

Human Activity and the Environment: Forests in Canada

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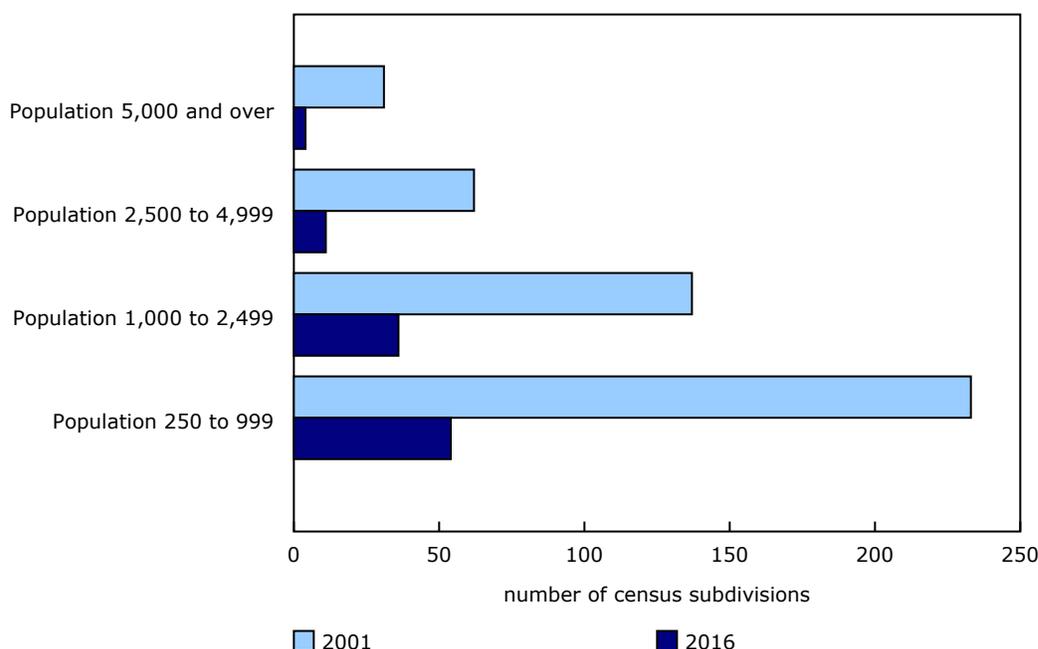
Canada's 3.47 million km² of forests, which account for about 9% of forest land worldwide, are diverse ecosystems that offer many benefits to Canadians.

The forest sector was a major economic driver for 105 communities across Canada in 2016, down from 463 in 2001, according to the latest release of the publication *Human Activity and the Environment*. These communities derived at least 20% of income from forest sector employment.

Overall, the share of forest sector employment income generated by forest sector-based communities fell from 30% in 2000 to 11% in 2015. Increasingly, communities that receive a significant proportion of their income from the forest sector are smaller.

[Click here to access the full publication.](#)

Chart 1
Forest sector-based communities by size, 2001 and 2016



Note(s): Changes occur to the number and the boundaries of census subdivisions (CSDs) between censuses. In 2016 there were 5,162 CSDs compared to 5,600 CSDs in 2001. These data have not been adjusted for changes in the boundaries between census periods. Of the 463 forest sector-based CSDs in 2001, the total area remained essentially the same for 64%; grew from 1% to 10% for 20% of CSDs; and by over 20% for 8% of CSDs. A further 8% were amalgamated into other areas. This analysis is based on a definition developed by Natural Resources Canada, Canadian Forest Services, Economic Analysis Division. It defines these communities as CSDs where forest sector employment income represents 20% or more of market income (i.e., total income excluding government transfers). Some data were suppressed for data quality reasons or to meet the confidentiality requirements of the *Statistics Act*. Income data were available for 4,009 CSDs in 2001 and 3,675 CSDs in 2016. This analysis may therefore underreport the total number of communities for which the forest sector is a major economic driver. Note that a decline in the percentage of forest sector income may be due to a decrease in forest sector income or an increase in income from other sources. The reference period for income data is the calendar year prior to the census. The forest sector includes North American Industry Classification codes 113 – forestry and logging; 1153 – support activities for forestry and logging; 321 – wood product manufacturing; and 322 – paper product manufacturing.

