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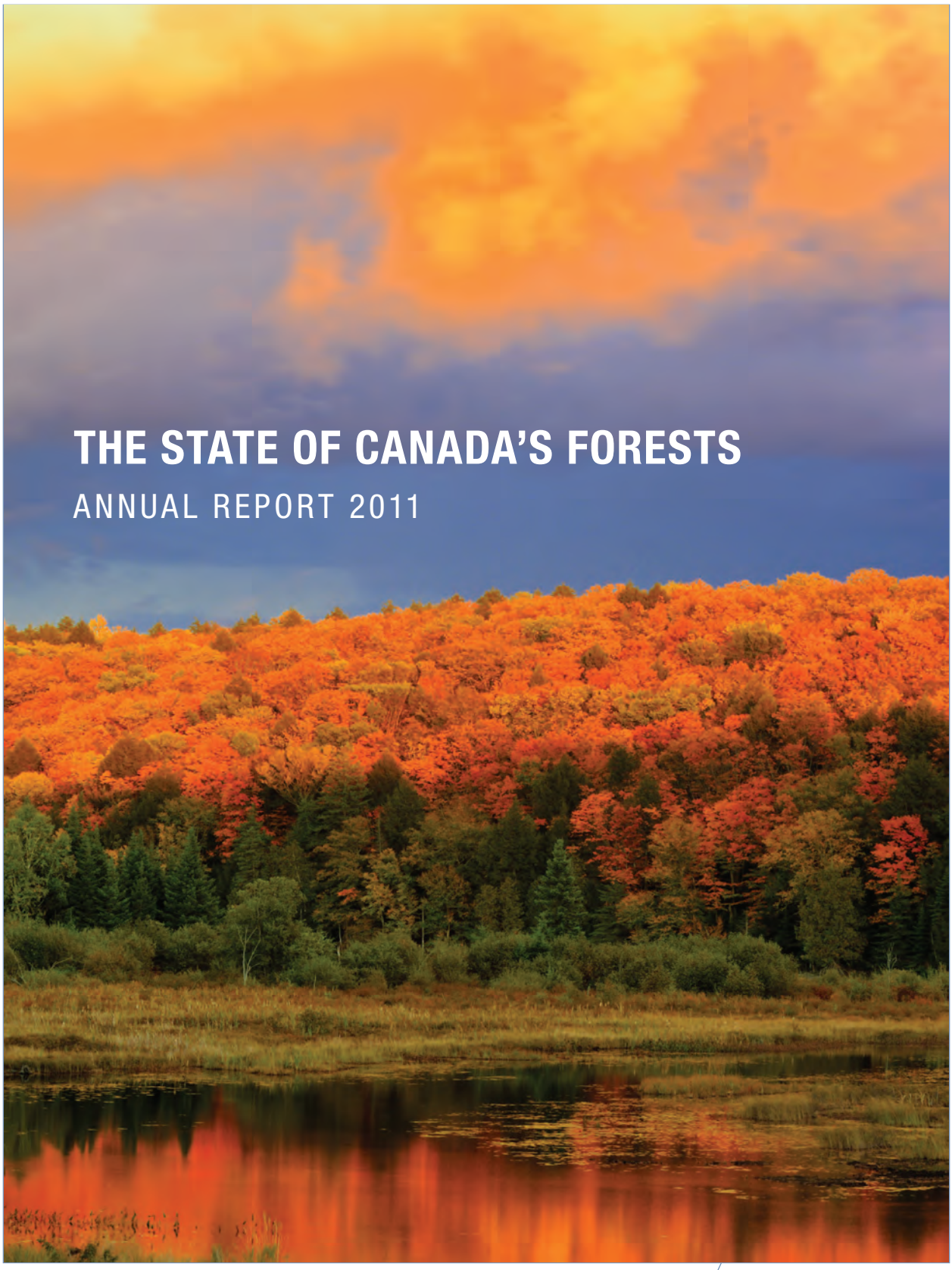

THE STATE OF CANADA'S FORESTS

ANNUAL REPORT 2011

Canada

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"Squeezing more value from trees" photo: courtesy of FPInnovations
Photos of five-ply cross-laminated timber panel (page 4) and outfeed system for finger-jointed cross-laminated timber (page 5): courtesy of Bill Downing, Structurlam Products Limited
"Mill activities in the Canadian forest industry" photo: Dryden pulp mill, courtesy of Domtar Inc.

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MESSAGE FROM THE MINISTER OF NATURAL RESOURCES

The 2011 edition of *The State of Canada's Forests* coincides with two significant domestic and international events: Canada's first National Tree Day celebration and the United Nations' International Year of Forests. National Tree Day is a day of action and appreciation to recognize the many ways in which trees benefit our environment and our lives. For the United Nations' International Year of Forests, Canadians are joining citizens around the world throughout 2011 in celebrating the importance of forests and the roles of individuals and groups in their sustainable management, conservation and development.

Our Government presents *The State of Canada's Forests 2011* to Parliament as part of our ongoing commitment to keeping Canadians fully informed about the state of our forests today, and to help shape a common vision and new approaches for tomorrow.

The *State of Canada's Forests 2011* offers an objective assessment of our resources and industry through the provision of key facts and a comprehensive and current collection of national statistics, accompanied by expert trend summaries. In addition, readers can learn at cfs.nrcan.gc.ca how investments have been contributing to the transformation of the forest industry, an industry that is now focusing on niche markets, non-traditional products and emerging technologies.

In 2007, our Government collaborated with industry and academia to establish the Transformative Technologies Program, a comprehensive national strategy aimed at rebuilding a vibrant and innovative forest sector. The goal was to increase the value of the products and services derived from the forest to meet market demand. As the report shows, we are meeting this goal in various ways.

Looking to the economic environment of the industry, we are also seeing encouraging signs of recovery that we must take advantage of to ensure continued growth. Our Government is continuing to support the sector's transformation by announcing in Budget 2011 an investment of $60 million to assist Canada's forest industry in its efforts to innovate and to tap into new opportunities abroad.

As a country rich in forest resources, Canada continues to balance the economic needs of our country while ensuring that future generations will continue to enjoy the many benefits of these resources. Today, we are helping other countries around the world improve their practices by sharing our knowledge and experience in sustainable forest management.

I hope you find *The State of Canada's Forests 2011* to be an informative overview of the nation's forest sector.

The Honourable Joe Oliver, P.C., M.P.
Minister of Natural Resources

CONTENTS

WEB FEATURES

At **cfs.nrcan.gc.ca,** read about

Squeezing more value from trees

This feature article reports on the extensive efforts underway at every level of the forest sector value chain to expand and optimize the market value of Canada's wood fibre resource. The well-integrated, innovation-driven transformation strategy guiding this revival is focused on two key objectives: developing higher-end products and services, and improving production efficiencies.

Working to sustain Canada's forests into the future

This feature article presents an overview of different initiatives that are underway to ensure that Canadian forests are environmentally sustainable in the long term, and that they continue to provide the many benefits that Canadians currently enjoy. This is especially important given the changes that have already begun to affect Canada's forests. The article also describes how the natural attributes of those forests are contributing to their long-term capacity to adapt.

EXECUTIVE SUMMARY

After the previous year's challenges, resulting from the global economic downturn, 2010 saw encouraging signs not just of recovery but of a transformation in the forest industry. With unprecedented investment in the forest sector by the Government of Canada and new investment by the provinces and industry, Natural Resources Canada, through the Canadian Forest Service, continued to play a key role in enabling this transformation.

There is evidence of growth in employment and investment in the forest industry, as the global economy recovers and as new demand and market opportunities continue to expand in China. But it's not business as usual: Canada's forest industry is reinventing itself, with a new business model focused on niche markets, non-traditional products and emerging technologies.

As a country rich in forest resources, Canada has always tried to get as much economic value from its forests as possible. Today, maximizing the benefits of our forests, and doing so sustainably, is especially important. With the decline in North American demand for traditional forest products such as newsprint, new markets and economic opportunities are needed, especially for communities in rural and remote areas. At the same time, with buyers interested in the environmental attributes of forest products, forests facing new threats from global pressures such as climate change, and an evolving definition of sustainability, there is a need to understand and manage Canada's forests in new ways.

Since 2007, Natural Resources Canada has been working with partners in government, industry and academia, to rebuild a vibrant, future-looking forest sector. A key objective is to increase the value of the products and services derived from the forest to meet market demand—in effect, to "squeeze more value from trees." This involves improving industry productivity, developing new products and services for existing and new markets, developing new markets for existing products and services, and demonstrating and promoting sustainable practices throughout the forest sector. (For more information about how Canada's forest industry is squeezing more value from trees, go to cfs.nrcan.gc.ca.)

Diversifying uses of and markets for Canadian wood products is an important part of improving the overall competitiveness of Canada's forest sector. It includes promoting the use of wood products in the North American non-residential and mid-rise construction market, and promoting Canadian wood and wood-frame building systems in new markets. Diversification can help cushion the forest sector from changes in any one market. For example, in 2010, through support from the Canada Wood program, exports of Canadian wood products to China rose to $834 million and exports to South Korea rose to $144 million, increases of 114 percent and 47 percent respectively—significant achievements during a period when home construction in the United States, Canada's traditional export market, was weak.

Announced in June 2009, the $1-billion Pulp and Paper Green Transformation Program (PPGTP) continues to drive environmental improvements in the Canadian pulp and paper sector while improving the sustainability of mills and mill communities across the country. Projects funded under this program are expected to generate enough renewable energy to power more than 200 000 houses, making mills more energy self-sufficient and diversifying their revenue streams. For example, the Celgar mill in Castlegar, British Columbia, has taken full advantage of this opportunity to optimize its power generation capacity and export even more "green" electricity. Thanks to the $57 million received by this company under the PPGTP, the mill will be able to produce nearly 216 000 megawatt hours per year of additional renewable electricity for sale to BC Hydro. The PPGTP will also significantly decrease mill atmospheric emissions, including greenhouse gases, particulates and odour-causing gases. In fact, upon completion of all projects, it is expected that the program will have reduced the greenhouse gas emissions of the entire Canadian pulp and paper sector by an estimated 10 percent.

Innovation is at the heart of the Transformative Technologies Program (TTP). Established in 2007, the program is already having a significant impact. For example, thanks to funding received under both the PPGTP and the TTP, a nanocrystalline cellulose plant in

Windsor, Quebec, will soon be turning forest biomass into a range of high-value industrial and consumer products—the first in the world to use this new technology on a large scale. These programs also contributed funds to a pulp mill in Athollville, New Brunswick, that will soon be installing a new technology for treating mill effluents to not only improve efficiency but also generate biogas to fuel the mill's operations. And in Okanagan Falls, British Columbia, a new plant is manufacturing cross-laminated timber panels from softwood lumber—making a product that has the ability to dramatically reduce construction times and costs. With the realization of new opportunities like these, investment is beginning to flow into the forest industry across the country.

In June 2010, the federal government also indicated its willingness to support technology commercialization in the forest sector by creating the new $100-million Investments in Forest Industry Transformation program (IFIT). IFIT will provide funding for projects that implement innovative technologies in the forest sector, leading to a diversified, higher-value mix of products, including bioenergy and renewable power, as well as biomaterials, biochemicals and other bioproducts. Unique among federal government programs, IFIT addresses a key funding gap by directly supporting the commercialization of new technologies by Canadian forest sector companies that are embracing transformation.

The forest sector showed widespread support for the forest industry transformation agenda by submitting more than 60 projects to IFIT's Call for Proposals. The total request for funds represented more than 10 times the funding that was available through the first call, demonstrating the sector's keen interest in moving forward on innovation projects. The projects submitted were from a wide range of sub-sectors, regions and company sizes, and involved a wide variety of innovative technologies, many of which emerged from earlier research efforts supported by the Government of Canada. The projects selected for funding will be implemented through 2011/12.

Changes in traditional markets over the last decade have had a major impact on communities that depend on the forest industry for jobs and other economic opportunities. At the same time as Natural Resources Canada is supporting market diversification and the development of

new technologies in the forest industry, it is helping to ensure that the resulting economic opportunities benefit forest and Aboriginal communities, through such programs as the Forest Communities Program and the new Aboriginal Forestry Initiative.

In addition, the Canadian Forest Service continues to play a leadership role in increasing the understanding of forests and developing the tools to manage them. Forests are much more than reservoirs of timber: Canadians benefit not only economically but also from the cleaner air and water, carbon storage and recreational opportunities provided by forests. Especially in light of climate change and other pressures, it is crucial to ensure that future generations of Canadians can continue to reap these benefits. Canadian Forest Service research in areas like forest carbon dynamics and the use of genomics to control pests such as spruce budworm is playing an important role in ensuring that Canada's forests can withstand and adjust to global changes over the next decades. (For more information about why sustainability matters, go to cfs.nrcan.gc.ca.)

Canada's leadership in sustainable forest management is also helping other countries around the world improve their forest knowledge and practices, notably through the International Model Forest Network, which now includes the African Model Forest Initiative (AMFI), launched by Natural Resources Canada in 2009. The AMFI is intended to improve the conservation and sustainable management of forest resources in francophone Africa. The Canadian Forest Service is helping other countries use its Carbon Budget Model to better understand the carbon dynamics of their forests. And the Canadian Forest Fire Danger Rating System is being used in many other countries around the world to measure fire potential and guide fire management activities.

As the world moves into a future marked by the impacts of global changes, getting the most out of our forests, through transformative technologies and sustainable forest management, will keep Canada's forest industry and the communities that depend on it on a strong footing for both today and tomorrow.


KEY FACTS

SOCIETY

- Most of Canada's forest land (93%) is publicly owned—77% under provincial or territorial jurisdiction and 16% 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 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.
- In 2010, direct employment in the Canadian forest industry fell by 7% compared with 2009.
- For about 200 communities, the forest sector makes up at least 50% of the economic base.
- About 80% of Aboriginal communities are in forested areas.
- Public participation is an important aspect of forest management planning in Canada.
- There were 12.3 million person-visits to Canada's national parks in 2010.

