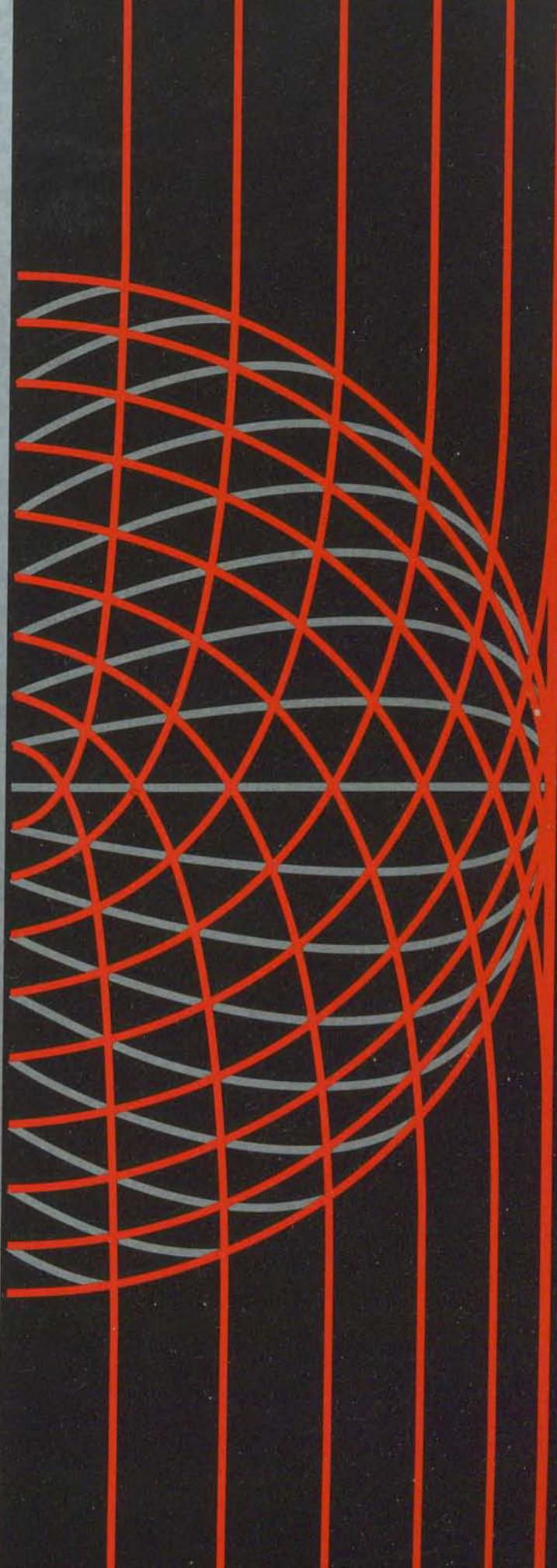


# Construction Machinery


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Canada

1990-1991

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*In a rapidly changing global trade environment, the international competitiveness of Canadian industry is the key to growth and prosperity. Promoting improved performance by Canadian firms in the global marketplace is a central element of the mandates of Industry, Science and Technology Canada and International Trade Canada. This Industry Profile is one of a series of papers in which Industry, Science and Technology Canada assesses, in a summary form, the current competitiveness of Canada's industrial sectors, taking into account technological, human resource and other critical factors. Industry, Science and Technology Canada and International Trade Canada assess the most recent changes in access to markets, including the implications of the Canada-U.S. Free Trade Agreement. Industry participants were consulted in the preparation of the profiles.*

*Ensuring that Canada remains prosperous over the next decade and into the next century is a challenge that affects us all. These profiles are intended to be informative and to serve as a basis for discussion of industrial prospects, strategic directions and the need for new approaches. This 1990-1991 series represents an updating and revision of the series published in 1988-1989. The Government will continue to update the series on a regular basis.*



Michael H. Wilson  
Minister of Industry, Science and Technology  
and Minister for International Trade

**Introduction**

Several firms making construction machinery in Canada also make similar equipment for other industries. The category assigned by Statistics Canada to a piece of equipment therefore frequently depends on how it is used rather than on its physical characteristics. Statistics Canada groups data on machinery and equipment under SIC 3192.<sup>1</sup> Five profiles have been prepared from this SIC category:

- *Construction Machinery*
- *Forestry Equipment*
- *Materials Handling Equipment*
- *Mining Equipment*
- *Oil and Gas Field Equipment*

In preparing these industry profiles, the Statistics Canada data have been sorted by Industry, Science and Technology

Canada (ISTC) according to the industry in which the machinery or equipment is used or the service is performed. Care has been taken to avoid double-counting in the disaggregation of these statistics.