Source(s): Statistics Canada, 2018, special tabulation from the 2001 and 2016 Census of Population.



Forests provide us with timber and other forest products, as well as many ecosystem services such as water filtration, air purification, carbon sequestration, and recreational and spiritual services. More than three-quarters of Canada's forest is located in the boreal zone. Canada has some of the largest areas in the world of remote and inaccessible forest landscapes.

The value of Canada's accessible timber stocks—a component of natural resource wealth—was estimated at \$215.4 billion in 2016.

Infographic 1 – An overview of forest resources

An overview of Canada's FOREST RESOURCES

HOW MUCH OF CANADA'S AREA IS FOREST?



3,470,690 km² of Canada's total area of **9,979,685 km²** is forest. That's a larger area than Alberta, Ontario and Quebec combined.

FOREST AREA



of Canada's area is forest.



of the world's forests are in Canada.

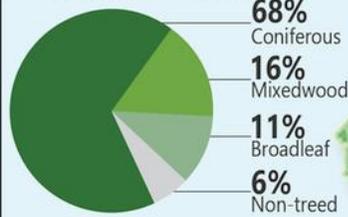
THE BOREAL ZONE

Canada's boreal zone spans 5.5 million km² including all or part of 10 ecozones and accounts for over three-quarters of Canada's forest area.

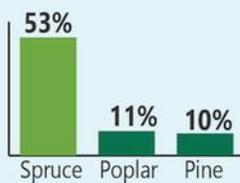


WHAT DO CANADA'S FORESTS LOOK LIKE?

FOREST TYPES



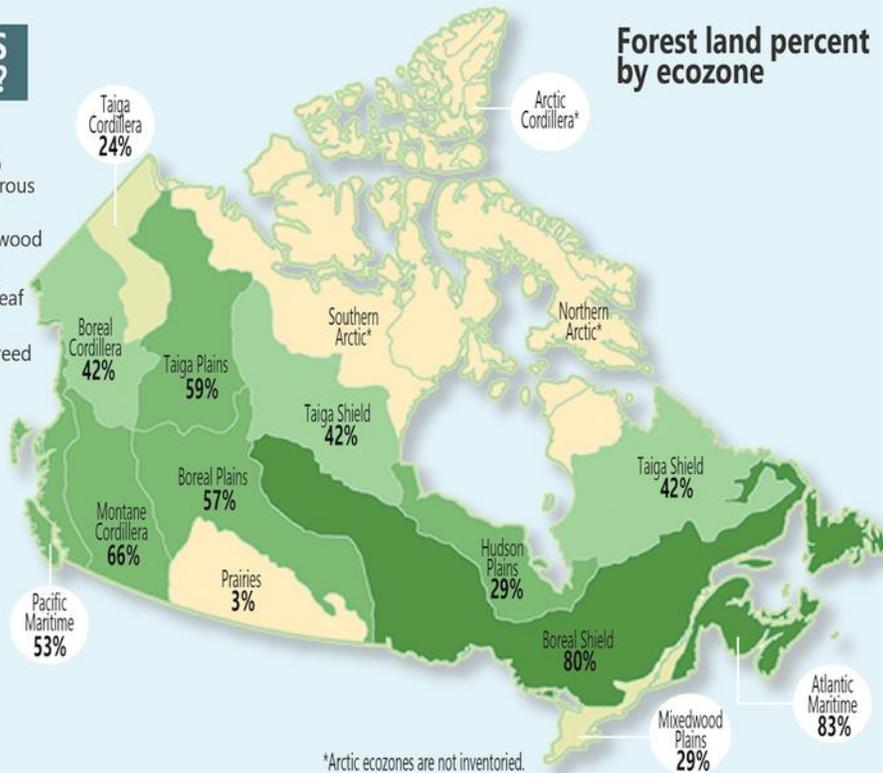
FOREST SPECIES



AGE CLASSES

42% of Canada's forests are between 81 and 120 years old, followed by 26% between 41 and 80 and 12% under 41.

