Natural Resources Canada | Ressources naturelles Canada

Important Facts on Canada's Natural Resources

(as of October 2005)

www.nrcan.gc.ca/statistics

Canada

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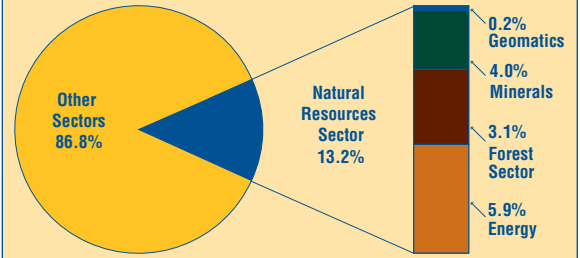
Canada's Natural Resources — Now and for the Future

Canada's natural resources sectors — our forests, energy, minerals and metals, and Earth sciences — are a vital part of Canada's economy and society. Canada enjoys extraordinary economic and social benefits thanks to its rich endowment of natural resources. The natural resources sectors and related industries have been an engine of economic growth and job creation for generations. As a leading exporter of natural resources and resource-based technology and knowledge, Canada contributes to the well-being of people in many countries around the world. Canada shares information and knowledge globally to promote the sustainable development of natural resources in a competitive investment climate. This brochure provides a statistical snapshot of the importance of Canada's natural resources.

Natural Resources Canada (NRCan) is a department of the Government of Canada with a mandate for sustainable development and use of our natural resources. Through innovation and partnership, the department plays a pivotal role in helping shape the enormous contributions of the natural resources sectors and related industries to the high quality of life of Canadians. Through its expertise in Earth sciences, science and technology, the department develops policies and implements programs for the well-being of all Canadians.

Figure 1 Natural Resources Sector and Canada's GDP in 2004



Canada's total GDP is $1,200.6 billion

Note: Totals may not add due to rounding.

Facts for 2004[1]	Forest Sector	Minerals	Energy	Geomatics	Total Natural Resources	Canada
Gross Domestic Product ($ billions)	$36.8 (3.1%)	$48.0 (4.0%)	$70.8 (5.9%)	$2.4 (0.2%)	$158.4 (13.2%)	$1,200.6 (100%)
Direct employment (thousands of people)	361 (2.3%)	369 (2.3%)	241 (1.5%)	27 (0.01%)	998 (6.3%)	15,950 (100%)
New capital investments ($ billions)	$3.1 (1.3%)	$6.6 (2.7%)	$46.4 (19.0%)	Not applicable	$56.1 (23.0%)	$243.9 (100%)
Trade ($ billions)						
• Domestic exports (excluding re-exports)	$44.6 (11.6%)	$55.3 (14.4%)	$67.3 (17.5%)	$0.5 (0.13%)	$167.7 (43.6%)	$385.0 (100%)
• Imports	$10.3 (2.9%)	$52.3 (14.7%)	$24.5 (6.9%)	Not applicable	$87.1 (24.5%)	$355.6 (100%)
• Balance of trade (including re-exports)	+$34.4	+$4.7	+$42.8	Not applicable	+$81.9	+$56.2

[1] The data reported for each of the natural resources sectors reflect the value of the primary industries and related downstream manufacturing industries as of October 2005. "Minerals" includes uranium and coal mining. Balance of trade is the difference between total exports and imports of goods. Services and capital flows are not included.

Note: All dollar amounts shown are in current Canadian dollars. Totals may not add due to rounding.

Forest Sector

- Canada has 10% of the world's forests.
- Canada has 402.1 million hectares (ha) of forest and other wooded lands, which represents 41.1% of its total surface area of 979.1 million hectares.
- Canada's forest and other wooded lands are made up of 310.1 million ha (77%) of forest and 92 million ha (23%) of other wooded land; 294.8 million ha of the forest (95.1%) are potentially available for commercial forest activities.
- In 2003, Canada harvested 180.5 million cubic metres of roundwood.
- Annually, Canada harvests 0.3% of its commercial forest area (1 million ha were harvested in 2002).
- A total of 19.2 million ha were affected by insect defoliation in 2003; 3.3 million ha were lost due to forest fires in 2004.
- In 2003, an estimated 378 746 ha were planted with 509 million seedlings, and 17 651 ha were seeded.
- Revenues from the sale of timber from provincial Crown lands are estimated to be $1.4 billion in 2003.