ECONOMY

- By value, Canada is the world's leading exporter of softwood lumber, newsprint and wood pulp.
- The forest industry's contribution to Canada's gross domestic product is about 1.8%.
- The United States is by far the largest buyer of Canadian forest products.

ENVIRONMENT

- Canada has 397.3 million hectares of forest, other wooded land and other land with tree cover, representing 10% of the world's forest cover and 30% of the world's boreal forest.
- About 8% of Canada's forest area is protected by legislation. About 40% of the total forest landbase is subject to varying degrees of protection such as integrated land-use planning or defined management areas such as certified forests.
- Annually, less than 1% of Canada's forests are harvested.
- By law, all forests harvested on Canada's public land must be successfully regenerated.
- By December 2010, 149.8 million hectares of Canada's forests were certified as being sustainably managed by one or more of three globally recognized certification standards.
- Bioenergy accounts for 58% of the total energy used by the forest industry, with the pulp and paper industry meeting some 62% of its energy needs from forest biomass.


STATISTICAL PROFILES

CANADA

POPULATION (APRIL 1, 2011) · 34 349 236 **MAPLE**

DOMESTIC ECONOMIC IMPACT

Canadian housing starts (SAAR) (2010)	191 558
Capital and repair expenditures (dollars) (2009)	**4 129 900 000**
Forestry and logging industry	569 900 000
Pulp and paper product manufacturing industry	2 080 700 000
Wood product manufacturing industry	1 479 300 000
Contribution to GDP (constant 2002 dollars) (2010)	**22 539 000 000**
Forestry and logging industry	4 308 000 000
Pulp and paper product manufacturing industry	8 652 000 000
Wood product manufacturing industry	9 579 000 000
Direct jobs (number) (2010)	
Direct jobs (LFS)	222 500
Direct jobs (SEPH)	190 658
New investments (dollars) (2010)	**1 578 300 000**
Forestry and logging industry	171 800 000
Pulp and paper product manufacturing industry	946 900 000
Wood product manufacturing industry	459 600 000
Revenue from goods manufactured (dollars) (2009)	**50 818 062 000**
Forestry and logging industry	7 608 444 000
Pulp and paper product manufacturing industry	24 905 620 000
Wood product manufacturing industry	18 303 998 000
Wages and salaries (dollars) (2009)	**8 779 067 000**
Forestry and logging industry	1 378 184 000
Pulp and paper product manufacturing industry	3 689 521 000
Wood product manufacturing industry	3 711 362 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	15 225 333
Area planted (hectares) (2009)	389 494
Area seeded (hectares) (2009)	20 629
Fire – area burned (hectares) (2010)	3 156 100
Fires – number (2010)	7 319
Forest area certified (hectares) (2010)	149 838 198
Harvest area (hectares) (2009)	611 874
Harvest volume (cubic metres) (2009)	118 254 000

GREENHOUSE GAS INVENTORY

For forest lands affected by land-use change (2009)	
Afforestation – forest area (kilohectares)	0
CO_2e removals from the atmosphere due to afforestation (megatonnes)	–1
Deforestation – forest area (kilohectares)	44.8
CO_2e emissions due to deforestation (megatonnes)	18
For managed forests (2009)	
Area of managed forests (million hectares)	229
Net greenhouse gas inventory (CO_2e/yr) (megatonnes)	–16
Net greenhouse gas exchange (CO_2e/yr) (megatonnes)	–130

FOREST PRODUCTS

Domestic consumption	
Lumber – hardwood (cubic metres) (2010)	2 198 350
Lumber – softwood (cubic metres) (2010)	27 530 835
Newsprint (tonnes) (2010)	771 466
Printing and writing paper (tonnes) (2010)	1 487 001
Structural panels (plywood and oriented strandboard) (cubic metres) (2010)	3 443 146
Wood pulp (tonnes) (2010)	9 414 708
Production	
Christmas trees (dollars) (2009)	39 407 000
Christmas trees (number) (2009)	1 878 000
Lumber – hardwood (cubic metres) (2010)	954 900
Lumber – softwood (cubic metres) (2010)	52 356 300
Maple products (dollars) (2009)	353 801 000
Maple products (litres) (2009)	41 274 309
Newsprint (tonnes) (2010)	4 640 000
Printing and writing paper (tonnes) (2010)	4 064 000
Structural panels (plywood and oriented strandboard) (cubic metres) (2010)	5 967 766
Wildlife pelts (minus sealskins) (number) (2008)	747 697
Wood pulp (tonnes) (2010)	18 530 000

INVENTORY

Area classification (thousand hectares)	
Forest land	347 710
Other land with tree cover	7 773
Other wooded land	41 779
Forest, other wooded land and other land with tree cover	**397 262**
Forest type (forest land)	
Broadleaf	11%
Coniferous	67%
Mixedwood	16%
Non-treed	6%
Ownership (forest and other wooded land)	
Federal	16%
Private	7%
Provincial	77%
National parks area (million hectares)	27.6

TRADE

Balance of trade (total exports) (dollars) (2010)	16 626 320 326
Value of domestic exports (dollars) (2010)	**25 952 824 750**
Primary wood products	871 450 972
Pulp and paper products	17 233 192 473
Wood-fabricated materials	7 848 181 305
Value of imports (dollars) (2010)	**9 454 548 106**
Primary wood products	451 041 602
Pulp and paper products	6 292 629 564
Wood-fabricated materials	2 710 876 940

See page 16 for background information and sources for the statistics presented in these tables.

BRITISH COLUMBIA

POPULATION (APRIL 1, 2011) · 4 563 296 **WESTERN REDCEDAR**

DOMESTIC ECONOMIC IMPACT

Housing starts (SAAR) (2010)	26 625
Direct jobs (number) (2010)	
Direct jobs (LFS)	54 400
Direct jobs (SEPH)	45 624
New investments (dollars) (2010)	**419 100 000**
Forestry and logging industry	59 300 000
Pulp and paper product manufacturing industry	202 200 000
Wood product manufacturing industry	157 600 000
Revenue from goods manufactured (dollars) (2009)	**13 126 093 000**
Forestry and logging industry	3 092 556 000
Pulp and paper product manufacturing industry	4 281 348 000
Wood product manufacturing industry	5 752 189 000
Wages and salaries (dollars) (2009)	**2 284 583 000**
Forestry and logging industry	541 140 000
Pulp and paper product manufacturing industry	620 466 000
Wood product manufacturing industry	1 122 977 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	12 850 278
Area planted (hectares) (2009)	154 003
Area seeded (hectares) (2009)	Not available
Fire – area burned (hectares) (2010)	331 508
Fires – number (2010)	1 678
Forest area certified (hectares) (2010)	52 884 451
Harvest area (hectares) (2009)	122 620
Harvest volume (cubic metres) (2009)	48 031 000

INVENTORY

Ownership (forest and other wooded land)	
Federal	1%
Private	3%
Provincial	96%
Provincial parks area (million hectares)	13.5

TRADE

Balance of trade (total exports) (dollars) (2010)	7 616 192 112
Value of domestic exports (dollars) (2010)	**9 030 217 661**
Primary wood products	645 192 288
Pulp and paper products	4 037 080 826
Wood-fabricated materials	4 347 944 547
Value of imports (dollars) (2010)	**1 415 628 764**
Primary wood products	43 993 616
Pulp and paper products	675 432 834
Wood-fabricated materials	696 202 314

ALBERTA

POPULATION (APRIL 1, 2011) · 3 758 234 **LODGEPOLE PINE**

DOMESTIC ECONOMIC IMPACT

Housing starts (SAAR) (2010)	26 875
Direct jobs (number) (2010)	
Direct jobs (LFS)	16 000
Direct jobs (SEPH)	15 642
New investments (dollars) (2010)	**165 400 000**
Forestry and logging industry	18 600 000
Pulp and paper product manufacturing industry	98 600 000
Wood product manufacturing industry	48 200 000
Revenue from goods manufactured (dollars) (2009)	**4 137 963 000**
Forestry and logging industry	631 819 000
Pulp and paper product manufacturing industry	1 509 641 000
Wood product manufacturing industry	1 996 503 000
Wages and salaries (dollars) (2009)	**783 005 000**
Forestry and logging industry	119 615 000
Pulp and paper product manufacturing industry	193 890 000
Wood product manufacturing industry	469 500 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	405 883
Area planted (hectares) (2009)	50 715
Area seeded (hectares) (2009)	1 080
Fire – area burned (hectares) (2010)	83 643
Fires – number (2010)	1 837
Forest area certified (hectares) (2010)	17 982 425
Harvest area (hectares) (2009)	71 249
Harvest volume (cubic metres) (2009)	19 768 000

INVENTORY

Ownership (forest and other wooded land)	
Federal	8%
Private	3%
Provincial	89%
Provincial parks area (thousand hectares)	220

TRADE

Balance of trade (total exports) (dollars) (2010)	1 949 907 647
Value of domestic exports (dollars) (2010)	**2 240 261 249**
Primary wood products	21 734 979
Pulp and paper products	1 596 740 217
Wood-fabricated materials	621 786 053
Value of imports (dollars) (2010)	**295 781 747**
Primary wood products	3 035 342
Pulp and paper products	141 065 606
Wood-fabricated materials	151 680 799

SASKATCHEWAN

POPULATION (APRIL 1, 2011) · 1 053 960 **WHITE BIRCH**

DOMESTIC ECONOMIC IMPACT

Housing starts (SAAR) (2010)	6 058
Direct jobs (number) (2010)	
Direct jobs (LFS)	3 600
Direct jobs (SEPH)	Not available
New investments (dollars) (2010)	**Not available**
Forestry and logging industry	2 700 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	Not available
Revenue from goods manufactured (dollars) (2009)	**480 214 000**
Forestry and logging industry	102 958 000
Pulp and paper product manufacturing industry	215 625 000
Wood product manufacturing industry	161 631 000
Wages and salaries (dollars) (2009)	**83 816 000**
Forestry and logging industry	13 651 000
Pulp and paper product manufacturing industry	20 108 000
Wood product manufacturing industry	50 057 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	129 260
Area planted (hectares) (2009)	1 339
Area seeded (hectares) (2009)	Not available
Fire – area burned (hectares) (2010)	1 734 799
Fires – number (2010)	571
Forest area certified (hectares) (2010)	3 869 964
Harvest area (hectares) (2009)	7 920
Harvest volume (cubic metres) (2009)	1 768 000

INVENTORY

Ownership (forest and other wooded land)	
Federal	4%
Private	6%
Provincial	90%
Provincial parks area (million hectares)	1.1

TRADE

Balance of trade (total exports) (dollars) (2010)	152 507 721
Value of domestic exports (dollars) (2010)	**224 138 869**
Primary wood products	2 200 348
Pulp and paper products	170 445 268
Wood-fabricated materials	51 493 253
Value of imports (dollars) (2010)	**72 417 925**
Primary wood products	1 503 693
Pulp and paper products	35 713 090
Wood-fabricated materials	35 201 142

MANITOBA

POPULATION (APRIL 1, 2011) · 1 246 396 **WHITE SPRUCE**

DOMESTIC ECONOMIC IMPACT

Housing starts (SAAR) (2010)	6 042
Direct jobs (number) (2010)	
Direct jobs (LFS)	5 000
Direct jobs (SEPH)	Not available
New investments (dollars) (2010)	**Not available**
Forestry and logging industry	400 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	Not available
Revenue from goods manufactured (dollars) (2009)	**901 210 000**
Forestry and logging industry	70 793 000
Pulp and paper product manufacturing industry	394 611 000
Wood product manufacturing industry	435 806 000
Wages and salaries (dollars) (2009)	**187 249 000**
Forestry and logging industry	9 329 000
Pulp and paper product manufacturing industry	71 959 000
Wood product manufacturing industry	105 961 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	140 055
Area planted (hectares) (2009)	9 565
Area seeded (hectares) (2009)	314
Fire – area burned (hectares) (2010)	187 494
Fires – number (2010)	583
Forest area certified (hectares) (2010)	13 256 131
Harvest area (hectares) (2009)	13 648
Harvest volume (cubic metres) (2009)	1 839 000

INVENTORY

Ownership (forest and other wooded land)	
Federal	2%
Private	3%
Provincial	95%
Provincial parks area (million hectares)	3.4

TRADE

Balance of trade (total exports) (dollars) (2010)	–119 718 773
Value of domestic exports (dollars) (2010)	**285 321 985**
Primary wood products	948 877
Pulp and paper products	198 631 959
Wood-fabricated materials	85 741 149
Value of imports (dollars) (2010)	**405 182 211**
Primary wood products	2 450 572
Pulp and paper products	293 244 739
Wood-fabricated materials	109 486 900

ONTARIO

POPULATION (APRIL 1, 2011) · 13 310 859 **EASTERN WHITE PINE**

DOMESTIC ECONOMIC IMPACT

Housing starts (SAAR) (2010)	61 242
Direct jobs (number) (2010)	
Direct jobs (LFS)	46 700
Direct jobs (SEPH)	40 219
New investments (dollars) (2010)	**314 400 000**
Forestry and logging industry	11 400 000
Pulp and paper product manufacturing industry	243 200 000
Wood product manufacturing industry	59 800 000
Revenue from goods manufactured (dollars) (2009)	**11 318 292 000**
Forestry and logging industry	1 096 849 000
Pulp and paper product manufacturing industry	7 227 093 000
Wood product manufacturing industry	2 994 350 000
Wages and salaries (dollars) (2009)	**2 126 703 000**
Forestry and logging industry	187 697 000
Pulp and paper product manufacturing industry	1 261 736 000
Wood product manufacturing industry	677 270 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	664 097
Area planted (hectares) (2009)	63 382
Area seeded (hectares) (2009)	18 600
Fire – area burned (hectares) (2010)	14 824
Fires – number (2010)	931
Forest area certified (hectares) (2010)	25 621 769
Harvest area (hectares) (2009)	123 965
Harvest volume (cubic metres) (2009)	9 664 000

INVENTORY

Ownership (forest and other wooded land)	
Federal	1%
Private	8%
Provincial	91%
Provincial parks area (million hectares)	7.9