Forest land percent by ecozone



WHAT TYPES OF DISTURBANCES AFFECT CANADA'S FORESTS?

INSECTS



In 2015, insects damaged 176,318 km² of forest.

FOREST FIRES



In 2015, 7,140 wildfires burned a total of 38,616 km² of forest.

HARVESTING



In 2015, Canada harvested 7,796 km² of forest.

DEFORESTATION



From 1990 to 2015, forest area decreased 0.3% from 3.48 million km² to 3.47 million km².

Source: Statistics Canada, 2018, "Forests in Canada," Human Activity and the Environment, Catalogue no. 16-201-X. Based on data from Canada's National Forest Inventory, National Forestry Database and National Deforestation Monitoring System.

Changes in the forest sector

The overall contribution of the forest sector to Canada's economy has declined since the mid-2000s, when it was hit by a decrease in demand for lumber, paper and newsprint following the collapse of the US housing market, as well as the rise of online media. The sector's share of gross domestic product declined from 1.7% in 2007 to 1.2% in 2014.

In addition, the sector's share of exports and employment has fallen in recent decades. Forest product exports—valued at \$29.5 billion in 2016—fell from 12% of total exports in 1997 to 6% in 2016, while the share of jobs declined from 2.5% to 1.1%. The number of jobs in the forest sector declined 42% from 351,675 in 1997 to 205,660 in 2016.

In 2015, the volume of timber harvested totalled 160.5 million m³, up 35% since an industry low in 2009. Meanwhile, lumber production totalled 68.4 million m³ in 2016, up 51% since the 2009 low. Neither volume, though, has recovered to levels seen before the downturn.

The forest sector—in particular, the paper manufacturing industry—was responsible for 4% of total Canadian water use in 2013. As well, greenhouse gas emissions associated with the sector totalled 39,931 kilotonnes in 2015, 5% of overall industrial and household emissions. Environmental protection expenditures by the sector totalled \$659.2 million in 2014.

Infographic 2 – An overview of the forest sector

An overview of Canada's FOREST SECTOR

HOW MUCH DOES CANADA'S FOREST SECTOR CONTRIBUTE TO THE ECONOMY?



In 2014, gross domestic product (GDP) for the forest sector in Canada was **\$22.1 billion.**