The value of shipments for the industries in SIC 3192 in 1991 was estimated by Statistics Canada to be \$2 841 million. Figure 1 shows the share of that total allocated to the particular industries. ISTC estimates that construction machinery was the third largest, representing 21 percent of total shipments.

**Structure and Performance****Structure**

The Canadian construction machinery industry comprises firms that produce large, wheeled vehicles and parts used in such diverse operations as excavating, road building and

<sup>1</sup>See *Standard Industrial Classification, 1980*, Statistics Canada Catalogue No. 12-501 (SIC 3192, construction and mining machinery and materials handling equipment industry).

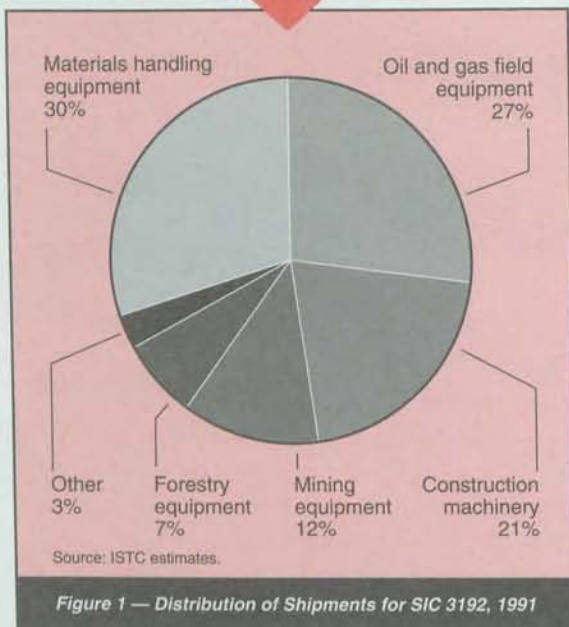


Figure 1 — Distribution of Shipments for SIC 3192, 1991

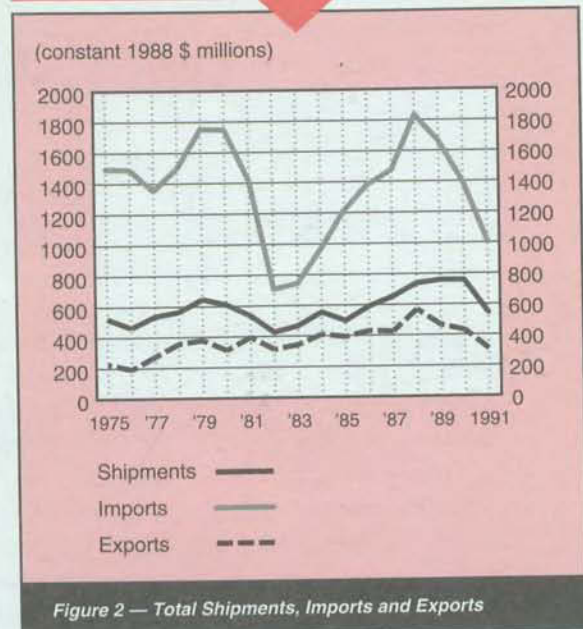


Figure 2 — Total Shipments, Imports and Exports

heavy hauling. These firms tend to specialize in one of four groups of products. The largest subsector, accounting for 90 percent of Canadian production, produces earth-moving machinery, including excavators, loaders, bulldozers and graders. The other three subsectors produce asphalt machinery (5 percent of industry production), including pavers and road repair equipment; concrete machinery (3 percent of industry production), such as mixers, block-making machines and concrete production plants; and other on-road equipment (2 percent of industry production), such as road rollers. Trucks, such as cement trucks, are covered in the profile on *Specialty Vehicles* and are not included in the data for this profile.

Both light- and heavy-duty models are made in the four subsectors. Producers of light-duty machinery generally serve the residential housing market, while heavy-duty equipment manufacturers depend on commercial construction, including government-financed infrastructures such as roads and sewers. A few manufacturers also produce some logging equipment, using much the same production process as that used for their construction machinery.

In 1988, there were approximately 110 establishments that manufactured construction machinery in Canada, with total direct employment estimated at 6 500 people. (On 12 July 1991, Caterpillar of Canada closed its Brampton plant, which had 380 employees. In September 1992, VME Equipment of Canada announced that it will be closing its St. Thomas, Ontario, plant in June 1993.) In 1990, the value of industry shipments is estimated to have totalled \$798.3 million in current dollars,

while exports reached \$453.3 million and imports were \$1 469.1 million (see Figure 2 for constant 1988 dollar values). Under the influence of the recent recession, 1991 shipments are estimated to have fallen to \$586.3 million, exports to \$328.7 million and imports to \$1 083.1 million. In constant 1988 dollar terms, as opposed to current dollars, 1990 shipments were flat while 1991 shipments fell by almost 28 percent from 1990 levels to \$545.6 million.