TRADE

Balance of trade (total exports) (dollars) (2010)	–878 405 234
Value of domestic exports (dollars) (2010)	**4 088 932 577**
Primary wood products	56 902 206
Pulp and paper products	3 287 998 961
Wood-fabricated materials	744 031 410
Value of imports (dollars) (2010)	**5 073 549 498**
Primary wood products	49 252 172
Pulp and paper products	3 911 980 607
Wood-fabricated materials	1 112 316 719

QUEBEC

POPULATION (APRIL 1, 2011) · 7 957 591 **YELLOW BIRCH**

DOMESTIC ECONOMIC IMPACT

Housing starts (SAAR) (2010)	50 900
Direct jobs (number) (2010)	
Direct jobs (LFS)	77 900
Direct jobs (SEPH)	64 213
New investments (dollars) (2010)	**414 400 000**
Forestry and logging industry	65 400 000
Pulp and paper product manufacturing industry	220 900 000
Wood product manufacturing industry	128 100 000
Revenue from goods manufactured (dollars) (2009)	**16 047 897 000**
Forestry and logging industry	1 760 164 000
Pulp and paper product manufacturing industry	8 657 143 000
Wood product manufacturing industry	5 630 590 000
Wages and salaries (dollars) (2009)	**2 553 962 000**
Forestry and logging industry	356 030 000
Pulp and paper product manufacturing industry	1 180 990 000
Wood product manufacturing industry	1 016 942 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	265 121
Area planted (hectares) (2009)	75 113
Area seeded (hectares) (2009)	600
Fire – area burned (hectares) (2010)	314 883
Fires – number (2010)	737
Forest area certified (hectares) (2010)	28 658 897
Harvest area (hectares) (2009)	148 569
Harvest volume (cubic metres) (2009)	Not available

INVENTORY

Ownership (forest and other wooded land)	
Private	11%
Provincial	89%
Provincial parks area (thousand hectares) (excluding wildlife reserves)	755

TRADE

Balance of trade (total exports) (dollars) (2010)	5 589 380 066
Value of domestic exports (dollars) (2010)	**7 482 112 402**
Primary wood products	64 546 023
Pulp and paper products	5 859 024 825
Wood-fabricated materials	1 558 541 554
Value of imports (dollars) (2010)	**1 905 720 241**
Primary wood products	284 954 760
Pulp and paper products	1 097 760 560
Wood-fabricated materials	523 004 921

NEW BRUNSWICK

POPULATION (APRIL 1, 2011) · 753 025 **BALSAM FIR**

DOMESTIC ECONOMIC IMPACT

Housing starts (SAAR) (2010)	4 492
Direct jobs (number) (2010)	
Direct jobs (LFS)	12 000
Direct jobs (SEPH)	Not available
New investments (dollars) (2010)	**Not available**
Forestry and logging industry	5 400 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	Not available
Revenue from goods manufactured (dollars) (2009)	**Not available**
Forestry and logging industry	617 111 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	792 120 000
Wages and salaries (dollars) (2009)	**Not available**
Forestry and logging industry	100 482 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	155 410 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	Not available
Area planted (hectares) (2009)	20 563
Area seeded (hectares) (2009)	Not available
Fire – area burned (hectares) (2010)	156
Fires – number (2010)	179
Forest area certified (hectares) (2010)	3 893 331
Harvest area (hectares) (2009)	63 072
Harvest volume (cubic metres) (2009)	7 940 000

INVENTORY

Ownership (forest and other wooded land)	
Federal	2%
Private	50%
Provincial	48%
Provincial parks area (thousand hectares)	24

TRADE

Balance of trade (total exports) (dollars) (2010)	1 332 753 600
Value of domestic exports (dollars) (2010)	**1 560 712 945**
Primary wood products	21 183 391
Pulp and paper products	1 197 486 548
Wood-fabricated materials	342 043 006
Value of imports (dollars) (2010)	**228 373 234**
Primary wood products	65 728 462
Pulp and paper products	112 328 300
Wood-fabricated materials	50 316 472

NOVA SCOTIA

POPULATION (APRIL 1, 2011) · 942 334 **RED SPRUCE**

DOMESTIC ECONOMIC IMPACT

Housing starts (SAAR) (2010)	4 375
Direct jobs (number) (2010)	
Direct jobs (LFS)	4 700
Direct jobs (SEPH)	Not available
New investments (dollars) (2010)	**Not available**
Forestry and logging industry	5 200 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	Not available
Revenue from goods manufactured (dollars) (2009)	**Not available**
Forestry and logging industry	147 349 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	463 051 000
Wages and salaries (dollars) (2009)	**Not available**
Forestry and logging industry	34 354 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	95 624 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	13 914
Area planted (hectares) (2009)	9 026
Area seeded (hectares) (2009)	Not available
Fire – area burned (hectares) (2010)	463
Fires – number (2010)	313
Forest area certified (hectares) (2010)	1 609 219
Harvest area (hectares) (2009)	41 346
Harvest volume (cubic metres) (2009)	4 127 000

INVENTORY

Ownership (forest and other wooded land)	
Federal	3%
Private	68%
Provincial	29%
Provincial parks area (thousand hectares)	31

TRADE

Balance of trade (total exports) (dollars) (2010)	864 263 227
Value of domestic exports (dollars) (2010)	**915 745 163**
Primary wood products	58 683 014
Pulp and paper products	764 060 822
Wood-fabricated materials	93 001 327
Value of imports (dollars) (2010)	**51 912 527**
Primary wood products	111 286
Pulp and paper products	19 323 578
Wood-fabricated materials	32 477 663

PRINCE EDWARD ISLAND

POPULATION (APRIL 1, 2011) · 143 836 — **RED OAK**

DOMESTIC ECONOMIC IMPACT

Housing starts (SAAR) (2010)	783
Direct jobs (number) (2010)	
Direct jobs (LFS)	400
Direct jobs (SEPH)	Not available
New investments (dollars) (2010)	**Not available**
Forestry and logging industry	Not available
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	Not available
Revenue from goods manufactured (dollars) (2009)	**Not available**
Forestry and logging industry	2 600 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	26 601 000
Wages and salaries (dollars) (2009)	**Not available**
Forestry and logging industry	516 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	5 688 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	Not available
Area planted (hectares) (2009)	570
Area seeded (hectares) (2009)	Not available
Fire – area burned (hectares) (2010)	5
Fires – number (2010)	4
Forest area certified (hectares) (2010)	337
Harvest area (hectares) (2009)	2 133
Harvest volume (cubic metres) (2009)	404 000

INVENTORY

Ownership (forest and other wooded land)	
Federal	1%
Private	91%
Provincial	8%
Provincial parks area (thousand hectares)	2

TRADE

Balance of trade (total exports) (dollars) (2010)	7 876 227
Value of domestic exports (dollars) (2010)	**7 958 421**
Primary wood products	42 423
Pulp and paper products	7 785 986
Wood-fabricated materials	130 012
Value of imports (dollars) (2010)	**83 386**
Primary wood products	0
Pulp and paper products	7 017
Wood-fabricated materials	76 369

NEWFOUNDLAND AND LABRADOR

POPULATION (APRIL 1, 2011) · 508 410 — **BLACK SPRUCE**

DOMESTIC ECONOMIC IMPACT

Housing starts (SAAR) (2010)	4 167
Direct jobs (number) (2010)	
Direct jobs (LFS)	1 800
Direct jobs (SEPH)	Not available
New investments (dollars) (2010)	**Not available**
Forestry and logging industry	Not available
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	Not available
Revenue from goods manufactured (dollars) (2009)	**Not available**
Forestry and logging industry	85 517 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	51 157 000
Wages and salaries (dollars) (2009)	**Not available**
Forestry and logging industry	15 130 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	11 933 000

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	99 105
Area planted (hectares) (2009)	5 156
Area seeded (hectares) (2009)	Not available
Fire – area burned (hectares) (2010)	1 020
Fires – number (2010)	61
Forest area certified (hectares) (2010)	2 061 674
Harvest area (hectares) (2009)	16 992
Harvest volume (cubic metres) (2009)	2 050 000

INVENTORY

Ownership (forest and other wooded land)	
Private	1%
Provincial	*99%
Provincial parks area (thousand hectares)	21

TRADE

Balance of trade (total exports) (dollars) (2010)	110 924 164
Value of domestic exports (dollars) (2010)	**116 759 769**
Primary wood products	12 991
Pulp and paper products	113 583 301
Wood-fabricated materials	3 163 477
Value of imports (dollars) (2010)	**5 875 033**
Primary wood products	11 699
Pulp and paper products	5 749 753
Wood-fabricated materials	113 581

** Timber and property rights for 69% of the Crown land on the island of Newfoundland have been conveyed to pulp and paper companies through 99-year licences issued under the 1905* Pulp and Paper Manufacturing Act *and 1935* Bowater Act. *Therefore, the province's financial and legal system treats this licensed land as private property.*

YUKON

POPULATION (APRIL 1, 2011) · 34 377 **SUBALPINE FIR**

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	601 415
Area planted (hectares) (2009)	35
Area seeded (hectares) (2009)	35
Fire – area burned (hectares) (2010)	146 957
Fires – number (2010)	88
Forest area certified (hectares) (2010)	Not available
Harvest area (hectares) (2009)	300
Harvest volume (cubic metres) (2009)	27 000

INVENTORY

Ownership (forest and other wooded land)	
Federal	100%
Territorial parks area	Not available

TRADE

Balance of trade (total exports) (dollars) (2010)	281 954
Value of domestic exports (dollars) (2010)	**301 593**
Primary wood products	4 432
Pulp and paper products	8 138
Wood-fabricated materials	289 023
Value of imports (dollars) (2010)	**19 039**
Primary wood products	0
Pulp and paper products	18 979
Wood-fabricated materials	60

NUNAVUT

POPULATION (APRIL 1, 2011) · 33 413

INVENTORY

Ownership (forest and other wooded land)	
Federal	100%
Territorial parks area	Not available

TRADE

Balance of trade (total exports) (dollars) (2010)	295 794
Value of domestic exports (dollars) (2010)	**295 794**
Primary wood products	0
Pulp and paper products	293 152
Wood-fabricated materials	2 642
Value of imports (dollars) (2010)	**0**
Primary wood products	0
Pulp and paper products	0
Wood-fabricated materials	0

NORTHWEST TERRITORIES

POPULATION (APRIL 1, 2011) · 43 505 **TAMARACK**

DOMESTIC ECONOMIC IMPACT

New investments (dollars) (2010)	**Not available**
Forestry and logging industry	300 000
Pulp and paper product manufacturing industry	Not available
Wood product manufacturing industry	Not available

FOREST MANAGEMENT

Area defoliated by insects and beetle-killed trees (hectares) (2009)	56 205
Area planted (hectares) (2009)	27
Area seeded (hectares) (2009)	Not available
Fire – area burned (hectares) (2010)	334 435
Fires – number (2010)	224
Forest area certified (hectares) (2010)	Not available
Harvest area (hectares) (2009)	60
Harvest volume (cubic metres) (2009)	24 000

INVENTORY

Ownership (forest and other wooded land)	
Federal	100%
Territorial parks area (thousand hectares)	14

TRADE

Balance of trade (total exports) (dollars) (2010)	61 821
Value of domestic exports (dollars) (2010)	**66 322**
Primary wood products	0
Pulp and paper products	52 470
Wood-fabricated materials	13 852
Value of imports (dollars) (2010)	**4 501**
Primary wood products	0
Pulp and paper products	4 501
Wood-fabricated materials	0

SOURCE AND INFORMATION

The statistical profile data in the preceding tables are derived from a number of sources, which are identified here under each data type. Where necessary, they have been edited for accuracy and consistency. All data are subject to revision.

In most cases, the data represent the year before the reporting period. However, when they are gathered from several sources, it takes longer to analyze and produce them. In these cases, the numbers reflect results from two or three years before the reporting period.

While most of the figures are calculated for the calendar year, some are based on the federal government's fiscal year (April 1 to March 31). Numbers are rounded off; in the case of employment data, they are rounded to the nearest hundred.

It may not be possible to compare directly the data from the various sections, as they emanate from several sources and these sources may compile their statistics differently.

DOMESTIC ECONOMIC IMPACT

CANADIAN HOUSING STARTS—SEASONALLY ADJUSTED ANNUAL RATE (SAAR)

A rate adjustment used for economic or business data that attempts to remove seasonal variations in the data. The time of year will affect most data. Adjusting for the seasonality in data enables more accurate month-to-month comparisons. The SAAR is calculated by dividing the unadjusted annual rate for the month by its seasonality factor and creating an adjusted annual rate for the month. These adjustments are more often used when economic data are released to the public.

Source: Canada Mortgage and Housing Corporation.

CAPITAL AND REPAIR EXPENDITURES

Capital expenditures include the cost of procuring, constructing and installing or leasing new durable plants, machinery or equipment, whether for replacement of or addition to existing assets. 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.

Source: Statistics Canada, Capital and repair expenditures, by sector and province, annual (dollars), CANSIM Table 029-0005 and Capital and repair expenditures, industry sectors 31-33, manufacturing, annual (dollars), CANSIM Table 029-0009, March 2011.

CONTRIBUTION TO 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.) Figures are in constant dollars and only available for Canada. The constant dollars are used to measure variations in the dollar's real value over time. The constant dollar is the real value of a current dollar compared with a dollar's value in a specific reference year. Expressing GDP in constant dollars makes it possible to measure real growth by removing the effect of inflation.

Source: Statistics Canada, Gross Domestic Product (GDP) at basic prices, by North American Industry Classification System (NAICS), monthly (dollars), CANSIM Table 379-0027, March 2011 and Selected economic indicators, provincial economic accounts, annual, CANSIM Table 384-0013, April 2011.

DIRECT JOBS

Persons employed directly in the following industries: forestry and logging, industries involved in support activities for forestry, and pulp and paper product manufacturing and wood product manufacturing.

The data are sourced from Statistics Canada's Labour Forces Survey (LFS) and the Survey of Employment, Payrolls and Hours (SEPH). Due to different methodologies, not all these data are comparable.