National Economic Importance

- The forest sector's contribution to the Canadian economy (GDP) was 3.1%, or $36.8 billion, in 2004.
- Direct employment was 361 100 in 2004, or 2.3% of total employment in Canada: wood industries, 185 800; paper and allied industries, 103 800;

logging, 50 200; and forestry services, 21 300. Employment is spread all across Canada but is primarily in Quebec (115 300), British Columbia (79 800) and Ontario (94 300).

⇨ Canada's forests are the engine behind an industry worth about $80.3 billion.

⇨ In 2004, shipments of pulp and paper reached a level of 31.2 million tonnes, an increase of 1.7% from the previous year.

⇨ Production of softwood lumber was 82.7 million m^3 in 2004.

⇨ New capital investments totalled $3.1 billion in 2004: paper and allied industries, $1.5 billion (49.9%); wood industries, $1.2 billion (38.2%); and logging, $0.4 billion (11.8%).

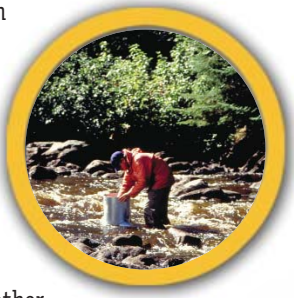
⇨ Tourism related to Canadian forests also provides a boost to Canada's economy.

International Importance

⇨ In 2004, Canada was the world's largest forest-product exporter (17.3%).

⇨ Forest products were a major contributor to Canada's surplus balance of trade in 2004 ($34.4 billion).

➪ The total value of Canadian forest-product exports increased by 12.6% in 2004 to $44.6 billion. British Columbia accounted for $14.7 billion (33.0%); Quebec, $11.9 billion (26.7%); Ontario, $9.0 billion (20.1%); and other provinces, $9.0 billion (20.2%).



Commodities	World Production[1] Ranking 2004	Exports 2004	Destination
Total forest products	–	$44.6 B (100%)	U.S. $35.5 B (80%) E.U. $2.5 B (6%) Japan $2.4 B (5%)
Softwood lumber	Second (19.0%)	$11.0 B (24.7%)	U.S. $9.1 B (80%) E.U. $0.2 B (2%) Japan $1.3 B (12%)
Newsprint	First (21.5%)	$5.3 B (11.9%)	U.S. $3.9 B (74%) E.U. $0.5 B (9%) India $0.2 B (3%)
Wood pulp	Second (15.2%)	$7.1 B (16.0%)	U.S. $3.0 B (42%) E.U. $1.4 B (20%) China $1.0 B (14%)
Other	–	$21.1 B (47.4%)	U.S. $19.5 B (92%) E.U. $0.4 B (2%) Japan $1.0 B (5%)

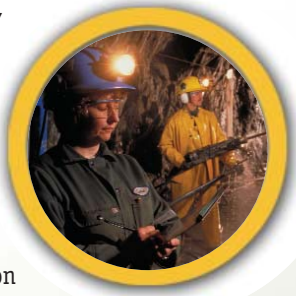
[1] Food and Agriculture Organization of the United Nations data for 2004.

Forest and Other Wooded Land

% Forest and Other Wooded Land	Total Land Area (Millions of ha)	Forest and Other Wooded Land Area (Millions of ha)
0-<5	363.1	1.2
5-<20	70.9	8.3
20-<40	74.0	22.3
40-<60	83.0	41.3
60-<80	121.8	86.9
80-100	266.3	241.7
Total	979.1	402.1

Minerals

- Canada is one of the largest mining nations in the world, producing more than 60 minerals and metals.
- At the start of 2005, more than 200 producing mining establishments (metal, non-metal and coal mines), more than 3,000 stone quarries and sand and gravel pits, and about 50 non-ferrous smelters and refineries, and steel mills were operating in Canada.



- Almost three-quarters of Canadian mineral production is accounted for by Ontario (30%), Quebec (17%), Saskatchewan (12%) and British Columbia (15%).

National Economic Importance

- In 2004, the value of production of the Canadian mining, mineral-processing and metal-producing industries totaled $60 billion, largely a result of increased commodity prices. This figure includes the traditional value of production from Canadian-mined ores, concentrates and aggregates ($23 billion). The balance ($37 billion) includes the value of production realized from the smelting and refining of domestic and imported ores and concentrates, recyclables, steel, aluminum, and coal and oil sands mining.

