Crude Oil

The Canadian oil industry is concentrated in western Canada: the provinces of Alberta and Saskatchewan account for nearly all Canadian crude oil production. But while substantial reserves of oil remain, conventional oil supplies in western Canada are declining. New indigenous oil supplies increasingly will be found only in higher-cost higher-risk projects in the heavy oil, oil sands, frontier and offshore areas. Recognizing that such new oil supplies will be costly to develop and will require new technologies, the federal and provincial governments provide development assistance on a case-by-case basis after reviewing the economic viability of each project.

The oil sands of western Canada contain this country's largest oil reserves by far. Their potential has been estimated as equivalent to the combined reserves of Saudi Arabia, Kuwait and the United Arab Emirates. Two large oil-sand mining and upgrading plants are already in operation, and several new projects are in the planning stages.

Major oil discoveries have also been made in the Beaufort Sea, in the Arctic and off the east-coast province of Newfoundland. Some of these discoveries are being considered for development.

Natural Gas

The western provinces of Alberta, British Columbia and Saskatchewan supply all of Canada's natural gas, with nearly 90 per cent coming from Alberta. In contrast to oil, the availability of gas supplies from conventional fields continues to increase. Major gas discoveries have been made in the frontier and offshore regions, particularly in the Mackenzie Delta and the Beaufort Sea, the Arctic islands, and the east-coast offshore fields. This frontier gas ultimately could make a large contribution to Canadian energy supplies.

Electricity

Electricity is one of Canada's fastest-growing energy sources. As reserves of conventional oil decline, its role is expected to become even more important.

Worldwide, Canada ranks fifth in total electrical generating capacity. Its needs are met by electricity generated mainly from hydraulic (water) sources, nuclear power and coal. Small amounts of electricity are also generated from oil and natural gas.

Hydro

Water power, or hydro, is the largest source of electrical energy in Canada, providing nearly two-thirds of the total generated. Canada produces about 15 per cent of the world's hydro-electric power. While hydro resources are more evenly distributed across the country than other energy resources, Quebec accounts for 45 per cent of all Canadian existing hydro capacity. Most of the more accessible and less costly hydro sites in Canada have already been developed, although several other sites in Quebec and British Columbia could also be developed economically.

Nuclear

Hydro power is likely to remain Canada's largest single source of electricity in the foreseeable future; however, the use of nuclear power for electricity generation is expected to increase from its current level of 15 per cent. This is particularly true in Ontario, Canada's most industrialized province, where about one-half of all electrical energy is produced from nuclear sources in Canadian-designed CANDU reactors using uranium from Ontario and Saskatchewan.

Coal

Coal is used primarily to generate electrical power, especially in the provinces with substantial coal reserves — Alberta, British Columbia, Saskatchewan, Nova Scotia and New Brunswick. Ontario also uses coal to generate some of its electricity. The province, however, has no coal supplies of its own and imports coal from western Canada and the United States.

Renewable Energy Sources

Canadians know that most of the vast energy resources in this country are finite. Once they have been used up, they will be gone forever. With this in mind, Canadians have become more concerned with using fuel efficiently — by insulating their homes and driving smaller cars, for example. In addition, Canada has committed itself to expanding its use of renewable energy sources.

These sources already play an important role in Canada's energy production. They supply about 4 per cent of the country's overall energy demand when hydro power is excluded (the figure rises to 20 per cent if hydro is included). Energy from organic waste (especially bioenergy from wood waste), solar, wind, small-scale water and geothermal power are the major sources. They provide liquid fuels or electricity or process heat.

Renewable energy use is expected to increase in the future because of growing Canadian concern about the effect of conventional energy sources on the environment. As a result, much research and development is aimed at increasing the economic viability of these energy sources.

Research and Development (R&D)

Fully 20 per cent of every Canadian R&D dollar is spent in the energy sector. Canadian scientists are developing new approaches to use the country's energy resources as efficiently as possible. They are seeking ways to improve Canada's physical environment, industrial competitiveness, energy security and quality of life.

Some current R&D projects include the development of new technologies for the recovery and processing of oil sands and heavy oil deposits; new ways to expand the use of coal that also meet increasingly stringent environmental regulations; environmentally acceptable means of exploiting frontier resources economically; and alternative fuels for the transportation sector to reduce the country's dependence on oil. Finally, researchers are looking for the best possible combination and variety of energy sources for Canada by encouraging the appropriate development and use of renewable energy sources.

Energy Consumption in Canada

(per cent)

Oil	40
Natural gas	28
Electricity (hydro, nuclear and coal)	28
Renewable energy sources	4

Source: Energy, Mines and Resources Canada, 1987 statistics.