Source: Statistics Canada, Labour Force Survey (LFS), March 2011 (special extraction) and the Survey of Employment, Payrolls and Hours, unadjusted for seasonal variation, by type of employee for selected industries classified using the North American Industry Classification System (NAICS), monthly (persons), CANSIM Table 281-0023, March 2011.

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).

Source: Statistics Canada, Capital and repair expenditures, by sector and province, annual (dollars), CANSIM Table 029-0005 and Capital and repair expenditures, industry sectors 31-33, manufacturing, annual (dollars), CANSIM Table 029-0009, March 2011.

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.

Source: Statistics Canada, Annual Survey of Manufactures and Logging (ASML): Logging industries, principal statistics by North American Industry Classification System (NAICS), annual, CANSIM Table 301-0007 and Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS), annual, CANSIM Table 301-0006, 2004–2009.

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, employment insurance and other social insurance schemes.

Source: Statistics Canada, Annual Survey of Manufactures and Logging (ASML): Logging industries, principal statistics by North American Industry Classification System (NAICS), annual, CANSIM Table 301-0007 and Principal statistics for manufacturing industries, by North American Industry Classification System (NAICS), annual, CANSIM Table 301-0006, 2004–2009.

FOREST MANAGEMENT

AREA DEFOLIATED BY INSECTS AND BEETLE-KILLED TREES

The data include areas where there is tree mortality and moderate to severe defoliation. Defoliation does not always imply mortality; for example, stands with moderate defoliation often recover and may not lose much growth. Also, defoliation is mapped on an insect-species basis, and a given area may be afflicted by more than one species at a time. This may result in double or triple counting in areas affected by more than one species, exaggerating the extent of the total area defoliated.

Source: National Forestry Database.

AREA PLANTED AND SEEDED

Total of federal, private and provincial land.

Source: National Forestry Database.

CARBON EMISSIONS/REMOVALS

For forest lands affected by land-use change, the deforestation and afforestation figures reflect annual rates, while the figures for CO_2 equivalent emissions (CO_2e) and removals reflect the current year plus the previous 20 years. Thus, the figures for CO_2e emissions include residual emissions from areas deforested over the past 20 years, and the figures for CO_2e removals include ongoing removals by areas afforested over the past 20 years. Emissions and removals exactly match the most recent greenhouse gas inventory figures submitted to the United Nations Framework Convention on Climate Change. Emissions always bear a positive sign, while removals bear a negative sign.

For managed forests, the negative value for net greenhouse gas inventory denotes net greenhouse gas uptake from the atmosphere by the forest. Net greenhouse gas exchange describes the net exchange of greenhouse

gases between the forests and the atmosphere, with the negative value denoting net greenhouse gas uptake from the atmosphere by the forest.

Source: National Inventory Report 2011, Environment Canada (based on Natural Resources Canada–Canadian Forest Service data/analysis).

FIRE

Area burned includes areas within all of Canada's forests.

Sources: All figures for the most current year are from the Canadian Interagency Forest Fire Centre. Data for all previous years were provided by the provinces/territories and are available from the National Forestry Database.

FOREST AREA CERTIFIED

If a forest area has been certified to more than one of the three sustainable forestmanagement standards (Canadian Standards Association [CSA], Sustainable Forestry Initiative [SFI] and Forest Stewardship Council [FSC]), the area is counted only once. Hence, the total certifications for SFM standards may be less than the sum of the individual totals for these standards.

Source: Canadian Sustainable Forestry Certification Coalition.

HARVEST (VOLUME)

The national and provincial/territorial figures for harvesting volume include data for industrial roundwood, fuelwood and firewood.

Source: National Forestry Database.

FOREST PRODUCTS

DOMESTIC CONSUMPTION

Natural Resources Canada–Canadian Forest Service calculated the consumption figures for these products. This information is available only at the national level.

PRODUCTION

Christmas trees

The production quantity and value are based on estimates calculated by Natural Resources Canada–Canadian Forest Service.

Sources: Statistics Canada and National Forestry Database.

Lumber

Source: Statistics Canada, Sawn lumber production and shipments, monthly (cubic metres dry), CANSIM Table 303-0009. April 2011.

Maple products

Source: National Forestry Database.

Newsprint, printing and writing paper, wood pulp

The production and consumption figures are based on Pulp and Paper Products Council data.

Structural panels

The production and consumption data of structural panels—plywood and oriented strandboard—are from the APA–The Engineered Wood Association.

Wildlife pelts (minus sealskins)

Source: Statistics Canada, Number and value of pelts produced, annual, CANSIM Table 003-0013. June 2011.

INVENTORY

AREA CLASSIFICATION

Source: National Forest Inventory 2006.

Forest type

Source: National Forest Inventory 2006.

Ownership

Source: Canada's Forest Inventory 2001.

The National Forest Inventory uses the following Food and Agriculture Organization of the United Nations (FA0) definitions:

Forest land

Areas of land where tree canopies cover more than 10 percent of the total area and the trees, when mature, can grow to a height of more than 5 metres. Does not include land that is predominantly urban or used for agricultural purposes.

Other land with tree cover

Areas of land where tree canopies cover more than 10 percent of the total area and the trees, when mature, can grow to a height of at least 5 metres. Includes treed areas on farms, in parks and gardens, and around buildings. Also includes tree plantations established mainly for purposes other than wood production, such as fruit orchards.

Other wooded land

Areas of land where 1) tree canopies cover 5–10 percent of the total area and the trees, when mature, can grow to a height above 5 metres; or 2) shrubs, bushes and trees together cover more than 10 percent of the area. These areas include treed wetlands (swamps) and land with slow-growing and scattered trees. They do not include land that is predominantly agricultural or urban.

TRADE

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.

Source: Statistics Canada, merchandise trade data (special extraction), monthly data.

SUSTAINABILITY INDICATORS

Sustainable forest management can be monitored by applying a set of indicators, which are objective measures that can be supported by data.

Indicators are practical, science-based tools that give governments, industry, the public and others a consistent way to track national progress over time and to identify where improvements can be made. However, no single indicator alone is a sign of sustainability. For a clear picture, the whole range of indicators must be considered.

The following is a sample of the indicators for sustainable forest management, along with the most recent information on how Canada's forests are doing in each area.

BIOLOGICAL DIVERSITY

Biological diversity or biodiversity refers to the variety of species and ecosystems on earth and the ecological processes of which they are a part. Biodiversity makes it possible for organisms and ecosystems to respond and adapt to environmental change. Biodiversity conservation is therefore crucial to ensuring that forests are managed sustainably.

INDICATOR: STATUS OF FOREST-ASSOCIATED SPECIES AT RISK

WHY IS THIS IMPORTANT?

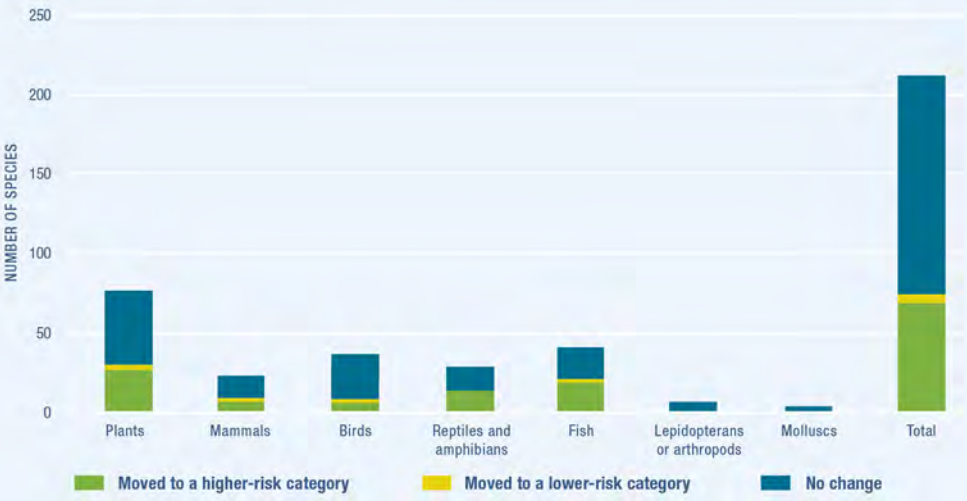
- Changes in the conservation status of forest-associated species over time are one indicator used to evaluate the sustainability of forest management practices in Canada.
- In Canada, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) meets annually to assess the conservation status of species thought to be at some degree of risk.

WHAT HAS CHANGED?

- There are currently 348 COSEWIC-listed forest-associated species at risk in Canada. Forest-associated species require forest habitat for the successful completion of their lifecycle.
- Of the 40 species assessed or reassessed by COSEWIC in May 2011, 16 are forest-associated, and of these, 9 were newly assessed to be at risk, 6 were reassessed and found to have had no change in their risk level, and 1 was reassessed and found to have moved to a higher-risk category.
- The 2011 COSEWIC assessment of forest-associated species at risk listed a host of threats to species at risk in Canada, including habitat loss and degradation caused by forest management practices. Other threats listed include recreation and tourism development, climate change, pollution and over-harvesting (e.g., hunting and fishing).

The following graph shows the change in COSEWIC status of 211 forest-associated species at risk. It excludes 137 species that have been assessed only once (including 9 newly assessed species in 2011) and therefore have exhibited no known change in status.

CHANGE IN COSEWIC STATUS OF FOREST-ASSOCIATED SPECIES AT RISK, 1999–2011



Source: Committee on the Status of Endangered Wildlife in Canada

ECOSYSTEM CONDITION AND PRODUCTIVITY

Canada's forest ecosystems must be resilient so that they can cope with and recover from natural and human disturbances and maintain their ecological functions and processes.

INDICATOR: ADDITIONS AND DELETIONS OF FOREST AREA

WHY IS THIS IMPORTANT?

- It is important to know how and why forest areas change over time, especially when these trends may cause long-term additions (e.g., afforestration) or deletions (e.g., deforestation) to Canada's forest base.
- Because forests provide a number of ecological services, such as water purification and erosion control, additions and deletions of forest area affect the overall capacity of forests to recover from natural and human disturbances. As well, because forests act as carbon sinks and sources, it is critically important to monitor and report forest additions and deletions to help gauge Canada's ability to meet its climate change–related commitments.
- Deforestation is the enduring conversion of forest to other land uses. Deforestation in Canada is caused mainly by the conversion of forest land for agriculture, industrial development, resource extraction and urban expansion. Harvesting, when followed by regeneration, is not deforestation. Afforestation is the establishment of new forests on previously non-forested land.

WHAT HAS CHANGED?

- Overall, the rate of deforestation in Canada has declined, with the annual rate dropping from just over 64 000 hectares in 1990 to some 45 000 hectares in 2009. However, reservoirs associated with large hydroelectric projects can cause spikes in this trend, increasing the area deforested for short time periods. For example, 35 000 hectares of forest area were lost in the mid-1990s and another 28 000 hectares were lost in the mid-2000s due to the development of reservoirs (not shown in table below).
- In 2009, deforestation resulted in net emissions of 15.7 million tonnes of carbon dioxide equivalent, down from 27.5 million tonnes in 1990.[1]
- Limited afforestation has been carried out in Canada since 1990 relative to the total area of forest. Although millions of trees are planted each year to supplement natural regeneration, these efforts are occurring primarily as part of sustainable forest management in areas that were already forested. Urban and rural tree-planting initiatives are occurring in Quebec, Ontario, the Prairie provinces and other regions of Canada. Some of these afforestation activities are recorded in Canada's National Afforestation Inventory, but the data in this system are incomplete and do not provide an accurate picture of national trends.

ESTIMATED AREA OF DEFORESTATION (1000 HECTARES) BY INDUSTRIAL SECTOR

Sector	1990	1995	2000	2005	2009
Agriculture	41.9	22.4	20.5	19.1	19.1
Forestry*	4.1	4.4	4.5	4.5	4.5
Hydro infrastructure**	2.6	1.5	0.9	1.0	0.7
Industry and transportation***					
Industry	0.9	0.8	0.8	0.8	0.8
Mining	2.3	2.5	2.5	2.5	2.4
Oil and gas	5.3	5.9	8.9	10.6	10.6
Transportation	1.7	1.5	1.4	1.3	1.3
Municipal****	3.9	3.7	4.2	4.6	4.6
Peat mining	0.9	0.7	0.5	0.0	0.0
Recreation*****	0.8	0.9	0.8	0.7	0.7
Total****	**64.4**	**44.2**	**45.0**	**45.2**	**44.8**

* *Resulting from the creation of permanent forest access roads*
** *Excludes reservoirs*
*** *Includes mines, gravel pits, oil and gas projects and highway construction*
**** *Includes urban development*
***** *Includes ski hills and golf courses*
****** *Numbers may not equal total due to rounding*

Source: Environment Canada 2011

[1] *These numbers account for lateral transfers of carbon from the forest ecosystem to the forest product sector as greenhouse gas emissions to the atmosphere and residual emissions from deforestation in previous years.*

INDICATOR: AREA OF FOREST DISTURBED BY FIRE, INSECTS, DISEASE AND HARVESTING

WHY IS THIS IMPORTANT?

- Forests are constantly exposed to and modified by natural disturbances such as fire, insects and diseases. They are also disturbed by industrial activities such as logging, road construction, oil and gas ventures and other human activities.
- Natural disturbances are an essential part of the process of forest renewal.
- Foresters study both natural and human disturbances to gain a better understanding of how forest ecosystems change.
- Forest managers increasingly look to natural events when planning forest harvesting. They want to ensure that their practices facilitate natural regeneration and recovery of ecosystem productivity following disturbance.

WHAT HAS CHANGED?

FIRES

- In 2010, 7319 forest fires were reported across Canada, approximately equal to the 10-year average (2000–2009). Although the number of fires was the same, the area burned was much higher in 2010: three million hectares—nearly double (86%) the 10-year average.
- The 2010 fire season began under extreme conditions due to low winter snowfall, with drought conditions not experienced since the 1930s. May saw a change in the El Niño–Southern Oscillation (ENSO) pattern from El Niño to La Niña conditions, which brought the fire danger closer to normal.
- Of the national area burned in 2010, 55% (1.7 million hectares) was in Saskatchewan, with 99% of that north of the Churchill River. The 2010 area burned in British Columbia exceeded that experienced in 2009, though in 2010 there were fewer interface fires than the previous year.
- Smoke events were a significant feature of the 2010 fire season. May and June fires in Quebec affected Ottawa, Montreal and Québec City. Fires in British Columbia smoked out many interior towns. Smoke plumes from fires around Williams Lake led to the August 19 smoke event in Edmonton, when visibilities were down to 800 metres in the city centre.