- The mining and mineral-processing industries contributed $48 billion to the Canadian economy, or 4.0% of the national GDP in 2004. This figure includes all mining and mineral-processing industries.
- Final exploration and deposit appraisal expenditures for the year 2004 totaled $1.2 billion, and revised company spending intentions for 2005 indicate a further increase to $1.4 billion.
- Capital investment reached $6.6 billion, up 28% from 2003, accounting for 3% of all capital investment in Canada.
- Total direct employment reached more than 369 000, or 2.3% of Canada's total employment. About 45 000 were employed in mining, 59 000 in smelting and refining, and 265 000 in mineral-processing industries.
- The mining and mineral-processing industries provide some of the highest weekly earnings in the economy, averaging more than $1,000. Weekly earnings in the Canadian economy averaged about $700.
- In 2004, the mining and mineral-processing industries spent $505 million on research and development; spending intentions for 2005 are roughly the same.
- In 2004, nickel was the top metallic mineral produced in Canada, with shipments valued at $3.3 billion, followed by gold at $2.2 billion. The leading non-metallic minerals were diamonds at $2.1 billion, followed by potash at $1.9 billion. Coal had shipments valued at $1.6 billion.

- Canada remains the third-largest diamond-producing nation in the world with production reaching 12.6 million carats.
- Canada is also the third-largest producer of primary aluminum in the world, producing 2.6 million tonnes from imported ores in 2004.

Commodities	World Production Ranking 2004	Domestic Exports 2004	Destination
Total mineral products	–	$55.3 B	U.S. $39.3 B (71%) E.U. $3.9 B (7%) Japan $1.9 B (3%)
Selected metals			
Uranium	First (32.4%)	$0.9 B	U.S. $0.4 B (44%) France $0.2 B (19%)
Nickel	Second (13.7%)	$4.3 B	U.S. $1.1 B (26%) Norway $1.1 B (26%)
Zinc	Fourth (8.4%)	$1.2 B	U.S. $0.9 B (74%) Belgium $0.07 B (6%)
Gold	Seventh (5.4%)	$3.5 B	U.S. $2.2 B (62%) E.U. $1.2 B (35%)
Copper	Eighth (3.9%)	$3.0 B	U.S. $2.2 B (73%) Japan $0.3 B (11%)
Selected non-metals			
Potash	First (31.7%)	$2.2 B	U.S. $1.1 B (52%) China $0.3 B (13%)
Gypsum	Third (8.5%)	$0.2 B	U.S. $0.2 B (98%)
Asbestos	Fourth (11.0%)	$0.2 B	U.S. $0.06 B (36%) India $0.04 B (22%)
Salt	Fifth (6.2%)	$0.5 B	U.S. $0.5 B (93%)

International Importance

⇨ Canada is one of the world's leading exporters of minerals and mineral products. These products make a significant contribution to Canada's international trade, accounting for 14.4% of Canada's total domestic exports.

⇨ Canada continues to be the world's leader in the production of potash and uranium, and ranks in the top five for the production of aluminum, asbestos, cadmium, cobalt, gypsum, magnesium, molybdenum, nickel, platinum group metals, salt, titanium concentrate and zinc.

- Remaining established reserves at the beginning of 2004 for natural gas were 56.3 trillion cubic feet (Tcf) — 55.9 Tcf in conventional areas and 0.4 Tcf in frontier. The total in-place, raw, undiscovered potential of natural gas in the Western Canada Sedimentary Basin is estimated to be 334 Tcf.
- Crude oil reserves[1] in 2004 were estimated at 178.6 billion (B) barrels, consisting of conventional, 4.4 B barrels (of which 1.3 B barrels are from frontier areas); and oil sands, 174.2 B barrels. The ultimate recoverable potential from the Alberta oil sands is more than 315 B barrels.
- Primary energy production[2] by commodity in 2004 was 37.2% gas, 38.0% petroleum, 12.8% electricity, 8.2% coal and 3.8% waste wood, spent pulping liquor and firewood, for a total of 17 180 petajoules. Alberta accounted for 64% of total production; British Columbia, 13%; Saskatchewan, 9%; Quebec, 4%; and Ontario, 3%.

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[1] Data on oil sands reserves are from the Alberta Energy and Utilities Board; reserves include proven plus probable and are initial established reserves less cumulative production. Probable reserves are contiguous recoverable reserves that are interpreted to exist from geological or geophysical information with reasonable certainty. Conventional and frontier reserves are from the Canadian Association of Petroleum Producers (CAPP); proven plus probable remaining established reserves.

Sources: *CAPP Statistical Handbook (November 2005); Alberta's Reserves 2004 and Supply/Demand Outlook 2005-2014.*

[2] Based on nuclear electricity conversion factor of 11.564 MJ/kWh.

