

Important Facts on Canada's Natural Resources

(as of July 2001)



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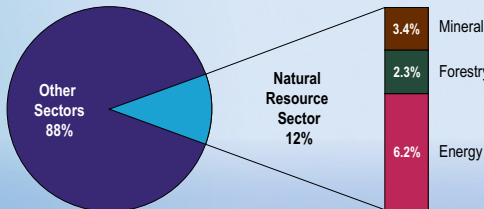
2000 Facts as of July 2001	Forestry	Minerals ¹	Energy	Total Natural Resources	Canada
Gross Domestic Product ² (GDP in current \$ billions)	\$20.8 (2.3%)	\$30.4 (3.4%)	\$55.2 (6.2%)	\$106.4 (12.0%)	\$886.9 (100%)
Direct employment (thousands of people)	373 (2.5%)	395 (2.6%)	201 (1.3%)	969 (6.5%)	14 910 (100%)
New investments (capital only) (\$ billions)	\$4.3 (2.4%)	\$7.2 (4.0%)	\$32.5 (18.2%)	\$44.0 (24.7%)	\$178.3 (100%)
Trade (\$ billions)					
• Domestic exports (excluding re-exports)	\$47.4 (12.3%)	\$47.3 (12.3%)	\$54.4 (14.2%)	\$149.1 (38.8%)	\$384.1 (100%)
• Imports	\$10.0 (2.8%)	\$49.5 (13.6%)	\$18.9 (5.2%)	\$78.4 (21.6%)	\$363.2 (100%)
• Balance of trade ³ (including re-exports)	+\$37.5	-\$0.9	+\$35.6	+\$72.2	+\$54.5

¹ The minerals industry now includes mineral extraction and concentrating, smelting and refining, non-metals and metals-based semi-fabricating industries, and metals fabricating industries. Minerals include uranium mining; energy includes coal mining.

² GDP was 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 2000.

³ 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.

Natural Resource Sector and Canada's GDP in 2000 (\$886.9 Billion)



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 225.6 million cubic metres (m³).

- Annually, Canada harvests less than 1/2 of 1% (1 082 450 ha, or 176.6 million m³ in 1998) of its commercial forest area.
- 6.3 million ha were affected by insect defoliation in 1998; 0.6 million ha were lost due to forest fires in 2000.
- In 1998, it is estimated that 398 322 ha were planted with 563 million seedlings, and 26 207 ha were seeded.
- Revenues from the sale of timber from provincial Crown land are estimated to be \$1.9 billion in 1998.

National Economic Importance

- The forest sector's contribution to the Canadian economy (GDP) was 2.3%, or \$20.8 billion, in 2000.

* = Estimation.



- Direct employment was 373 300 in 2000, or 2.5% of total employment in Canada: wood industries, 167 700; paper and allied industries, 116 400; logging, 58 200; and forestry services, 31 000. Employment is spread all across Canada, but is primarily in Quebec, 108 900; British Columbia, 101 400; and Ontario, 88 400.
- Wages and salaries for direct employment were \$11.8 billion for 1997.
- Shipments were \$69.6 billion in 1997.
- In 2000, shipments of pulp and paper hit a record level of 32.4 million tonnes, an increase of 1.4% from the previous year.
- Production of softwood lumber rose to a record level of 68.6 million m³ in 2000.
- New investments (capital only) totalled \$4.3 billion in 2000: paper and allied industries, \$2.3 billion (53%); wood industries, \$1.6 billion (38%); and logging, \$0.4 billion (9%).

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 2000 (\$37.5 billion).
- The total value of Canadian forest product exports rose by 7.2% in 2000 to \$47.4 billion: British Columbia, \$16.0 billion (34%); Quebec, \$12.2 billion (26%); Ontario, \$9.7 billion (21%); and other, \$9.5 billion (19%).

Commodities	World Production ¹ Ranking 1999	Exports 2000	Destination
Total forest products		\$47.4 B (100%)	U.S. \$36.3 B (77%) E.U. \$3.8 B (8%) Japan \$3.5 B (7%)
Softwood lumber	Second (21%)	\$11.5 B (24.3%)	U.S. \$9.2 B (80%) Japan \$1.7 B (15%) E.U. \$0.3 B (3%)
Newsprint	First (25%)	\$7.0 B (14.8%)	U.S. \$5.6 B (80%) E.U. \$0.5 B (6%) Japan \$0.2 B (3%)
Wood pulp	Second (16%)	\$9.9 B (20.9%)	U.S. \$4.1 B (41%) E.U. \$2.5 B (26%) Japan \$1.1 B (11%)
Other		\$19.0 B (40.0%)	U.S. \$17.4 B (92%) E.U. \$0.5 B (3%) Japan \$0.5 B (3%)

¹ FAO data for 1999.