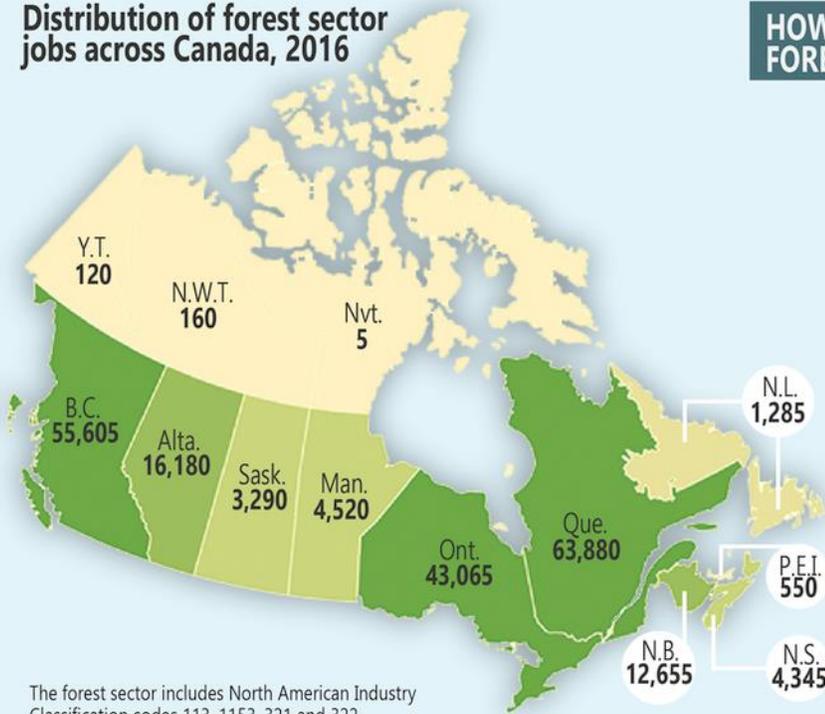


In 2016, forest product exports were valued at **\$29.5 billion.**



In 2016, employment in the forest sector was **205,660.**

Distribution of forest sector jobs across Canada, 2016



The forest sector includes North American Industry Classification codes 113, 1153, 321 and 322.

HOW VALUABLE ARE CANADA'S FOREST ASSETS?

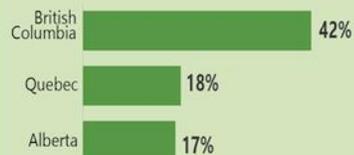


Forests provide many products, but also ecosystem services such as water filtration, air purification, carbon sequestration, and recreational and spiritual services.



In 2016, the value of Canada's accessible timber stocks—a component of natural resource wealth—was estimated at **\$215.4 billion.**

Volume of roundwood harvested, 2015 as a proportion of Canada's total



COMMUNITIES FOR WHICH THE FOREST SECTOR WAS A MAJOR SOURCE OF INCOME

The forest sector continues to be an important provider of jobs and income in communities across the country, particularly in smaller and Indigenous communities. It was a major economic driver for 105 communities in 2016 compared to 463 in 2001.

2001
463 communities



2016
105 communities



Source: Statistics Canada, 2018, "Forests in Canada," Human Activity and the Environment, Catalogue no. 16-201-X. Based on data from Statistics Canada and Canada's National Forestry Database.

