



Natural Resources  
Canada

Ressources naturelles  
Canada

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# Important Facts on Canada's Natural Resources

(as of July 2000)

<http://www.nrcan.gc.ca/statistics/>

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Canada



1999 Facts as of July 2000	Minerals	Energy	Forestry	Total Natural Resources	Canada
Gross Domestic Product <sup>1</sup> (GDP in current \$ billions)	\$18.9 (2.3%)	\$51.5 (6.4%)	\$19.4 (2.4%)	\$89.8 (11.1%)	\$809.9 (100%)
Direct employment (thousands of people)	209 (1.4%)	194 (1.3%)	352 (2.4%)	755.0 (5.2%)	14 531 (100%)
New investments (capital only) (\$ billions)	\$5.3 (3.3%)	\$25.4 (15.7%)	\$3.6 (2.2%)	\$34.3 (21.2%)	\$161.6 (100%)
<b>Trade (\$ billions)</b>					
• <b>Domestic exports</b> (excluding re-exports)	\$29.3 (8.9%)	\$30.4 (9.2%)	\$44.2 (13.4%)	\$103.9 (31.4%)	\$330.4 (100%)
• <b>Imports</b>	\$18.4 (5.8%)	\$11.0 (3.4%)	\$9.0 (2.8%)	\$38.4 (12.0%)	\$319.9 (100%)
• <b>Balance of trade<sup>2</sup></b> (including re-exports)	+\$11.3	+\$19.5	+\$35.4	+\$66.2	+\$34.2

<sup>1</sup> GDP converted from 1992 dollars to current dollars using a common factor based on the Implicit Price Index. Therefore, GDP estimates do not account for any relative price changes among mineral, energy and forestry commodities between 1992 and 1999. Minerals include uranium mining; energy includes coal mining; metal fabricating industries are excluded.

<sup>2</sup> Balance of trade shown in this table is the merchandise balance, which represents the difference between the total exports and imports of goods. Services and capital flows are excluded.

## Forestry:

### The Resource

- Canada has 10% of the world's forests.
- 45% (417.6 million hectares (ha)) of Canada's land area is forested. **Ownership:** 71% provincial, 23% federal and territorial, 6% private.
- 56% (234.5 million ha) of Canada's forests are considered capable of producing forest products (commercial forests); only 28% (119 million ha) are managed for timber purposes.
- The 1999 **annual allowable cut** was 240.9 million cubic metres (m<sup>3</sup>).
- Annually, Canada **harvests** less than 1/2 of 1% (1 078 004<sup>e</sup> ha or 174.5 million m<sup>3</sup> in 1998) of its commercial forest area.
- 5.1 million ha were affected by **insect** defoliation in 1998; 1.7 million ha were lost due to **forest fires** in 1999.
- In 1998, it is estimated that 400 863 ha were **planted** with 543 million seedlings and 27 009 ha were seeded.
- **Revenues** from the sale of timber from provincial Crown land are estimated to be \$1.9 billion in 1998.

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<sup>e</sup> = *Estimation.*

## National Economic Importance

- The forest sector's **contribution to the Canadian economy** (GDP) was 2.4%, or \$19.4 billion, in 1999.
- **Direct employment** was 352 000 in 1999, or 2.4% of total employment in Canada: wood industries, 154 000; paper and allied industries, 118 000; logging, 58 000; and forestry services, 22 000. Employment is spread all across Canada, mostly in Quebec, 110 000; B.C., 95 000; and Ontario, 77 000.
- **Wages and salaries** for direct employment were \$11.8 billion for 1997.
- **Shipments** were \$69.6 billion in 1997.
- In 1999, shipments of pulp and paper hit a record level of 31.9 million tonnes, an increase of 8.8% from the previous year.
- Production of softwood lumber rose to a record level of 68.4 million m<sup>3</sup> in 1999.
- **New investments** (capital only) totalled \$3.6 billion in 1999: paper and allied industries, \$2.3 billion (64%); wood industries, \$1.0 billion (28%); and logging, \$0.3 billion (8%).