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.
- In 2000, there were some 235 metal, non-metal and coal mines, 3000 stone quarries and sand and gravel pits,



and over 50 non-ferrous smelters, refineries and steel mills operating in Canada.

- More than 60% of Canadian non-fuel minerals production is accounted for by Ontario (31%), Quebec (20%) and Saskatchewan (12%).

National Economic Importance

- In 2000, the mining and mineral processing industries* contributed \$30.4 billion (current dollars) to the Canadian economy, or 3.4% of the national GDP.
- Well over 100 communities across Canada with a total population of over 600 000 are dependent on the minerals industry. These communities are located in all regions of the country but mainly in remote and rural areas.
- Total direct employment was almost 395 000, or 2.6% of total employment. Of these, roughly 47 000 were employed in mining (excluding coal mining), 61 000 in smelting and refining, and 286 000 in metal and non-metal semi-fabrication and fabrication.

- The mining and mineral processing industries provide some of the highest weekly earnings in the economy, averaging over \$1,000 both in the mining industry and in non-ferrous smelting and refining. Weekly earnings in the Canadian economy averaged \$600.

- Over the last five years, minerals and mineral products accounted for over 60% of the volume handled at Canada's ports and some 55% of rail revenue freight.

* The figures for mining and mineral processing activities now include Stages 1 to 4 and exclude coal.

- In 2000, about \$321 million was spent on research and development in the mining and mineral processing industries.
- Final exploration and deposit appraisal expenditures for the year 1999 totalled \$504 million, and preliminary estimates show a decline to \$473 million in 2000. Spending intentions for 2001 indicate a more modest decline to \$458 million.
- Spending on exploration and deposit appraisal by junior companies increased from \$141 million in 1999 to \$149 million in 2000 and could reach \$167 million in 2001.

Commodities	World Production Ranking 1999	Exports 2000	Destination
Total mineral products		\$47.3 B	U.S. \$38.1 B (81%) E.U. \$3.8 B (8%) Japan \$1.2 B (3%)
Selected metals:			
Uranium	First (25.3%)	\$0.6 B	U.S. \$0.4 B (66%) France \$0.1 B (17%)
Nickel	Second (17.1%)	\$2.5 B	U.S. \$0.9 B (35%) Norway \$0.5 B (20%)
Zinc	Third (12.5%)	\$1.7 B	U.S. \$1.1 B (69%) Belgium \$0.1 B (5%)
Gold	Fifth (6.4%)	\$2.6 B	U.S. \$2.5 B (95%) Japan \$0.1 B (2%)
Copper	Fifth (4.8%)	\$2.4 B	U.S. \$1.9 B (77%) Japan \$0.2 B (8%)
Selected non-metals:			
Potash	First (31.8%)	\$2.4 B	U.S. \$1.1 B (46%) China \$0.4 B (17%)
Asbestos	Third (17.2%)	\$0.3 B	U.S. \$0.08 B (31%) Japan \$0.03 B (13%) India \$0.03 B (13%)
Structural materials		\$1.2 B	U.S. \$1.2 B (95%)

International Importance

- Canada is one of the world's leading exporters of minerals and mineral products. Some 80% of Canada's mineral production is exported. These products make a significant contribution to Canada's international trade, accounting for over 12% of Canada's total domestic exports.

- Canada continues to be the world's leader in the production of potash and uranium. In 1999, Canada ranked second in the production of nickel and was in the top five producers in the world in the production of aluminum, gold, lead, zinc, copper, gypsum, molybdenum, platinum group metals, salt, cadmium, titanium concentrate and asbestos.

- In 2000, Canadian mining and mineral processing products exported to the United States totalled \$38.1 billion (80.6%); to the European Union, \$3.8 billion (8.0%); to Japan, \$1.2 billion (2.6%); to Mexico, \$0.2 billion (0.4%); and to other countries, \$4.0 billion (8.4%).