Changes in forest ecosystems

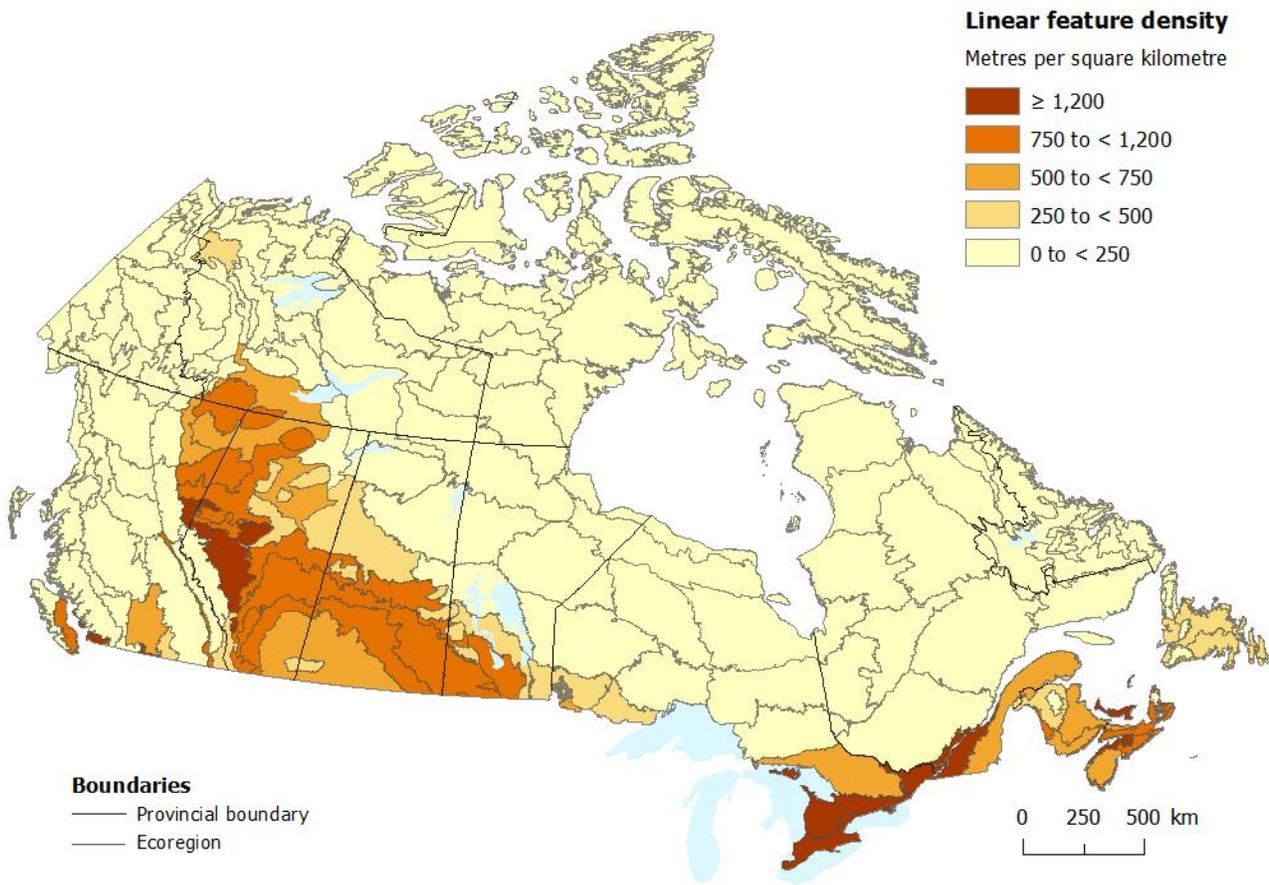
Fires and insect outbreaks are normal events in forest ecosystems, shaping the succession and regeneration of forests. In 2015, insect outbreaks damaged an estimated 176,318 km² of forest, while 7,140 wildfires burned a total of 38,616 km² of forest land. Of these fires, 49% were started by lightning strikes, 48% had a human source of ignition, and the remainder had an unknown cause. Fires started by lightning were responsible for the majority of the burned area.

Timber harvesting areas covered 7,796 km² of forest land in 2015, of which clearcutting was the most common harvesting method. Harvested areas are normally replanted or allowed to regenerate naturally.

Deforestation affects a small proportion of Canada's forest. In 2015, 360 km² of forest area was converted to other uses. From 1990 to 2015, Canada's forest area decreased 0.3%, from 3.48 million km² to 3.47 million km². Over this period, most forest converted to other land uses was used for agriculture (42%), mining, oil and gas (24%), built-up area (16%), hydro-electric infrastructure and reservoirs (13%) and forestry roads (6%).

Linear features including roads, rail lines, electrical infrastructure and cutlines contribute to habitat fragmentation. While linear feature density is highest in more densely populated ecoregions, it is also elevated in other less densely populated areas, including parts of the Boreal Plains and Taiga Plains ecozones, largely due to the influence of seismic lines for resource-based activities.