- Primary energy consumption[3] by commodity in 2004 was 43.2% petroleum, 25.9% gas, 13.4% electricity, 11.7% coal and 5.8% waste wood, spent pulping liquor and firewood, for a total of 11 767 petajoules. Ontario accounted for 29% of total consumption; Quebec, 16%; Alberta, 21%; British Columbia, 10%; Saskatchewan, 5%; Manitoba, 2%; and the Atlantic provinces, 6%.
- Secondary energy consumption accounted for about 70.0% of primary energy demand in 2003. Industry accounted for 38.4% of this total; transportation, 27.9%; residential, 17.2%; commercial and institutional, 14.0%; and agriculture, 2.5%.

- Marketable production of natural gas in Canada in 2004 was 5.9 Tcf.
- Production of crude oil in Canada in 2004 was 1.49 million barrels per day (BPD) of light and 1.08 million BPD of heavy, totalling 2.57 million BPD or 938 million barrels for the year.
- Electricity generation in 2004 by source was 576 net terawatt hours: 58% hydro, 17% coal, 15% nuclear, and 10% oil, gas and other. Quebec accounted for 30% of total generation (95% from hydro) and Ontario for 27% (49% from nuclear sources).

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[3] Ibid.

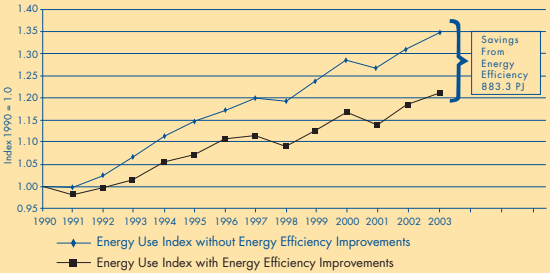
National Economic Importance

- Energy (all sources) contributed 5.9% to GDP in 2004. Of the $70.8 billion (current $) total energy GDP, crude oil and natural gas industries accounted for $27.4 billion (39%); electric power, $24.6 billion (35%); and pipelines, $5.4 billion (8%).
- About 74% of petroleum and natural gas production in 2004 (valued at $64.5 billion) was in Alberta.
- Direct employment, excluding service stations and wholesale trade in petroleum products, was 240 827 people in 2004 or 1.5% of total employment in Canada. Service stations and wholesale trade in petroleum products accounted for 97 122 people or 0.6%.

- In 2004, energy accounted for 17.5% of total merchandise exports, and the energy trade balance ranked first as a contributor to Canada's positive overall trade balance.
- In 2004, new capital investments in energy-related industries represented 19.0% of total Canadian investment and 4.4% of GDP.

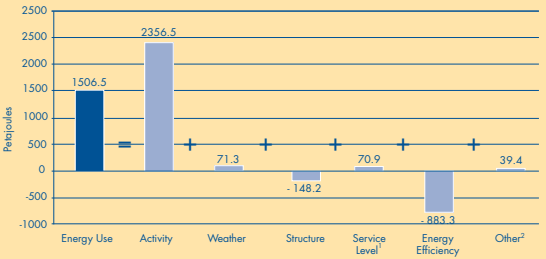
⇨ Despite a 43.6% increase in GDP between 1990 and 2003, end-use energy consumption grew by only 21.7%. As shown in Figure 2 (below), energy efficiency played a major role in limiting this growth.

Figure 2 Secondary Energy Use, With and Without Energy Efficiency Improvements, 1990–2003 (Index 1990 = 1.0)



As Figure 3 (opposite page) shows, end-use energy consumption grew by 1 507 petajoules between 1990 and 2003. This increase takes into account factors such as growth in economic activity, colder weather (the winter of 2003 was 5% colder than that of 1990), changes in the structure of the economy that favour less energy-intensive industries, increased service level for auxiliary equipment in the commercial/institutional sector and significant gains in energy efficiency.

Figure 3 Impact of Activity, Weather, Structure, Service Level and Energy Efficiency on Energy Use, 1990–2003 (petajoules)



[1] "Service Level" refers to the service level of auxiliary equipment in the commercial/institutional sector.

[2] "Other" refers to street lighting, non-commercial airline aviation, offroad transportation and agriculture, which are not included in the factorization but are included in "Energy Use."

⇨ Overall, energy efficiency improved by 13% between 1990 and 2003, which corresponds to a reduction in energy consumption of 883 petajoules in 2003. These gains in energy efficiency translated into savings of $13.4 billion in 2003 alone and represent an estimated 52.3 megatonnes of avoided greenhouse gas emissions.

International Importance

⇨ The United States is Canada's major trade market for energy products, accounting for 99% ($66.7 billion) of all Canadian energy exports. In 2004, Canada imported $24.5 billion of energy products, mainly from the United States (28%), Norway (19%) and the United Kingdom (12%).