Energy

The Resource

- Remaining established reserves at the beginning of 1999: natural gas, 61.7 trillion cubic feet (Tcf) – 61.1 Tcf in conventional areas and 0.6 Tcf in frontier areas – for a reserves-to-

production ratio of 10.1 years. The total in-place, raw, undiscovered potential of natural gas in the Western Canada Sedimentary Basin is estimated to be 294 Tcf.

- Crude oil reserves in 1999 were estimated at 11.3 billion (B) barrels consisting of: conventional, 3.4 B barrels; oilsands, 6.6 B barrels; and frontier, 1.3 B barrels (of which 0.87 B barrels are off the East Coast), for a reserves-to-production ratio of 10 years.

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

- Coal reserves are estimated at 6294 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 by commodity*** in 2000 was: 38.4% gas, 35.3% petroleum, 13.2% electricity, 9.3% coal, and 3.8% waste wood, spent pulping liquor, and firewood for a total of 16 302 petajoules. Alberta accounted for 68% of total production; British Columbia, 12%; Saskatchewan, 10%; Quebec, 4%; and Ontario, 3%.

- Primary energy consumption*** by commodity in 2000 was: 37.2% petroleum, 26.7% gas, 18.7% electricity, 11.8% coal, and 5.6% waste wood, spent pulping liquor, and firewood for a total of 10 935 petajoules. Ontario accounted for 35% of total consumption; Quebec, 21%; Alberta, 20%; British Columbia, 13%; Saskatchewan, 5%; Manitoba, 2%; and the Atlantic provinces, 4%.

- Marketable production of natural gas in Canada in 2000 was 5.9 Tcf.

- Production of crude oil in Canada in 2000 was 1.35 million barrels per day (BPD) of light and 0.85 million BPD of heavy, totalling 2.2 million BPD, or 803 million barrels for the year.

- Electricity generation** in 2000 by source was 600 net terawatt hours: 62% hydro, 19% coal, 12% nuclear, and 7% oil, gas and other. Quebec accounted for 32% of total generation (97% from hydro), and Ontario for 26% (40% from nuclear sources).

- Canada produced 69 million tonnes of coal valued at \$1.5 billion in 2000 – 35% Alberta sub-bituminous, 10% Alberta bituminous, 37% British Columbia bituminous, 16% Saskatchewan lignite, and the remainder from the Maritimes. Eighty-nine percent of the coal consumed in Canada was used to produce electricity.

National Economic Importance

- Energy (all sources) contributed 6.2% to GDP in 2000. Of the \$55.2 billion (current \$) total energy GDP, crude oil and natural gas industries accounted for \$18.4 billion (33%); electric power, \$23.7 billion (43%); and pipelines, \$3.8 billion (7%).

- About 76% of petroleum and natural gas production in 2000 (valued at \$49.8 billion) was in Alberta.

- Direct employment, excluding service stations and wholesale trade in petroleum products, was 201 392 people in 2000, or 1.3% of total employment in Canada. Employment in service stations and wholesale trade in petroleum products accounted for another 92 098 people, or 0.5%.

- Energy exports accounted for 14.2% 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 18.2% of total Canadian investment and 3.7% of GDP.

International Importance

- The United States is Canada's major trade market for energy products, accounting for 96% (\$52.2 billion) of all Canadian energy exports. In 2000, Canada imported \$18.9 billion of energy products, mainly from the United Kingdom (24%), United States (23%) and Norway (21%).

- Canada exported 3.6 Tcf of natural gas, or 60% of its marketable production – all to the United States.

Commodities	World Production Ranking 2000	Exports 2000	Destination
Total energy		\$54.4 B (100%)	U.S. \$52.2 B (96%) Japan \$0.7 B (1%) S. Korea \$0.3 B (1%) Brazil \$0.1 B (0.1%)
Petroleum ¹	Tenth (3.5%)	\$28.2 B (52%)	U.S. \$28.1 B (99%)
Natural gas	Third (7.0%)	\$20.1 B (37%)	U.S. \$20.1 B (100%)
Coal ²	Thirteenth (1.7%)	\$1.9 B (3%)	Japan \$0.7 B (45%) S. Korea \$0.3 B (14%) U.S. \$0.4 B (21%)
Electricity	Fourth among OECD ³ countries	\$4.1 B (8%)	U.S. \$4.1 B (100%)

- Trade data include crude oil, liquefied petroleum gases (LPGs) and petroleum products. Production ranking includes crude and LPGs.
- Includes coal and coal products.
- Organization for Economic Cooperation and Development.