Map 1 – Linear feature density by ecoregion, 2011

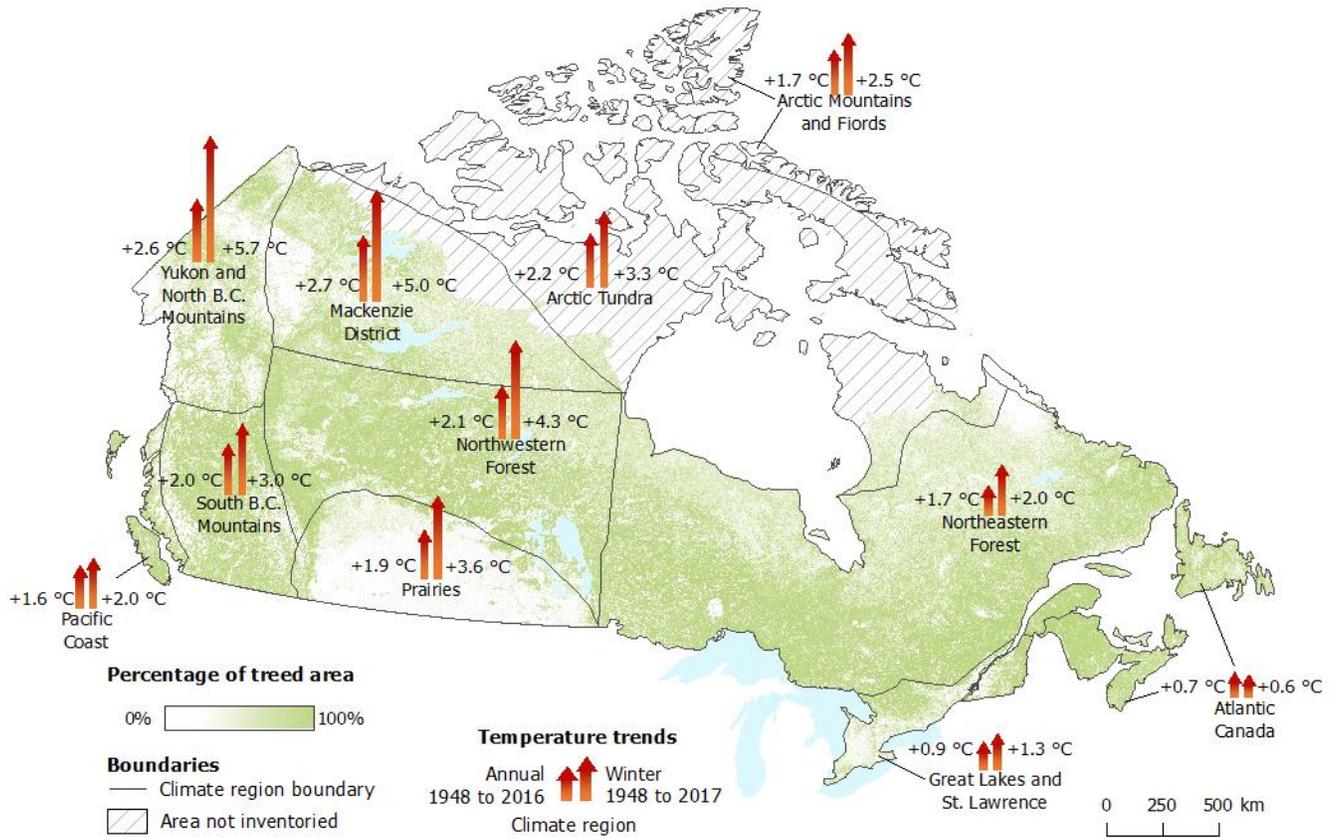


Notes: Linear feature density refers to the density of roads, rail lines, electrical transmission lines and cutlines (e.g., from seismic lines and firebreaks), measured in metres of linear features per square kilometre. Other infrastructure such as pipelines are not included. Data are aggregated into 194 ecoregions of Canada ([Ecological Land Classification 2017](#)).

Source: Statistics Canada, Environment, Energy and Transportation Statistics Division, 2018, special tabulation of Natural Resources Canada, 2012, *CanVec*, Earth Science Sector, Mapping Information Branch, Centre for Topographic Information, <http://www.geogratis.gc.ca> (accessed October 9, 2017); Statistics Canada, 2013, "Measuring ecosystem goods and services in Canada," *Human Activity and the Environment*, Catalogue no. 16-201-X.

Canada's forests are adapted to climate conditions associated with their specific geographic area, and as the climate changes, forests will change in response. From 1948 to 2016, the average annual temperature in Canada rose by 1.7 °C, with all 11 of Canada's climate regions experiencing temperature increases during this time period. The largest increase occurred in the Mackenzie District climate region, followed by the Yukon and North British Columbia Mountains.