INSECTS

- In 2009, 15.2 million hectares of forest were defoliated by insects or contained beetle-killed trees, an increase from 13.7 million hectares in 2008.
- From 1998 to 2010, the mountain pine beetle killed more than 700 million cubic metres of pine in British Columbia, which represents more than 50% of the province's commercially important pine. Aided by some recent cold winters, management to control beetle populations is slowing the rate of spread in the highly vulnerable mature pine forest along the eastern slopes of the Rockies. However, the area of forest being attacked by beetles in Alberta continues to increase. Future eastward expansion of the beetle will depend on its ability to survive the winter, the frequency of summer drought, suitability of boreal forest pines to host the beetle, and the effectiveness of intensive efforts to control beetle populations.
- Some insect outbreaks are cyclical, with peak populations occurring periodically in particular regions of the country. For example, the last extensive outbreak of spruce budworm in Canada covered more than 50 million hectares in the 1970s and then declined to fewer than 1 million hectares in the late 1990s. Since that time, there has been resurgence and then decline of populations in different regions throughout the extensive range of spruce budworm in Canada.

- Invasive pests are a particular concern for forest managers because of uncertainty about how new species might affect the existing ecosystem. For example, the brown spruce longhorn beetle, discovered in Halifax in 1999, killed 30% of spruce in heavily infested areas around Halifax between 2008 and 2010 and now presents a risk to mature spruce forests across the country, especially those under stress from drought or other insects.

DISEASES

- Native forest pathogens have evolved to exist in equilibrium with natural forest communities. However, they can become very destructive when the natural equilibrium is altered by forest management activities, climate change, fire or insects.
- Invasive forest pathogens such as white pine blister rust are also prominent in Canadian forests, in some cases threatening the survival of certain tree species.
- As agents of disturbance in forest ecosystems, forest pathogens are major drivers of diversity, shaping forest structure and function. Pathogens also play a major role in decomposition and carbon cycling in Canada's forests.
- Environmental agents, such as drought, air pollution, extreme temperatures and nutrient deficiencies, can cause disease directly or predispose trees to damage by disease-causing organisms. For example, aspen dieback and decline in western Canada and northern Ontario has been attributed to the combined effects of insect defoliation, pathogens and thaw-freeze events.
- Although root diseases are one of the most widespread pathology problems in Canada's forests, the symptoms are subtle and very difficult to detect. Nationally, Armillaria root disease affects 203 million hectares of forest, infecting almost all tree species. Disease intensity may increase in stands disturbed by harvest or natural causes. For example, surveys of Douglas-fir in British Columbia and spruce and balsam fir in Ontario show that Armillaria infection increases steadily with stand age after planting in harvested stands or after disturbance in natural stands. Furthermore, there is an increase in the number of forest stands that are infected by Annosus root and butt rot, and the disease is now established in regions that were not previously exposed to it.

HARVESTING

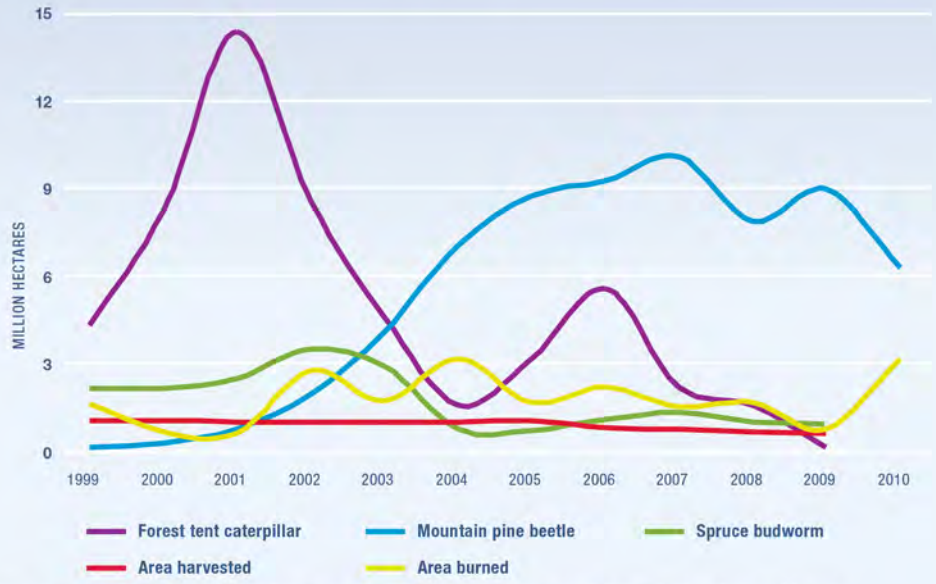
- Provincial and territorial regulations govern harvesting of Canada's forests and all harvested areas must be reforested. Each province and territory sets an allowable annual cut (AAC) based on the sustainable growth rate of the particular forest area. The goal is to maintain biological diversity while considering economic and social factors.
- In 2009, approximately 612 000 hectares of forest were harvested on provincial/territorial, federal and private lands.

Area of forest disturbed	Million hectares	Percentage change from previous year
Area burned (2010	3.2	303.0
Area defoliated by major insects* (2009)		
Forest tent caterpillar	0.2	–90.4
Mountain pine beetle (2010)	6.3	–29.2
Spruce budworm	1.0	–2.3
Area harvested (2009)	0.6	–9.5

** Area includes moderate to severe defoliation*

Sources: Canadian Interagency Forest Fire Centre, National Forestry Database and British Columbia Ministry of Forests, Lands and Natural Resource Operations

AREA OF FOREST DISTURBED BY FIRE, INSECTS AND HARVESTING



Sources: Canadian Interagency Forest Fire Centre, National Forestry Database and British Columbia Ministry of Forests, Lands and Natural Resource Operations

INDICATOR: PROPORTION OF TIMBER HARVEST AREA REGENERATED BY ARTIFICIAL AND NATURAL MEANS

WHY IS THIS IMPORTANT?

- Successful regeneration of harvest areas ensures that forest lands remain productive for wood fibre and continue to provide key ecosystem services, such as storing carbon, regulating water quality and quantity and providing recreation opportunities and wildlife habitat.
- Provinces set standards or regulations to determine whether a harvest area is successfully regenerated. Standards vary by province but commonly incorporate such criteria as species composition, density and distribution; age and height of the regenerating trees; and distribution of various forest types and age classes across the landscape. Harvested areas must meet provincial regeneration standards in a specified period of time.
- Artificial regeneration (planting and seeding) increases the likelihood of achieving regeneration to planned future forest species compositions and provides the maximum control of density and stocking.
- Natural regeneration can be effective when prescribed for certain conditions and for certain species, such as aspen and pine. The main benefit of natural regeneration is that it requires minimal human assistance and is therefore potentially less costly than artificial regeneration. However, there is less control over species composition, and remedial measures such as thinning or fill planting may be needed to regulate density and stocking.

- The proportion of harvested area regenerated naturally or artificially can fluctuate as a result of changes in the type of forest harvested. The amount of burned area from which timber is salvaged can also influence annual regeneration rates, since salvage areas may be more suited to either natural or artificial regeneration, depending on the site and original species composition. Total area regenerated is directly linked to harvest area, but reported regeneration rates typically lag behind those of harvest area by approximately two years.

WHAT HAS CHANGED?

- Until the early 1950s, foresters managing even-aged forests relied almost exclusively on natural regeneration of harvested areas. Today, with improved techniques, more effective tools and evolving provincial regeneration standards, artificial and natural regeneration are each being prescribed to approximately half of the area regenerated annually.
- Between 2008 and 2009, naturally regenerated area decreased by 3.5% and artificially regenerated area decreased by 13.3%.[2] This reflects the steep decline (42%) in annual harvest area over the previous five years, from a 10-year high in 2005 to a 20-year low in 2009. The reduction in harvest levels began in 2006 with the onset of a decline in the U.S. housing market and associated reduced demand for Canadian timber.[3]
- Although the proportion of harvested areas planted and seeded in 2009 was higher than average relative to the area regenerated naturally, the total number of seedlings planted was still down 14.9% from the previous year, setting a new 20-year low.
- One reason for the decline in area naturally regenerated may have been the collapse in demand for hardwood-based products such as oriented strand board (OSB). This would have resulted in fewer aspen stands harvested and therefore less area suited for natural regeneration.
- Regenerated area is likely to continue to decline until there is a well-established recovery in harvest rates, which will coincide with improved North American and international demand for Canadian forest products.

Regeneration method	Area thousand hectares	Portion of 2007 harvested area*	Percentage change from previous year	10-year average** Area thousand hectares	10-year average** Portion
Harvest 2007*	662		–9.3	884	
Natural***	288	43.5%	–3.5	437	49.5%
Artificial	374	56.5%	–13.3	447	50.4%
Planting	358	54.1%	–12.8	422	47.7%
Seeding	16	2.4%	–22.3	25	2.8%

Number of seedlings planted in 2009: 530 million (a 14.9% decrease from 2008 and a 12.4% decrease from the 10-year average)

* *Assumes a 2-year lag between harvest and regeneration. Harvest area data are from 2007 and percentage of area harvested is calculated by dividing 2009 data by 2007 data*

** *The 10-year average for harvest is for 1997–2006 and the 10-year average for natural and artificial regeneration area is for 1999–2008*

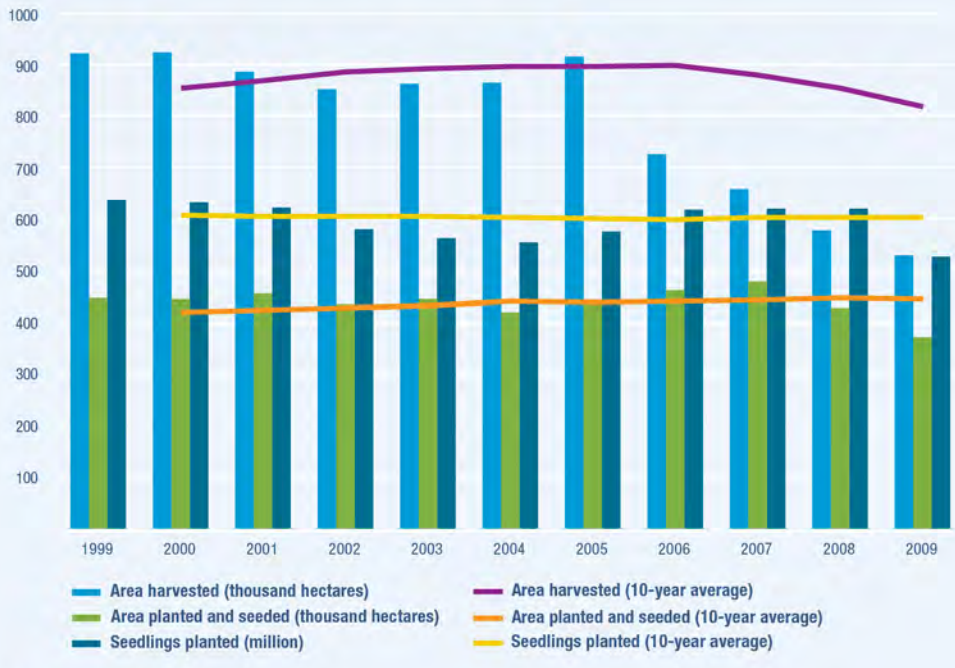
*** *Natural = harvest minus artificial*

Source: National Forestry Database

[2] *Data are for even-aged forests on Crown lands across Canada; federally and privately owned lands are excluded.*

[3] *Since there is typically a delay of two years between harvest and regeneration, to allow for site preparation and provision of nursery stock, regeneration data from 2009 are compared to harvest data from 2007.*

FOREST REGENERATION ON PROVINCIAL CROWN LANDS



Source: National Forestry Database

ROLE IN GLOBAL ECOLOGICAL CYCLES

Forests play an important role in global ecological cycles. They depend on and contribute to self-regulating processes responsible for recycling carbon, water, nitrogen and other life-sustaining elements. Forest management can impact forests' role in the carbon cycle.

INDICATOR: CARBON EMISSIONS/REMOVALS IN CANADA'S MANAGED FORESTS

WHY IS THIS IMPORTANT?

- Management activities aimed at increasing carbon stocks in Canada's forest ecosystems could mitigate climate change.
- Carbon emissions and removals from managed forests are an important indication of the contribution these forests make to the global carbon cycle and of the ever-changing impacts of natural processes.
- Monitoring trends in carbon emissions and removals is important for anticipating the future role of Canada's forests in the global carbon cycle and for tracking the success of the forest sector's mitigation activities.

WHAT HAS CHANGED?

- Canada's managed forests acted as net carbon sinks in 12 of the 20 years from 1990 to 2009. However, it is difficult to discern an overall trend because forest carbon emissions and removals vary considerably from year to year as a result of wildfires and, to a lesser extent, insect epidemics.
- In 2009, the managed forests acted as a net sink, taking 130 millions tonnes of carbon dioxide out of the atmosphere, accumulating 7 million tonnes of carbon (which is the equivalent of 16 million tonnes of carbon dioxide) in forest biomass and dead organic matter, and transferring 31 million tonnes of carbon (the equivalent of 114 million tonnes of carbon dioxide) into the forest product sector.
- Fire strongly influences year-to-year differences in carbon emissions and removals from Canada's managed forests. In 1992, a year of relatively few fires, net greenhouse gas inventory removals of carbon dioxide equivalent (CO_2e) were 112 million tonnes. In 1995, when more than 2 million hectares were burned, net greenhouse gas inventory emissions of CO_2e reached 171 million tonnes.
- During the 1990–2009 period, annual gross emissions directly from wildfire ranged from a high of 263 million tonnes of CO_2e in 1995 to a low of 11 million tonnes in 2000.