## International Importance

- Canada is the world's **largest forest products exporter** (19%).
- Forest products were the largest contributors to Canada's surplus **balance of trade** in 1999 (\$35.4 billion).
- The total value of **Canadian forest product exports** rose by 4.4% in 1999 to \$44.2 billion: B.C., \$15.3 billion (35%); Quebec, \$11.5 billion (26%); Ontario, \$8.9 billion (20%); and other, \$8.5 billion (19%).

1999 Commodities	In Terms of Production	Exports	Destination
Total forest products		\$44.2 B (100%)	United States (U.S.) \$35.0 B (79%) Japan \$3.1 B (7%) European Union (E.U.) \$2.9 B (7%)
Softwood lumber	2nd in the world (21%)	\$11.1 B (25.1%)	U.S. \$10.5 B (83%) Japan \$1.6 B (13%) E.U. \$0.3 B (2%)
Newsprint	1st in the world (26%)	\$6.7 B (15.2%)	U.S. \$5.1 B (79%) E.U. \$0.5 B (7%) Japan \$0.2 B (3%)
Wood pulp	2nd in the world (15%)	\$6.7 B (15.2%)	U.S. \$3.2 B (43%) E.U. \$1.7 B (23%) Japan \$0.8 B (11%)
Other		\$19.7 B (44.5%)	U.S. \$16.2 B (92%) E.U. \$0.5 B (3%) Japan \$0.4 B (2%)

## Minerals:

### The Resource

- Canada is **one of the largest mining nations in the world**, producing more than 60 minerals and metals.
- **Less than 0.03% of the land area** of Canada has been used to produce minerals and mineral products for everyday use.
- **Final exploration and deposit appraisal expenditures** totalled \$656 million in 1998 and preliminary estimates show a decline to \$501 million in 1999.

- **Mine development expenditures** in operating mines and mines committed to production were \$966 million in 1998 were estimated to be \$763 million in 1999 and are forecast to be \$735 million in 2000.
- Exploration and deposit appraisal expenditures on the search for **diamonds** are expected to increase by 28% from \$126 million in 1999 to \$161 million for 2000.
- Spending by **junior companies** in exploration and deposit appraisal expenditures is expected to climb to \$165 million in 2000 from \$137 million in 1999.
- More than 60% of Canadian **non-fuel minerals production** is accounted for by Ontario (30%), Quebec (21%) and British Columbia (10%). Producing mines are found in all provinces and territories except Prince Edward Island.

### **National Economic Importance**

- In 1999, the mineral industry's **contribution to the Canadian economy (GDP)** was 2.3% (\$18.9 billion).
- **Total direct employment** was 209 000, or 1.4% of total employment. Of these, roughly 45 000 were employed in mining (excluding coal mining), 60 000 in smelting and refining, and 97 000 in metal semi-fabrication.
- **Average weekly earnings** in the mining, quarries, and oil wells industry in 1999 were \$1113, one of the highest levels of any industry in the Canadian economy. Average weekly earnings in the mining industry were \$1086.
- During the decade ending in 1998, **labour productivity** increased by more than 22% in the mining industry and 37% in the smelting and refining industry.
- In 1998, 58% of Canadian **rail revenue** and 66% of the **volume loaded at Canadian ports** were minerals and mineral products.
- In 1999, there were some 277 metal, nonmetal and coal mines, 3000 stone quarries, and sand and gravel pits, and 54 nonferrous smelters, refineries and steel mills **operating** in Canada.

- Canadian mining companies spend roughly \$75 million annually on **research and development**. The Canadian mining industry is a world leader in environmentally safe and clean mining practices.
- **New investments** (capital only) totalled \$5.3 billion in 1999: mining and concentrating, \$2.0 billion; smelting and refining, \$2.0 billion; and metal semi-fabrication, \$1.3 billion.