Map 2 – Treed area and long-term temperature trends by climate region



Notes: This map displays the increase in annual and winter temperature trends by climate region and provides a visual representation of the distribution of treed area. The long-term temperature trend refers to the linear trend in temperature departures from the 1961 to 1990 climate normal over the period of 1948 to 2017. Positive values indicate that temperatures have warmed. Data for forest area are available from the National Forest Inventory by ecozone and have been adjusted to provide climate region totals. Treed area is different from forest area—the former includes areas with trees on non-forest land use areas (e.g., agricultural or urban lands) while forest area includes lands that are temporarily unstocked with trees (e.g., after disturbance or harvesting) and that are expected to regenerate. Non-inventoried land includes the Arctic ecozones (Arctic Cordillera, Northern Arctic, Southern Arctic) and small portions of the Taiga Plains and Hudson Plains ecozones located in Nunavut—areas that are largely devoid of tree cover.

Sources: Statistics Canada, Environment, Energy and Transportation Statistics Division, 2018; Environment and Climate Change Canada, 2017, "Annual 2016" and "Winter 2016-2017," *Climate Trends and Variations Bulletin*, www.ec.gc.ca/sc-cs/default.asp?lang=En&n=A3837393-1 (accessed December 5, 2017); Canada's National Forest Inventory (NFI), 2016, Grouped ANN Map layers, <http://tree.pfc.forestry.ca> (accessed April 7, 2017); NFI, 2013, Table 4.1 Area (1000 ha) of forest and non-forest land by terrestrial ecozone in Canada, revised 2006 baseline, Version 3, December 2013, <https://nfi.nfis.org/en/standardreports> (accessed April 7, 2017).

Note to readers

This edition of Human Activity and the Environment provides the latest statistics on forest area; forest products and ecosystem services; economic and social contributions of the forest sector; and forest management activities and environmental impacts. The report also includes highlights, maps, charts and tables. This report is based on data from the National Forestry Database, the National Forest Inventory and Statistics Canada, and also includes a variety of information from other sources.

Forest is defined by the Food and Agriculture Organization of the United Nations as "land spanning more than 0.5 hectares with trees higher than 5 metres and a canopy cover of more than 10% or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use."

The forest sector includes the following North American Industry Classification codes: 113 – forestry and logging; 1153 – support services for forestry; 321 – wood product manufacturing; and 322 – paper manufacturing industries.

The analysis of forest sector-based communities is based on a definition developed by Natural Resources Canada, Canadian Forest Services, Economic Analysis Division. It defines these communities as census subdivisions (CSDs) where forest sector employment income represents 20% or more of market income (i.e., total income excluding government transfers). Some data were suppressed for data quality reasons or to meet the confidentiality requirements of the Statistics Act. Income data were available for 4,009 of 5,600 CSDs in 2001 and 3,675 of 5,162 CSDs in 2016. This analysis may therefore underreport the total number of communities for which the forest sector is a major economic driver. Note that a decline in the percentage of forest sector income may be due to a decrease in forest sector income or an increase in income from other sources. The reference period for income data in the Census of Population is the calendar year prior to the census.

Note also that changes occur to the number and the boundaries of CSDs between censuses. These data have not been adjusted for changes in the boundaries between census periods. Of the 463 forest sector-based CSDs in 2001, the total area remained essentially the same for 64%; grew from 1% to 10% for 20% of CSDs; and by over 20% for 8% of CSDs. A further 8% were amalgamated into other areas.

The study "[Forests in Canada](#)" is now available in *Human Activity and the Environment*, 2017 ([16-201-X](#)).

Spatial data files covering the population size and variation of 2016 forest sector-based communities can be downloaded from the article and are also accessible from the [Geographic products](#) page of our website, under "Environmental accounting files."

For more information, or to enquire about the concepts, methods or data quality of this release, contact us (toll-free 1-800-263-1136; 514-283-8300; STATCAN.infostats-infostats.STATCAN@canada.ca).

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