CARBON EMISSIONS/REMOVALS IN CANADA'S MANAGED FORESTS

Source: National Inventory Report 2011, Environment Canada (based on CFS data/analysis)

INDICATOR: FOREST SECTOR CARBON EMISSIONS

WHY IS THIS IMPORTANT?

- Most experts agree that there is a strong link between global warming and the burning of fossil fuels and other activities that emit greenhouse gases (GHGs) such as carbon dioxide, methane and nitrous oxide.
- The forest sector uses large amounts of energy in harvesting, transporting and processing wood. In fact, it is one of the largest industrial users of energy in Canada.
- The forest sector has significant GHG emissions. However, the sector's share of total industrial emissions is considerably lower than its share of total industrial energy use because of its increasing use of bioenergy.
- The sector's GHG emissions include direct emissions, which result mainly from fossil fuel burned by the sector, and indirect emissions, which result mainly from fossil fuel burned in producing electricity purchased by the sector. The sector's direct and indirect emissions also include small amounts of methane and nitrous oxide from burning biomass for energy.
- Monitoring the forest sector's GHG emissions is a necessary first step in improving the sector's emissions record. As well, tracking emissions in the forest sector helps Canada measure its national emission levels for comparison to its targets for GHG reductions.

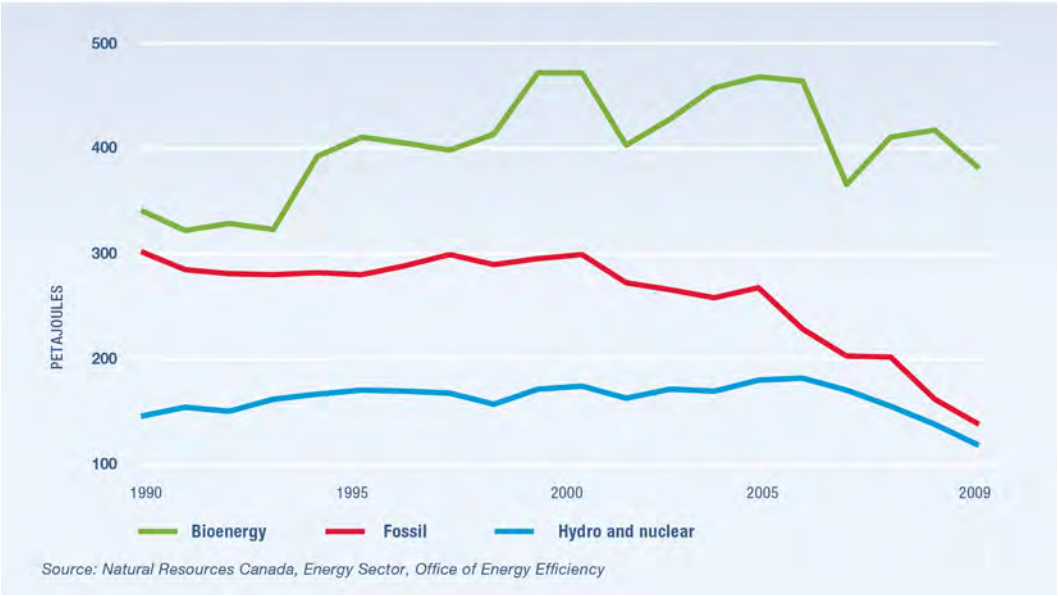
WHAT HAS CHANGED?

- A changing energy mix and greater energy efficiency are clearly reducing GHG emissions in the sector.
- The survey methodology used to inform Canada's Report on Energy Supply and Demand changed in 2008. This directly affects the estimates for industrial energy use and electricity generation and indirectly affects the emissions estimates. As such, the time series data for 2008–2009 may not be completely consistent with earlier years. (Note: 2009 data are preliminary.)
- Between 1990 and 2009 the sector's gross domestic product (GDP) fell 15% when measured in 2002 dollars, with much of the decline occurring in 2008 and 2009 due to the decline in the U.S. housing market and global economic recession. The industry's energy use fell by 19% as energy efficiency improved.
- In 1990, fossil fuels, which include coal, refined petroleum products and natural gas, accounted for 38% of the forest sector's energy needs. This estimate includes both the fossil fuels used directly by the sector and the fossil fuels used in producing electricity that the sector purchases. By 2009 the fossil fuel share had fallen to 22%, while the share of bioenergy, hydro and nuclear power rose from 62% to 78%.
- Because of this switch in fuel types, increasing energy efficiency and reduced energy use during the global economic recession, the sector's overall GHG emissions (direct and indirect) decreased 51% between 1990 and 2009, at the same time as its contribution to GDP fell by 15%.
- The forest sector substantially cut its use of fossil fuels between 1990 and 2009, contributing to a 63% decrease in direct emissions. However, in the same period the sector increased its use of fossil fuel electricity, increasing indirect emissions from this source by 5% and offsetting some of the reduction in direct emissions.
- In 2009, the federal government announced the Pulp and Paper Green Transformation Program, a three-year initiative that provides pulp and paper companies in Canada with one-time access to $1 billion in funding for capital investments that make environmental improvements to their

facilities, such as improved energy efficiency or increased production of alternative energy. Upon completion of all projects, the program is expected to directly reduce the greenhouse gas emissions of the entire Canadian pulp and paper sector by an estimated 10%.

- The federal government continues to invest in forest industry projects that will help combat emissions in the future.

ENERGY SOURCES IN THE FOREST SECTOR



Source: Natural Resources Canada, Energy Sector, Office of Energy Efficiency

FOSSIL FUEL GHG EMISSIONS AND TOTAL ENERGY USE IN THE FOREST SECTOR

Source: Natural Resources Canada, Energy Sector, Office of Energy Efficiency

ECONOMIC AND SOCIAL BENEFITS

Sustainable forest management ensures that forests provide a broad range of goods and services over the long term, offering significant economic and social benefits.

INDICATOR: ANNUAL HARVEST OF TIMBER RELATIVE TO THE LEVEL OF HARVEST DEEMED TO BE SUSTAINABLE

WHY IS THIS IMPORTANT?

- Regulating the amount of wood that can be harvested is central to sustainable forest management strategies. Tracking harvest volumes allows forest managers to determine whether these levels comply with regulated amounts.
- Provincial governments regulate harvest levels on provincial Crown lands by specifying an allowable annual cut (AAC), which is the annual level of harvest allowed on a particular area of Crown land over a specified number of years. In practice, annual harvest volumes may be above or below the AAC, but they must balance out over the regulation period.
- Although no AAC is determined for Canada as a whole, it is possible to compare the aggregation of the provincial AACs across the country with the aggregated harvest from the same land base.
- Harvest volumes on private, federal and territorial lands are generally unregulated, although the managers of these lands may have commitments to meeting specific harvest targets. It is therefore difficult to determine the sustainable level of harvest on these lands.
- Wood supply is the term used to describe the estimated volume of timber that can be harvested from an area while meeting sustainability criteria. In Canada, various planning processes are used to estimate wood supply, depending on the forest land's ownership and regulatory environment.

WHAT HAS CHANGED?

- Canada's aggregate AAC in 2009 is estimated to be 207 million cubic metres, comprising 164 million cubic metres of softwoods and 43 million cubic metres of hardwoods.
- The volume of hardwood timber harvested on provincial Crown land increased steadily between 1990 and 2004, peaking at 27 million cubic metres in 2004, well below the AAC. Harvest volumes have declined rapidly since then, falling below 16 million cubic metres in 2009.
- Although softwood harvest volumes on provincial Crown land were relatively constant between 1990 and 2004 at about 130 million cubic metres per year, they have fallen steadily since 2004, to 82 million cubic metres in 2009.
- Private, territorial and federal lands contributed an additional 13 million cubic metres of softwoods and 5 million cubic metres of hardwoods to the total volume of timber harvested in 2009.
- Canada's total wood supply has been relatively stable since 1990, at about 240 million cubic metres, although in recent years it has increased modestly, reaching 246 million cubic metres in 2009, including 188 million cubic metres of softwoods and 58 million cubic metres of hardwoods.

- Softwood harvests on all land types (provincial, territorial, federal and private) have averaged 144 million cubic metres per year over the past 10 years (2000–2009)—more than 20% below the estimated wood supply. Harvests have fallen rapidly since 2004, however, and current volumes are about half of the estimated sustainable supply.

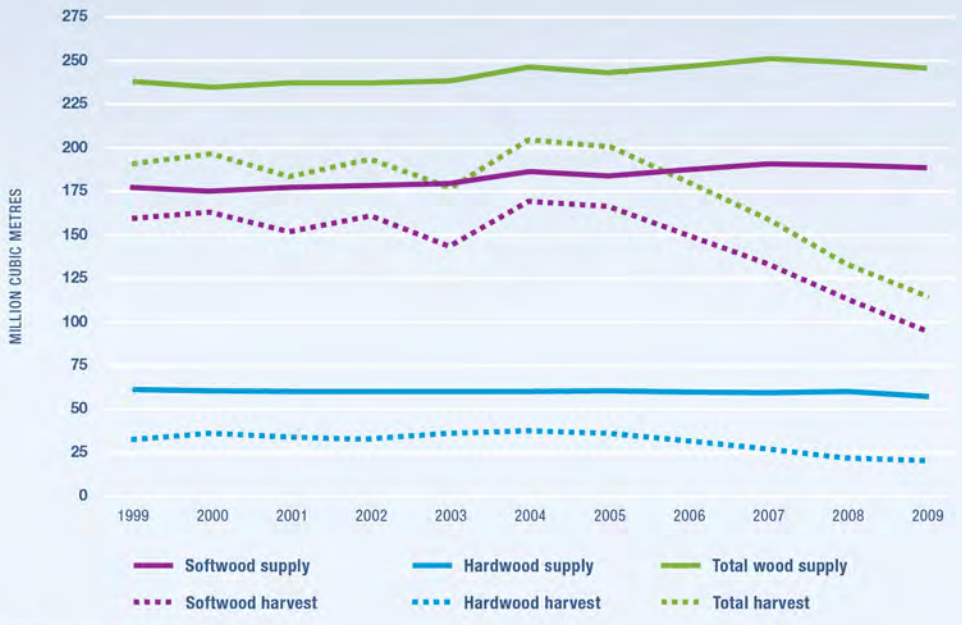
- Hardwood harvests on all land types (provincial, territorial, federal and private) have remained relatively constant over the past decade, at just over 30 million cubic metres per year, although they too have declined since 2004, falling to 20 million cubic metres in 2009, well below the estimated wood supply of 58 million cubic metres per year.

Annual harvest versus supply deemed sustainable*	Million cubic metres (2009)	Percentage change from previous year	Percentage change from previous 10 years**
Softwood supply	188	–0.7	0.6
Hardwood supply	58	–3.2	–0.6
Softwood harvest	95	–15.5	–5.0
Hardwood harvest	20	–6.7	–4.3

* *Includes all land types (provincial, territorial, federal, private)*
** *10-year average, 1999–2009*

Source: National Forestry Database

ANNUAL HARVEST VERSUS SUPPLY DEEMED SUSTAINABLE FOR HARVEST



Note: Includes only industrial roundwood
Source: National Forestry Database

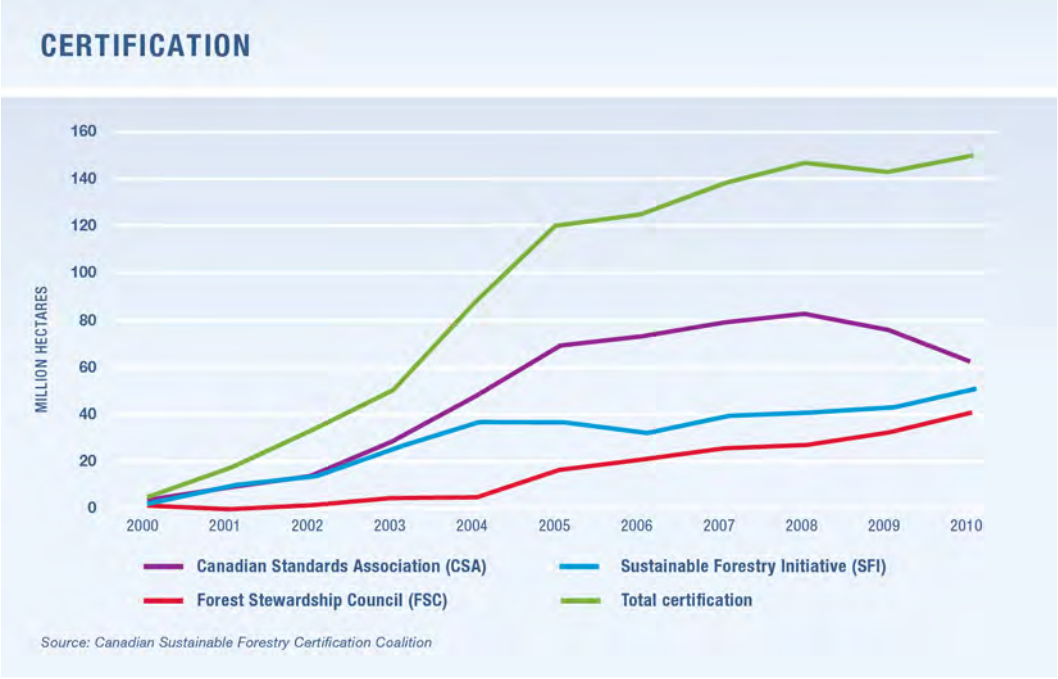
INDICATOR: CERTIFICATION

WHY IS THIS IMPORTANT?

- Third-party certification assures buyers that the forest products they purchase are from legal and sustainable sources. It demonstrates the rigour of Canada's forest management laws and the sustainability of its forest management practices.
- Three internationally recognized certification systems are used in Canada: Canadian Standards Association (CSA), Forest Stewardship Council (FSC) and Sustainable Forestry Initiative (SFI).

WHAT HAS CHANGED?

- As of December 2010, Canada had 149.8 million hectares of forest certified to one or more of the three certification systems, up from 142.8 million hectares in 2009.
- Canada has the largest area of certified forest in the world, with 42% of the total worldwide as of December 2010.
- The CSA and SFI standards are endorsed by the international umbrella organization Programme for the Endorsement of Forest Certification Schemes (PEFC).
- Canada has almost half of the world's PEFC-endorsed certifications, and almost a third of the world's FSC certifications.