➪ Canada exported 3.7 Tcf of natural gas or 63% of its marketable production — all to the United States. The value of this export was $27.0 billion. In volume terms, Canada accounted for more than 84% of U.S. gas imports and had a 15% share of the U.S. market.

➪ Exports of crude oil were 1 620 000 barrels per day in 2004, valued at $25.1 billion. More than 99% of these exports were U.S.-bound. Canadian crude oil held a 14% share of the U.S. market in 2004 and accounted for more than 16% of U.S. crude imports. Exports of refined petroleum products in 2004 reached a value of $13.1 billion ($12.5 billion or 96% to the U.S.) on a volume of 162.6 million barrels.

Commodities	World Production Ranking 2004	Exports 2004	Destination
Total energy	–	$67.3 B (100%)	U.S. $66.7 B (99%)
Petroleum[1]	Eighth (3.9%)	$38.3 B (57%)	U.S. $25.1 B (99%)
Natural gas	Third (6.8%)	$27.0 B (40%)	U.S. $27.0 B (100%)
Electricity	Third among OECD[2] countries	$2.0 B (3%)	U.S. $2.0 B (100%)

[1] Trade data include crude oil, liquefied petroleum gases (LPGs) and petroleum products. Production ranking includes crude and LPGs.
[2] Organization for Economic Co-operation and Development.

Geomatics and Geoscience

- Geomatics and geoscience are complementary aspects of Earth sciences activities. They encompass a broad range of disciplines that can be brought together to create a detailed and understandable picture of the physical world and our place in it.
- Geomatics consists of science and technology activities, products and services involved in the collection, integration, interpretation, analysis and management of geospatial data and the development of tools to support those activities.
- Geographic information can be retrieved from various sources including Earth-orbiting satellites, ground-based instruments, and air- and sea-borne sensors. This geospatial data is processed and manipulated with state-of-the-art information technology using computer software and hardware.
- Geoscience is any science that deals with the physical Earth, including geology, geophysics, geochemistry and geodesy.
- Geomatics and geoscience technologies play an important role in supporting the data gathering, interpreting, and analysis applications of the energy, mining and forestry sectors, as well as other sectors in the economy. They also play an important role in environmental assessments, climate change impacts and adaptations, land-use planning, and natural-hazards assessment and mitigation.

National Economic Importance

- In 2004, the estimated[1] revenue from the sale of geomatics products and services totalled $2.8 billion, with a contribution to the economy estimated at $2.4 billion.
- The geomatics activities experiencing high growth include Geographic Information Systems (GIS), Global Positioning Systems (GPS), remote sensing, location-based services and technologies, and Web-based services.
- The 27 000 employees in the geomatics industry make up a highly educated workforce engaged by more than 2 200 firms that form important clusters in Atlantic Canada, Quebec, Ontario, Alberta and British Columbia.
- The benefits of geomatics technologies relate to many vital sectors of the Canadian economy that require geospatial data to increase productivity and efficiency or to facilitate the allocation of resources.

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[1] These are preliminary results from Statistics Canada *Census Survey of the Geomatics Industry*. For updated data, please visit www.nrcan.gc.ca/statistics.

Geomatics Industry[2]	
Number of Establishments	2 215
Number of Employees	27 300
Revenue	$2.8 billion
Exports	$497 million
Value Added	$2.4 billion

International Importance

- Geomatics ranks in the top three most important and rapidly growing professional fields in the global market. Its products and services are estimated to be between US$30 and US$40 billion[3]. In 2004, Canada exported approximately C$497 million in geomatics products and services, mostly to the United States.
- The areas in which there is growth and export potential are the areas with technological innovations and value-added applications, mainly satellite-based remote sensing, GIS and GPS.
- Canada is the world leader in niche markets of remote sensing data and applications, including mapping from space, sea floor mapping, and hydrography via the Electronic Chart System.
- Canada is recognized internationally for developing customized GIS applications for urban planning, agriculture, geo-marketing and natural resources management.
- Major international markets for Canadian geomatics firms include North America and western Europe (mainly Germany and the United Kingdom).

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2 Ibid.

3 Source: US Department of Labor, Hal Corp report 2001.

Emerging markets include Asia, Africa, Russia, eastern Europe and Latin America. The international demand for geomatics products and services will continue to increase, stimulating the growth of the industry in the coming years.

⇨ Canadian geomatics firms, through many recent trade missions to China, India and Brazil (among others), continue their international efforts to ensure future growth.