005*

# Industry

The forest industry provides many benefits to workers, communities and businesses, and to Canadians as a whole.

Industry	Contribution to gross domestic product (GDP) (2006)	Revenue from goods manufactured (2005)	Capital and repair expenditures (2005)	New investments (2006)	Direct employment (2006)	Wages and salaries (2005)
Forestry and logging	\$8.2 billion	\$13.1 billion	\$0.8 billion	\$0.3 billion	41 500	\$2.3 billion
Paper product manufacturing	\$12.8 billion	\$32.2 billion	\$3.4 billion	\$1.3 billion	94 100	\$5.0 billion
Wood product manufacturing	\$15.3 billion	\$33.0 billion	\$3.0 billion	\$1.5 billion	166 500	\$5.2 billion
Support activities for forestry					21 500	
<b>TOTAL</b>	<b>\$36.3 billion</b>	<b>\$78.3 billion</b>	<b>\$7.2 billion</b>	<b>\$3.1 billion</b>	<b>323 600</b>	<b>\$12.5 billion</b>
Annual change increased ▲ OR decreased ▼	2005 2006 ▼	2004 2005 ▼	2004 2005 ▲	2005 2006 ▼	2005 2006 ▼	2004 2005 ▼

Source: Statistics Canada



# Products

The forest industry produces a range of products such as dimensional lumber, wood pulp, paper and value-added products, and helps support a variety of service-based industries. The key wood products are softwood lumber, structural panels and engineered wood products. Value-added wood products such as millwork (for example, doors and windows) also make up a significant portion of Canada's wood manufacturing (approximately 20 percent of total shipments). The chief pulp and paper products are newsprint, printing and writing papers, and market pulp. Pulp and paper products also include other papers (for instance, tissue) and packaging, although these represent a relatively small portion of Canada's pulp and paper production.

Selected forest products (2006)	Production	Imports	Exports		
<i>Wood products</i>	<i>Quantity</i>	<i>Quantity</i>	<i>Quantity</i>	<i>Value</i>	<i>Major export markets<sup>1</sup></i>
Lumber – hardwood	1.6 million m <sup>3</sup>	1.0 million m <sup>3</sup>	1.1 million m <sup>3</sup>	\$0.5 billion	U.S. (56%)
Lumber – softwood	79.2 million m <sup>3</sup>	0.7 million m <sup>3</sup>	52.6 million m <sup>3</sup>	\$9.0 billion	U.S. (82%)
Structural panels	12.4 million m <sup>3</sup>	0.28 million m <sup>3</sup>	9.3 million m <sup>3</sup>	\$2.8 billion	U.S. (97.5%)
<i>Paper products</i>					
Newsprint	7.1 million tonnes	51 000 tonnes	6.7 million tonnes	\$4.9 billion	U.S. (72%)
Printing and writing paper	6.1 million tonnes	1.2 million tonnes	5.2 million tonnes	\$4.5 billion	U.S. (92%)
Wood pulp	23.5 million tonnes	312 000 tonnes	10.9 million tonnes	\$6.5 billion	U.S. (42%)
<i>Value-added wood products</i>					
Doors and windows	not available	7.0 million doors and windows	not available	\$0.6 billion	U.S. (97.5%)
Framing products	not available	not available	not available	\$1.1 billion	U.S. (98%)
Prefabricated buildings	not available	19 000 prefabricated buildings	not available	\$0.5 billion	U.S. (60%)
<i>Non-timber forest products</i>					
Christmas trees <sup>2</sup> (2005)	3.2 million trees	254 000 trees	2.4 million trees	\$0.04 billion	U.S. (92%)
Maple products (2005)	28.1 million litres	894 000 litres	24.7 million litres	\$0.2 billion	U.S. (72%)

<sup>1</sup> Based on value

<sup>2</sup> Based on estimates

Sources: Canadian Council of Forest Ministers (National Forestry Database); Statistics Canada; Pulp and Paper Products Council; APA-The Engineered Wood Association

# Exports

Canada is the world's largest exporter of forest products, accounting for 15.9 percent of the world trade. The major contributors are softwood lumber, newsprint and wood pulp.

Commodity (2006)	Export market value	Major export markets	Balance of trade	Annual change increased ▲ OR decreased ▼
Primary wood products <sup>1</sup>	\$979.9 million	U.S. (58.6%)		2005 2006
Pulp and paper products <sup>2</sup>	\$20.9 billion	U.S. (71.8%)		2005 2006
Wood-fabricated materials <sup>3</sup>	\$16.4 billion	U.S. (87.4%)		2005 2006
<b>TOTAL</b>	<b>\$38.2 billion</b>	<b>U.S. (78.1%)</b>	<b>\$28.1 billion</b>	2005 2006

<sup>1</sup> Logs, pulpwood, chips, etc.

<sup>2</sup> Wood pulp, newsprint, paper, etc.

<sup>3</sup> Lumber, plywood, oriented strandboard, etc.

Source: Statistics Canada

# Glossary of Economic Terms

## **Balance of trade**

The difference between the value of the goods and services that a country exports and the value of the goods and services that it imports. If a country's exports exceed its imports, it has a trade surplus; if imports exceed exports, the country has a trade deficit.

## **Capital and repair expenditures**

Capital expenditures include the cost of procuring, constructing and installing new durable plants, machinery or equipment, whether for replacement of worn or obsolete assets, as additions to existing assets or for lease or rent to others. Also included are all capitalized costs such as feasibility studies and architectural, legal, installation and engineering fees; the value of capital assets put in place by firms either by contract or with the firm's own labour force; and, capitalized interest charges on loans for capital projects. Repair expenditures include costs to repair and maintain structures, machinery and equipment.

## **Direct employment**

Persons employed directly in the following industries: forestry and logging (includes timber tract operations, nurseries and logging), industries involved in support activities for forestry (for example, fire prevention/fighting, reforestation, pest control), and paper manufacturing and wood product manufacturing (includes production of lumber and other wood products).

## **Gross domestic product (GDP)**

The total unduplicated value of the goods and services produced in an economic area such as a country or region during a given period. ("Unduplicated value" means that the intermediate costs of producing an item or service have been deducted.)

## **New investments**

All expenditures made on buildings, engineering, construction, machinery and equipment (including imports of used machinery and equipment) for the current time period. Investment in buildings includes transfer costs on the sale of existing assets (for example, real estate commissions).

## **Revenue from goods manufactured**

Revenue from the sale of goods manufactured using materials owned by the establishment as well as from repair work, manufacturing service charges and work contracted to others.

## **Wages and salaries**

The earnings, in cash or in kind, of Canadian residents for work performed before deduction of income taxes and contributions to pension funds, unemployment insurance and other social insurance schemes.