INDICATOR: CONTRIBUTION OF FOREST PRODUCTS TO GROSS DOMESTIC PRODUCT

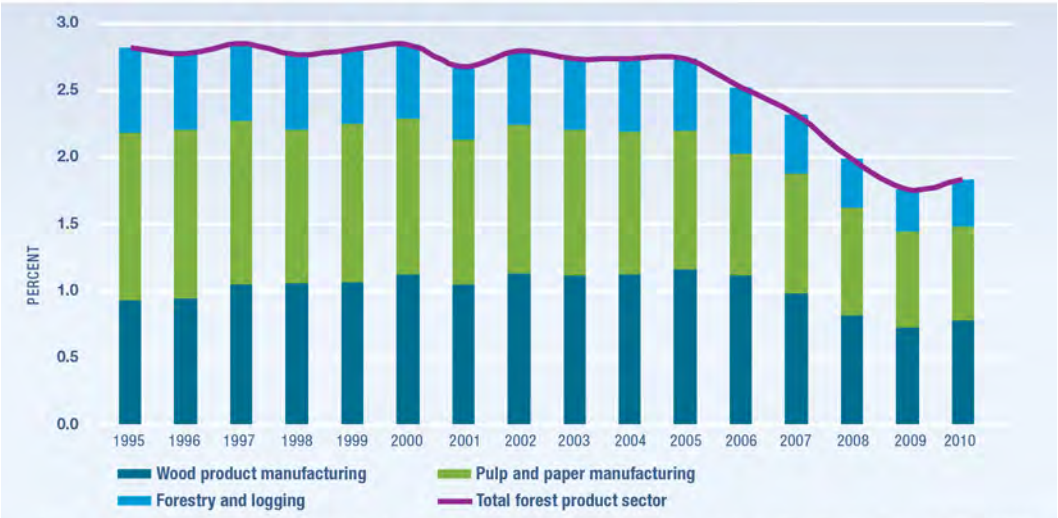
WHY IS THIS IMPORTANT?

- The gross domestic product (GDP) is the total value of all final goods and services produced annually in all sectors of the economy.
- Comparing the GDP contribution of the forest product sector with that of the entire Canadian economy shows the relative importance of Canadian forest products to the Canadian economy.
- The Canadian forest product sector includes three subsectors: wood (building products such as lumber and wood panels), logging (timber extraction, forest protection and regeneration) and pulp and paper.

WHAT HAS CHANGED?

- From 2006 to 2009, the forest product sector's share of GDP dropped significantly.
- Until 2006, the contribution of the pulp and paper (excluding newsprint) and wood subsectors had been very stable. The U.S. housing crisis has been a severe challenge for the wood subsector, which declined to record lows in 2009 before starting to recover in 2010. The pulp and paper sector has been impacted by the high Canadian dollar and the global recession, but its prospects too are improving.
- In 2010, the forest product sector's contribution to the GDP showed signs of improvement from its record low in 2009 and reached 1.8% of total Canadian GDP, at $22.6 billion. This growth was caused in part by a strong demand from Asian markets, the onset of a global economic recovery and the positive impacts of fundamental restructuring among forest sector firms.
- The turnaround of the forest product sector GDP contribution is the result, in part, of federal programs that promote environmental performance, support innovation and expand market opportunities, thus enhancing the competitive position of Canadian companies. The programs are aimed at increasing market destination opportunities (North American Wood First, Canada Wood Export), expanding the Canadian product mix (Value to Wood, Transformative Technologies) and facilitating the move towards greener and more efficient operations (Pulp and Paper Green Transformation, Pilot-Scale Demonstration, Investments in Forest Industry Transformation).

FOREST PRODUCT SECTOR CONTRIBUTION TO GDP



Source: Statistics Canada, Gross Domestic Product (GDP) at basic prices, by North American Industry Classification System (NAICS 2002)

INDICATOR: FINANCIAL PERFORMANCE

WHY IS THIS IMPORTANT?

- Canada's forest industry contributes significantly to the nation's economy. It is particularly important in many rural communities, where other jobs tend to be scarce.
- Key measures of the forest industry's financial performance include operating profits and return on capital employed. While high operating profits indicate that an industry's core business activity is in good health, return on capital employed is an important measure of how efficiently the industry is using its capital.

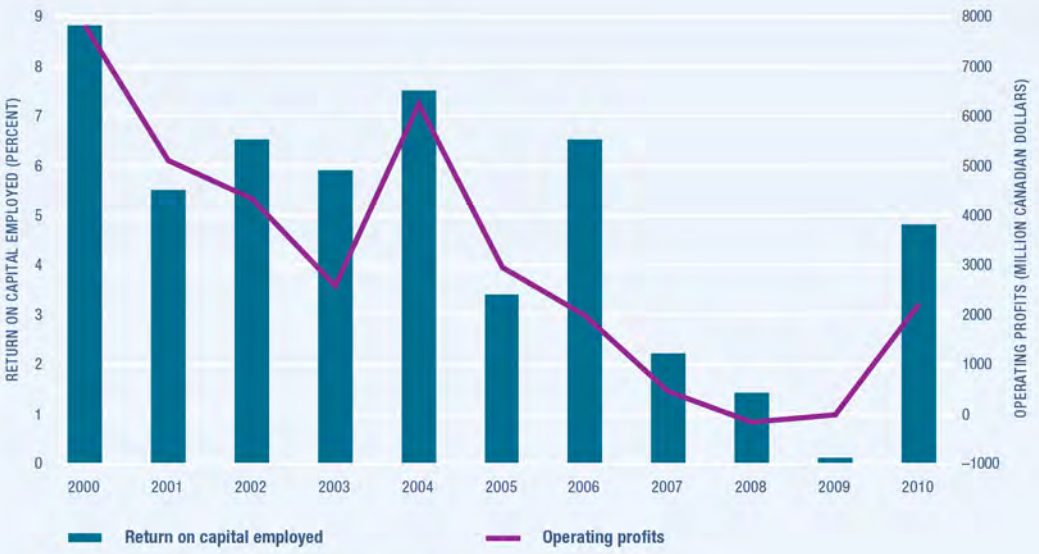
WHAT HAS CHANGED?

- After two consecutive years of losses, Canadian forest industry operating profits recovered to pre-crisis levels, reaching $2.2 billion in 2010. The return on capital employed also improved to 4.8% in 2010, a considerable improvement over the 20-year low of 0.1% witnessed in 2009.
- Improved financial performance was primarily due to restructuring activities taking place in the Canadian forest sector, as well as greater demand for Canadian forest products, which translated into higher prices and profits.

Return on capital employed	2000	2009	2010
	8.8%	0.1%	4.8%

Source: Statistics Canada, quarterly survey of financial statistics for enterprises, CANSIM Table 187-0002

FINANCIAL PERFORMANCE



Source: Statistics Canada, quarterly financial statistics for enterprises, CANSIM Table 187-0002

INDICATOR: FOREST INDUSTRY EMPLOYMENT

WHY IS THIS IMPORTANT?

- The Canadian forest industry is a major employer nationwide, particularly in many rural communities, where forest-related work is the main source of income.

WHAT HAS CHANGED?

- In 2010, direct employment in the Canadian forest industry fell 6.6% from 2009 levels.
- Forest industry support activities had the steepest decline in employment, falling by 30.3%. However, the wood product manufacturing sector, which has the largest share of employment in the Canadian forest industry (47.9%), lost the most jobs, with 11 100 fewer employees than in 2009 (9.4% year-over-year drop).
- The main short-term factor contributing to the decline of forest industry employment was the still-weak U.S. housing market, which has decreased demand for Canadian lumber and wood panel products. The main long-term factors have been the continuous migration of advertising revenue from newsprint and printing and writing papers to online media sources and the increasing logging costs and restructuring of forest operations.

Employment	2000	2010
Direct employment	367 400	222 500
Indirect and induced employment	566 400	343 023
Total	**933 800**	**565 523**

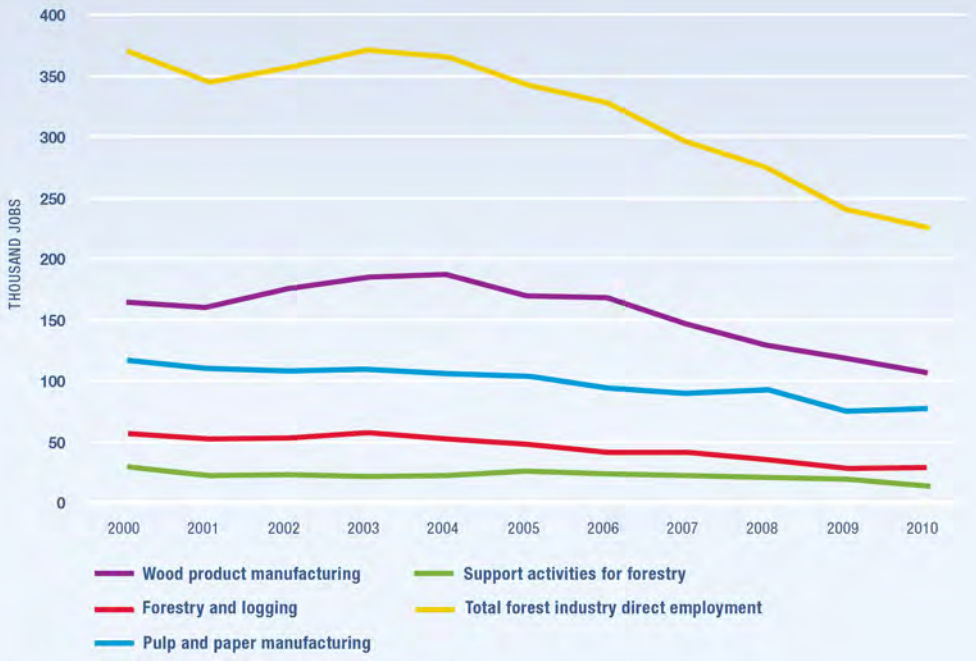
Source: Statistics Canada, Labour Force Survey, March 2011 (special extraction)

Direct employment	Person-years (2010)	Percentage change from previous year	Percentage change over previous 10 years*
Wood product manufacturing	106 500	–9.4	–4.3
Pulp and paper manufacturing	74 800	0.7	–4.3
Forestry and logging	27 400	3.4	–7.1
Forest industry support activities	13 800	–30.3	–7.3
Total	**222 500**	**–6.6**	**–4.9**

** 2000–2010*

Source: Statistics Canada, Labour Force Survey, March 2011 (special extraction)

FOREST INDUSTRY DIRECT EMPLOYMENT



Source: Statistics Canada, Labour Force Survey, March 2011 (special extraction)

INDICATOR: FOREST PRODUCT EXPORTS

WHY IS THIS IMPORTANT?

- Canada's forest industry contributes substantially to the Canadian economy and forms the economic backbone of many rural communities.
- By value, Canada is the world's leading exporter of softwood lumber, newsprint and wood pulp; the fifth largest exporter of printing and writing paper; and the sixth largest exporter of wood panels.

WHAT HAS CHANGED?

- In 2010, the value of Canada's forest product exports increased to $26 billion from $23.6 billion in 2009 (+10.1%). Exports improved thanks to better global economic conditions.
- The strong Asian demand for forest products encouraged a diversification away from the U.S. market. In particular, exports to India and China have consistently grown since 1995, at annual average growth rates of 6% and 15% respectively.
- Increasing offshore opportunities benefited lumber and pulp exports, resulting in an increase in export value, but were insufficient to offset the gap left by a still-decreasing U.S. demand for printing and writing papers.

· Canada has the largest share of the global northern bleached softwood kraft (NBSK) pulp market, with 31% of production. Demand for NBSK is expected to remain strong, and Canada is well-positioned to take advantage of market opportunities despite the challenge of a strong Canadian dollar.

Forest product exports	Billion dollars (2010)	Percentage change from previous year	Percentage change over previous 10 years*
Wood pulp	7.0	38.1	–3.4
Softwood lumber	4.8	28.7	–8.4
Printing and writing paper**	2.8	–21.5	–6.6
Newsprint	2.8	–0.9	–9.1
Structural wood panels	1.3	5.9	–8.7
Other forest products	7.2	1.3	–3.4
Total all forest products* **	**26.0**	**10.1**	**–5.9**

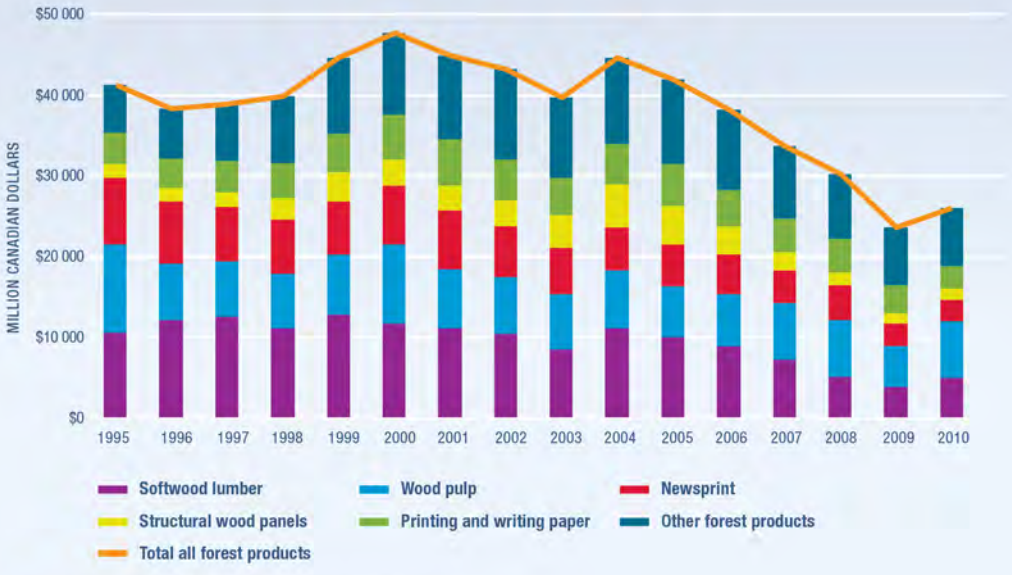
** 2000–2010*

*** Estimate calculated by the Canadian Forest Service based on data for the past 5 years from the Pulp and Paper Products Council*