### **International Importance**

- Canada is **one of the world's largest** exporters of minerals and mineral products.
- Some 80% of Canada's mineral and metal production is **exported**. In 1999, minerals and mineral products provided 8.4% of Canada's total exports (including re-exports) and contributed \$11.3 billion to the Canadian trade surplus.
- In 1998, Canada was the world's **largest producer** of potash (35.6%) and uranium (32.5%).
- In 1998, Canada was the world's **second largest producer** of nickel (18.7%), zinc (13.9%) and cadmium (10.5%).
- In 1998, Canada was one of the **top five producers** in the world of aluminum, asbestos, cobalt, copper, gold, lead, molybdenum, platinum group metals, salt, and titanium concentrates.
- In 1999, **Canadian minerals and mineral products exported** to the **United States** totalled 78.3% (\$22.9 billion); to the **European Union**, 8.8% (\$2.6 billion); to **Japan**, 2.7% (\$0.9 billion); to **Mexico**, 0.3% (\$0.1 billion); and to **other countries**, 9.9% (\$2.9 billion).

Commodities	In Terms of 1998 Production	1999 Exports	Country of Destination
Total mineral products		\$29.3 B	<ul style="list-style-type: none"> <li>• U.S. \$22.9 B (78%)</li> <li>Japan \$0.9 B (3%)</li> </ul>
Selected metals:			
Uranium	1st in the world (32.5%)	\$0.7 B	<ul style="list-style-type: none"> <li>• U.S. \$0.5 B (71%)</li> <li>France \$0.1 B (13%)</li> </ul>
Nickel	2nd in the world (18.7%)	\$1.7 B	<ul style="list-style-type: none"> <li>• U.S. \$0.5 B (29%)</li> <li>Norway \$0.4 B (26%)</li> </ul>
Zinc	2nd in the world (13.9%)	\$1.6 B	<ul style="list-style-type: none"> <li>• U.S. \$1.0 B (66%)</li> <li>Belgium \$0.1 B (6%)</li> </ul>
Gold	4th in the world (6.8%)	\$2.6 B	<ul style="list-style-type: none"> <li>• U.S. \$2.5 B (95%)</li> <li>South Korea \$0.05 B (2%)</li> </ul>
Copper	4th in the world (5.8%)	\$1.9 B	<ul style="list-style-type: none"> <li>• U.S. \$1.5 B (82%)</li> <li>Japan \$0.1 B (8%)</li> </ul>
Selected nonmetals:			
Potash	1st in the world (35.6%)	\$2.1 B	<ul style="list-style-type: none"> <li>• U.S. \$1.1 B (54%)</li> <li>China \$0.3 B (14%)</li> </ul>
Asbestos	3rd in the world (15.7%)	\$0.2 B	<ul style="list-style-type: none"> <li>• Japan \$0.04 B (19%)</li> <li>India \$0.03 B (15%)</li> </ul>
Structural materials		\$0.97 B	<ul style="list-style-type: none"> <li>• U.S. \$0.94 B (97%)</li> </ul>

*Notes: Trade data exclude re-exports and coal. Fabricated metal products are excluded.*



## Energy:

### The Resource

- **Remaining established reserves** at the beginning of 1998: **natural gas**, 61.7 trillion cubic feet (Tcf) — 61.4 Tcf in conventional areas and 0.3 Tcf in frontier areas — for a reserves-to-production ratio of 10.6 years.

The total in-place raw undiscovered potential of natural gas in the Western Canada Sedimentary Basin is estimated to be 287 Tcf.

- **Crude oil reserves** in 1998 were estimated at 9.1 billion (B) barrels consisting of: conventional, 3.6 B barrels; oilsands, 4.2 B barrels; and frontier, 1.3 B barrels (of which 0.91 B barrels are off the East Coast), for a reserves-to-production ratio of 13 years.

The ultimate recoverable potential from the **Alberta oilsands** is over 300 B barrels.