* Based on nuclear electricity conversion factor of 11.564 MJ/kWh.
** Estimate based on first two quarters of *Quarterly Report on Energy Supply – Demand in Canada, 2000*.

The value of this export was \$20.1 billion. In volume terms, Canada accounted for over 93% of U.S. gas imports and had a 15% share of the U.S. market.

- Exports of crude oil were 1 380 684 BPD in 2000 valued at \$19.4 billion. Over 99% of these exports were U.S. bound. Canadian crude oil held a 9% share of the U.S. market in 2000 and accounted for over 14% of U.S. crude imports. Exports of refined petroleum products in 2000 reached a value of \$6.7 billion (\$6.6 billion, or 99% to the U.S.) on a volume of 110.3 million barrels.

- Japan was the destination of over 45% of the 32 million tonnes (\$1.9 billion) of coal exported by Canada.

Geomatics

The Industry

- The geomatics* industry includes space technologies (e.g. remote sensing, radio interferometry, geospatial positioning, GPS), geophysical, land, and hydrographic surveying, mapping and charting, photogrammetry and geographic information systems (GIS).

- Geomatics technology plays an important role in supporting the data-gathering, interpreting and analysis applications of the energy, mining and forestry sectors, thereby contributing to the competitiveness of these sectors.

- Innovations in geomatics facilitate sustainable development by contributing to improved resource management, enhanced detection of pollution, and environmental disaster prevention and mitigation.



National Economic Importance

- In 1991, the geomatics industry consisted of approximately 1355 firms (employing about 12 000 people). By 1998, the surveys and mapping industry sector alone** had grown to over 2740 establishments.

- Total industry revenues for the surveying and mapping sector of the geomatics industry (as defined by Statistics Canada**) totalled \$1.2 billion in 1998. The highest level of revenues and employment was in the Prairie Provinces, followed by Ontario, Quebec and British Columbia.

- The Canadian surveys and mapping sector is predominantly composed of small to medium-sized enterprises. In 1998, only 14 firms had revenues over \$10 million. In the same year, approximately 9% of all establishments had revenues over \$1 million while 7% of establishments had revenues in the \$500,000 to \$1 million range. The vast majority (84%) of establishments had revenues of less than \$500,000.

- Fewer than 1% of surveying and mapping firms are considered to be complex. Rather, most are single-industry, single-province and single-establishment companies.

- The profit margins (before taxes) for the survey and mapping sector averaged 9% in 1998.

International Importance

- Industry Canada estimated total export of geomatics products at \$260 million in 1997.

- The global market for geomatics technology and equipment is significant and growing at a rate of 20% per year. It is

estimated that the current international market for geomatics technology is between \$10 billion and \$20 billion (in current dollars). Canada ranks behind only the United States in technology development and international revenues.

- The principal markets for Canadian geomatics technology and services are the United States and Europe. New markets are emerging in Latin America, Eastern Europe and Asia.

- The Canadian industry leads in supplying remote sensing equipment and technology, such as ground satellite-receiving stations. It supplies the global market with approximately 10–15% of world sales value of remote-sensing products and services, half the value of electronics used in ground satellite-receiving stations, and 25% of the value of image-processing systems.

- The Canadian geomatics community works co-operatively to provide geospatial information to the international community in support of a number of global projects, including the International GPS Service, International VLBI Service, International Earth Rotation Service, the Global Geodynamics Project and Digital Earth.

* Data on the geomatics industry are few. Data provided are taken from three reports: Industry Canada's *Sector Competitiveness Frameworks, Geomatics Part 1 – Overview and Prospects* and *1991 – Geomatics Industry Profile* and Statistic Canada's *1998 Survey of Surveying and Mapping Services*.

** All material presented in the National Economic Importance section comes from the 1998 Statistics Canada survey. This survey was limited in scope to firms classified as belonging to two North American Industrial Classification System (NAICS) codes: 54136 – Geophysical Surveying and Mapping; and 54137 – Surveying and Mapping (except geophysical) Services. This report acknowledged that a significant number of firms which are considered to be involved in the field of geomatics are not included in the survey as they may fall within one of a number of other NAICS codes (e.g. manufacturing, engineering, consulting, software publishing, other publishers, computer systems design, etc.). In addition, many of the geophysical surveying and mapping firms included in the report are not considered as truly falling within the geomatics industry, as defined by key players in the industry.