**** Excludes non-timber forest products except Christmas trees*

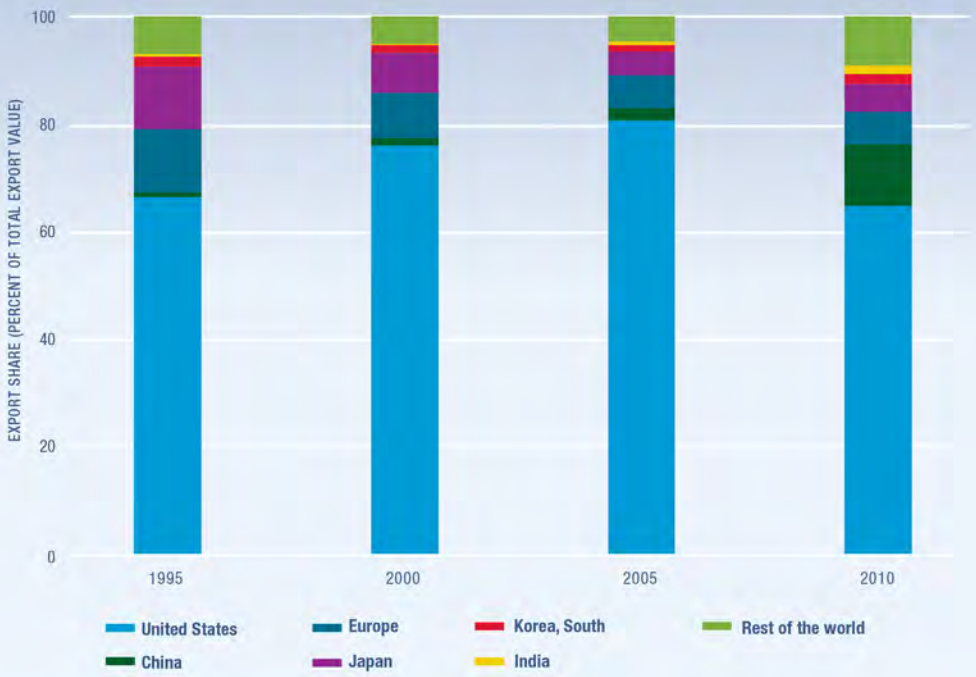
Source: Statistics Canada, merchandise trade data, monthly

FOREST PRODUCT EXPORTS



Source: Statistics Canada, merchandise trade data, monthly

CANADIAN FOREST PRODUCT EXPORT DESTINATIONS



Source: Statistics Canada merchandise trade data, monthly

SOCIETY'S RESPONSIBILITY

Extensive forestry operations take place on Canada's public lands, and many rural communities depend on the forest for their well-being. It is therefore essential that forest practices reflect society's economic, social and cultural values.

INDICATOR: FOREST-DEPENDENT COMMUNITIES IN CANADA

WHY IS THIS IMPORTANT?

- The forest industry is the main economic driver in nearly 200 Canadian rural communities. Sustainable forest management is particularly important to these communities because they are more likely than larger urban centres to suffer the costs of unsustainable practices, market fluctuations and environmental change.

WHAT HAS CHANGED?

- The number of rural communities where the forest industry is the main economic driver is down from approximately 300 recorded in the 2001 census to fewer than 200 in 2006, according to the most recent data available. The primary cause of this drop was the decline in the forest sector between censuses. The impact on communities has been tempered by job growth in other sectors, particularly other resource sectors.
- Increased demand from China and other factors have resulted in about 2800 people being called back to work this year, which more than offsets this year's permanent and indefinite mill layoffs. People were recalled in all regions of the country.
- Factors contributing to the decline in the number of forest-dependent communities include the stronger Canadian dollar, offshore competition, lower U.S. housing starts and the impacts of the mountain pine beetle infestation.
- Some communities have suffered significantly in recent years. However, quality of life indicators show that as a group, both currently and formerly forest-dependent communities have seen no decline in well-being. Many communities are diversifying their economies. This includes efforts to develop other forest-related values and services—such as recreation, ecotourism, bioenergy and non-timber products.

MILL ACTIVITIES IN THE CANADIAN FOREST INDUSTRY

Over the last decade, Canada's forest sector has seen both unprecedented highs, with the U.S. housing boom and rapid growth in Chinese pulp markets, and devastating lows, with the collapse of the U.S. housing market, sharp loss in newsprint demand, high value of the Canadian dollar and increasing low-cost competition from offshore producers. This has resulted in the rationalization of some operations and the closure of others.

Recently there have been encouraging signs of recovery, such as increases in employment—up 2% in the first quarter of 2011 over the historic lows of the same quarter in 2010—and product prices, including softwood lumber and pulp, up 14% and 11%, respectively, in the same period. A number of facilities have reopened, largely as a result of increased wood exports to Asia.

The following three tables show mill acquisitions, curtailments (indefinite and permanent closures, along with capacity reductions) and mill restarts that occurred in Canada in 2010. Companies made significant investments in mill expansions and upgrades over the course of the year.

The first table shows acquisitions activity in 2010. A number of these mills have been idled and are currently being upgraded with the intention of reopening in the near future. Several mills also restarted throughout the year, as shown in the second table. In total, there were 22 mill restarts, with approximately 2800 workers recalled. The majority of restarts occurred in British Columbia and most were in the second half of the year.

The third table shows mill curtailments that occurred across Canada in 2010. There were 15 indefinite or permanent mill closures, resulting in approximately 2500 layoffs, with the majority occurring in the first half of 2010. In total, 2010 saw a net gain of approximately 300 jobs.

MAJOR MILL ACQUISITIONS IN THE CANADIAN FOREST INDUSTRY, 2010

DATE	BUYER	SELLER	DETAILS OF ACTION
January	Georgia-Pacific	Grant Forest Products	Agreement to acquire Englehart, Ont., OSB facility and associated Earlton, Ont., facility Amount invested: not available
March	Conifex Inc.	AbitibiBowater	Sale of 2 sawmills and planer mills and timberland Amount invested: not available 932 500 cubic metres in Mackenzie, B.C. Amount invested: C$33.9 million
March	Eacom Timber Corporation	Domtar Inc.	Purchase of 7 sawmills (Ontario: Timmins, Nairn Centre, Gogama, Ear Falls; Quebec: Val d'Or, Ste-Marie, Matagami) and an equity interest in Elk Lake, Que. Amount invested: C$120 million
March	Fortress Paper Ltd.	Fraser Papers Inc.	Purchase of previously closed bleached hardwood kraft manufacturing facility in Thurso, Que., for conversion to a cellulose mill and a power cogeneration facility Amount invested: not available
April	Sinar Mas	Pope & Talbot Canada	Purchase of softwood pulp mill in Mackenzie, B.C. Amount invested: C$20 million
June	American Iron & Metal	AbitibiBowater	Sale of 3 idle paper mills (Beaupré and Donnacona, Que., and Dalhousie, N.B.) and an agreement to acquire a fourth in Thunder Bay, Ont. Amount invested: C$8.7 million
June	TAG Enterprises	Weyerhaeuser Company Ltd.	Purchase of former Miramichi, N.B., oriented strandboard mill that closed in 2007 Amount invested: not available

Sources: Company press releases, newspaper articles

MILL RESTARTS IN THE CANADIAN FOREST INDUSTRY, 2010

EFFECTIVE DATE	COMPANY	MILL AND LOCATION	PRODUCT	NUMBER OF WORKERS RECALLED	ORIGINAL LAYOFFS AND DATE
February	AbitibiBowater	Mersey paper mill, Liverpool, N.S.	Newsprint	258	258 September 2009
February	Western Forest Products	Somass sawmill, Port Alberni, B.C.	Lumber	43	113 June 2009
March	Kruger Inc.	Saint-Roch-de-Mékinac sawmill, Saint-Roch-de-Mékinac, Que.	Lumber	90	220 September 2009
March	Kruger Inc.	Saint-Séverin-de-Proulxville mill, Saint-Séverin-de-Proulxville, Que.	Lumber	18	Not available September 2009
May	Buchanan Forest Products Ltd.	McKenzie Forest Products Inc., Hudson, Ont.	Lumber	80	110 April 2007
May	Catalyst	Crofton mill, Paper Corp. Crofton, B.C.	Newsprint	127	36 December 2009
May	Springer Creek Forest Products	Springer Creek sawmill, Slocan, B.C.	Lumber	75	Not available April 2009
May	Tembec Inc.	Chetwynd division, Chetwynd, B.C.	Kraft pulp	70	188 February 2009
June	Canfor	Quesnel division, Quesnel, B.C.	Lumber	155	200 January 2010
June	Twin Rivers Paper Co.	Thurso mill, Thurso, Que.	Kraft pulp	290	300 May 2009
July	International Forest Products Ltd.	Castlegar division, Castlegar, B.C.	Lumber	85	362 November 2007
July	Tembec Inc.	Béarn division, Béarn, Que.	Lumber	150	150 June 2006
July	Tolko Industries Ltd.	Armstrong division, Armstrong, B.C.	Lumber	175	175 March 2010
July	Weyerhaeuser Company Ltd.	Hudson Bay plywood division, Hudson Bay, Sask.	Panels	170	170 February 2008
August	Sinar Mas	Mackenzie pulp operations, Mackenzie, B.C.	Kraft pulp	220	251 May 2008
September	Buchanan Forest Products Ltd.	Terrace Bay pulp mill, Terrace Bay, Ont.	Kraft pulp	340	370 February 2009
September	Western Forest Products Ltd.	Ladysmith sawmill, Ladysmith, B.C.	Lumber	64	40 April 2008
October	National Choice Specialty Woods	McBride Forest Industries, McBride, B.C.	Lumber	10	100 November 2006
October	TRC Cedar	TRC Cedar, McBride, B.C.	Lumber	30	Not available
November	Conifex Inc.	Mackenzie sawmill, Mackenzie, B.C.	Lumber	70	309 January 2008
November	Western Forest Products	Nanaimo division, Nanaimo, B.C.	Lumber	40	118 January 2009
December	St. Mary's Paper	St. Mary's Paper, Sault Ste. Marie, Ont.	General pulp and paper	170	300 March 2010

Sources: Company press releases, newspaper articles

MAJOR MILL CURTAILMENTS* IN THE CANADIAN FOREST INDUSTRY, 2010

EFFECTIVE DATE	COMPANY	MILL AND LOCATION	PRODUCT	CAPACITY REDUCTION
January	AbitibiBowater	Clearmont mill, Clearmont, Que.	Newsprint	125 000 tonnes
January	AbitibiBowater	Fort Frances division, Fort Frances, Ont.	General pulp and paper	Not available
January	Alexandre Lemay & Sons	Alexandre Lemay & Sons sawmill, Saint-Bernard, Que.	Lumber	Not available
January	Canfor	Quesnel division, Quesnel, B.C.	Lumber	255 000 MBF**
January	West Fraser Timber	Eurocan Pulp & Paper, Kitimat, B.C.	Paperboard	450 000 tonnes
February	Coulson Manufacturing Ltd.	Coulson Forest Products, Port Alberni, B.C.	Lumber	Not available
March	Tolko Industries Ltd.	Armstrong division, Armstrong, B.C.	Lumber	210 000 MBF
	St. Mary's Paper	St. Mary's Paper, Sault Ste. Marie, Ont.	General pulp and paper	Not available
April	AbitibiBowater	Thorold mill, Thorold, Ont.	Newsprint	270 000 tonnes
	AbitibiBowater	Gatineau mill, Gatineau, Que.	Newsprint	360 000 tonnes
June	Kruger Inc.	Trois-Rivières mill, Trois-Rivières, Que.	Speciality paper	140 000 tonnes
July	Catalyst Paper Corporation	Elk Falls mill, Campbell River, B.C.	Kraft pulp	Not available
August	Canfor	Clear Lake sawmill, Prince George, B.C.	Lumber	Not available
	Buchanan Forest Products Ltd.	McKenzie Forest Products Inc., Hudson, Ont.	Lumber	Not available
December	Groupe Savoie	Westville sawmill, Westville, N.S.	Lumber	30 000 MBF

** Includes both partial (machine) and full mill closures, whether indefinite or permanent; does not include shift reductions*
*** MBF = thousand board feet*

Sources: Company press releases, newspaper articles

ABOUT NATURAL RESOURCES CANADA—CANADIAN FOREST SERVICE

Forests and forest resources are integral to Canadian life. The Canadian Forest Service is a science-based policy organization within Natural Resources Canada, a Government of Canada department that helps shape the natural resources sector's important contributions to the economy, society and the environment.

For more than a century, the Canadian Forest Service has conducted research on the health of Canada's forests to ensure that our nation's forest sector needs are met without compromising the ability of future generations to meet their own needs. Today, using scientific data and economic analysis, the Canadian Forest Service plays a leadership role in advancing a new model for the forest sector, focused on two key areas: sustainability and competitiveness.

In its work related to sustainability, the Canadian Forest Service uses knowledge of natural and human-caused forest disturbances to develop models, tools and advice for forest practitioners, as well as adaptation options for addressing climate change. It also ensures that policy decisions related to resource development and sustainability are based on sound research.

In its work on competitiveness, the Canadian Forest Service aims at increasing economic opportunities for the Canadian forest sector; adding economic value to the forest sector through innovation; integrating innovation efforts and institutions into a more effective national system; and addressing challenges and building on new opportunities for forest-based communities.

Made up of research scientists, technicians, economists, policy analysts and other dedicated professionals, the Canadian Forest Service develops and shares knowledge about forests and brings together stakeholders to address regional, national and global forest issues. Whether conducting research in the field, performing tests in the lab or analyzing information and data, Canadian Forest Service staff are working to ensure a healthy forest and a strong forest sector for Canada.

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