- **Coal reserves** are estimated at 6 294 million tonnes for a reserves-to-production ratio of 84 years. Total coal resources are estimated at well over 200 gigatonnes. Most of these resources (90%) occur in the three western provinces.
- **Primary energy production<sup>1,2</sup>** by commodity in 1999 was: 38.7% gas, 33.9% petroleum, 12.7% electricity, 11.1% coal, and 3.6% waste wood, spent pulping liquor, and firewood for a total of 16 151 petajoules. Alberta accounted for 68% of total production; B.C., 13%; Saskatchewan, 9%; Quebec, 4%; and Ontario, 2%.
- **Primary energy consumption<sup>1,2</sup>** by commodity in 1999 was: 40.3% petroleum, 24.1% gas, 18.5% electricity, 11.6% coal, and 5.5% waste wood, spent pulping liquor, and firewood for a total of 10 671 petajoules. Ontario accounted for 34% of total consumption; Quebec, 21%; Alberta, 20%; B.C., 13%; Saskatchewan, 6%; Manitoba, 2%; and the Atlantic provinces, 4%.
- Marketable **production of natural gas** in Canada in 1999 was 5.7 Tcf.
- **Production of crude oil** in Canada in 1999 was 1.34 million barrels per day (BPD) of light and 0.83 million BPD of heavy, totalling 2.2 million BPD, or 803 million barrels for the year.

- **Electricity generation**<sup>2</sup> in 1999 by source was 550 net terawatt hours: 60% hydro, 19% coal, 13% nuclear, and 8% oil, gas and other. Quebec accounted for 36% of total generation (96% from hydro), and Ontario for 32% (42% from nuclear sources).
- Canada **produced** 72 million tonnes of **coal** valued at \$1.6 billion in 1999 — 34% Alberta sub-bituminous, 14% Alberta bituminous, 33% B.C. bituminous, 16% Saskatchewan lignite, and the remainder from the Maritimes. 90% of the coal consumed in Canada was used to produce electricity.

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<sup>1</sup> Based on nuclear electricity conversion factor of 11.564 Mj/kWh.

<sup>2</sup> Estimate based on first three quarters of Quarterly Report on Energy Supply – Demand in Canada, 1999.

### **National Economic Importance**

- Energy (all sources) contributed 6.4% to GDP in 1999. (Of the \$51.5 billion (current \$) total energy GDP, crude oil and natural gas industries accounted for \$18.0 billion (35%); electric power, \$21.9 billion (43%); and pipelines, \$3.8 billion (7%.)
- About 79% of **petroleum and natural gas** production in 1999 (valued at \$28.8 billion) was in Alberta.
- Direct employment, excluding service stations and wholesale trade in petroleum products, was 194 215 people in 1999, or 1.3% of total employment in Canada. Employment in service stations and wholesale trade in petroleum products accounted for another 87 773 people, or 0.6%.
- Energy exports accounted for 9.2% of total merchandise exports, and the energy trade balance ranked second to forestry as a contributor to Canada's positive overall trade balance.
- **New investments** (capital only) in energy-related industries represented 15.7% of total Canadian investment and 3.1% of GDP.

## International Importance

- The United States is Canada's major **trade** market for energy products, accounting for 93% (\$27.6 billion) of all Canadian energy exports. In 1999, Canada imported \$11.0 billion of energy products, mainly from the United States (30%), Norway (19%) and the United Kingdom (14%).
- Canada exported 3.6 Tcf of natural gas, or 59% of its marketable production — all to the United States. The value of this export was \$10.3 billion. In volume terms, Canada accounted for over 94% of U.S. gas **imports** and had a 15% share of the United States market.
- **Exports of crude oil** were 1 253 241 BPD in 1999 valued at \$10.1 billion. Over 99% of these exports were U.S. bound. Canadian crude oil held a 8% share of the U.S. market in 1999 and accounted for over 14% of U.S. crude imports. **Exports of refined petroleum products** in 1999 reached a value of \$3.9 billion (\$3.7 billion or 95% to the United States) on a volume of 109.6 million barrels.
- Japan was the destination of over 43% of the 34 million tonnes (\$2.2 billion) of coal exported by Canada.

1999 Commodities	In Terms of Production	Exports	Country of Destination
Total energy		\$30.4 B (100%)	U.S. \$27.6 B (93%) Japan \$0.9 B (3%) S. Korea \$0.3 B (1%) Brazil \$0.1 B (0.4%)
Petroleum*	11th in the world (3.5%)	\$15.3 B (52%)	U.S. \$15.2 B (99%)
Natural gas	3rd in the world (7.0%)	\$10.3 B (35%)	U.S. \$10.3 B (100%)
Coal***	10th in the world (1.9%)	\$2.2 B (7%)	Japan \$0.9 B (43%) S. Korea \$0.3 B (16%) U.S. \$0.3 B (16%)
Electricity	4th among OECD** countries	\$1.9 B (6%)	U.S. \$2.0 B (100%)

\* Trade data include crude oil, liquefied petroleum gases (LPGs) and petroleum products. Production ranking includes crude and LPGs.

\*\* Organization for Economic Cooperation and Development.

\*\*\* Includes coal and coal products.

# Geomatics<sup>1</sup>:

## The Industry

- The geomatics industry includes disciplines such as surveying, aerial photography, geodesy, mapping, photogrammetry, remote sensing and geographic information systems (GIS).
- Geomatics technology plays an important role in supporting the data-gathering and analysis applications of the forestry, mining and energy sectors, contributing to the competitiveness of these sectors.
- Innovations in geomatics facilitate sustainable development by contributing to improved detection of industrial pollution, better resource management, and environmental disaster prevention and mitigation.

## National Economic Importance

- In 1991, the geomatics industry in Canada consisted of approximately 1355 firms, employing about 12 000 people. By 1996, these figures had increased to over 1500 firms and total industry employment of 20 400.
- In 1996, the highest employment was in Ontario, followed by the Prairie provinces, British Columbia, Quebec and the Atlantic provinces.
- The total estimated gross billings for the Canadian geomatics industry in 1996 was \$1.85 billion. The percentage derived from export sales was 30%.

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<sup>1</sup> Due to the rapid growth and technological change occurring in geomatics, data on the industry are few. Data provided are taken from three reports: the Industry Canada *Sector Competitiveness Frameworks, Geomatics Part 1 – Overview and Prospects* (data are from a 1996 study conducted by a private consulting firm), and *1991 – Geomatics Industry Profile*; and the Geomatics Industry Association of Canada *1996 Study of the Impacts of the Changing Market Structure on the Canadian Geomatics Industry*. Statistics Canada has recently defined two new industrial classification codes to survey the geomatics industry.

- The Canadian geomatics industry is predominantly composed of small- to medium-sized enterprises. In 1996, 82% of firms had fewer than 20 employees and 10% of Canadian geomatics firms generated revenues greater than \$3 million (gross billings).
- The average value of R&D investments has increased from 6.5% of gross billings in the 1985-90 period to 8.3% during 1991-96.

### **International Importance**

- The global market for geomatics technology is growing at a rate of 20% per year. Currently, it is estimated to have a value between \$10 billion to \$20 billion (in current dollars).
- Canada ranks second in technology development and international billings, with the United States being first. Canada is followed by France, Germany and the United Kingdom.
- Current major markets are North America and Europe. New markets are emerging in Latin America, Eastern Europe and Asia. For example, in 1994, the Republic of Korea purchased geomatics products valued at \$60 million.
- The Canadian geomatics industry leads in supplying remote sensing equipment and technology, such as satellite ground receiving stations. It supplies the global market with 10–15% of world sales value of remote sensing products and services, half the value of electronics used in satellite data ground receiving stations, and 25% of the value of image processing systems.