The industry is concentrated in terms of both ownership and location. The 10 largest firms account for up to 75 percent of total shipments. On a regional basis, the industry is centred in Ontario, where 59 percent of the establishments are located; Quebec accounts for 14 percent; British Columbia, 12 percent; the Prairie provinces, 11 percent; and the Atlantic provinces, 4 percent (Figure 3).

There is an important distinction in how firms in the industry do business. About 90 establishments focus on supplying the Canadian market. These firms tend to be small to medium-sized, having 8 to 60 employees, and usually serve a well-defined geographic area within Canada. This segment of the industry includes foreign-owned plants that have not carried out product rationalization as well as Canadian-owned equipment and parts producers that supply domestic market demands, rarely pursuing export market opportunities. They compete by providing service and parts.

Another 20 establishments, accounting for approximately 90 percent of total shipments, produce mainly for the export market and, through specialization, have succeeded

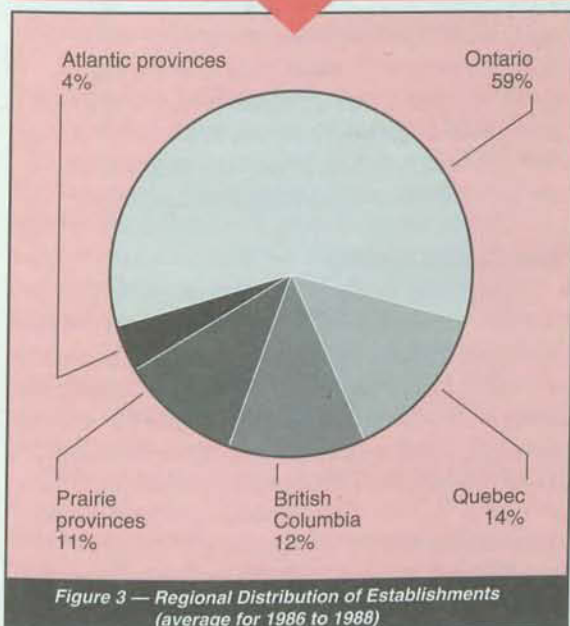
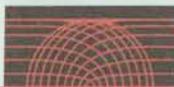


Figure 3 — Regional Distribution of Establishments (average for 1986 to 1988)

by exploiting well-defined market segments for such equipment as road graders, asphalt pavers and skid steer loaders. One-half of these export-oriented firms are foreign-owned, including three Canadian subsidiaries of large multinational enterprises (MNEs). In 1991, 67 percent of Canadian exports went to the United States. Canada is succeeding in maintaining its market share in the highly competitive U.S. market despite the inroads being made by Japanese manufacturers of construction equipment such as Komatsu, which manufactures crawler tractors and road graders. This company alone increased its share of the U.S. market from a very low level to 8 percent between 1980 and 1988. In 1990, Canadian-made construction machinery held a 5 percent share of the U.S. market.

Canadian manufacturers of front-end wheel loaders are eligible for benefits under the Front End Wheel Loader Remission Order. This duty remission program was introduced in 1980 to encourage manufacturers to produce certain models of front-end loaders at their Canadian plants for both domestic consumption and export. As long as certain production and Canadian-content levels are maintained, manufacturers can import the remainder of their loader lines duty-free. Since 1 January 1993, the Canada-U.S. Free Trade Agreement (FTA) has provided for duty-free access between Canada and the United States of all front-end loaders manufactured in North America and has eliminated the use of remission orders.

Imports of complete machines into Canada make up over 90 percent of the Canadian market. They consist largely

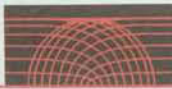
of hydraulic excavators, front-end loaders and loader-backhoes. About 30 percent of the parts for construction machinery, including those for machinery manufactured in Canada, are imported. While 72 percent of imports came from the United States in 1991, primarily from firms with a manufacturing presence in Canada, equipment from the European Community (EC) and Japan has been making significant inroads into the Canadian market since the mid-1980s.

### Performance

Canadian construction machinery producers maintained their domestic market share at 15 to 20 percent during the 1970s, largely because of the growing popularity of versatile, rubber-tired, earth-moving machinery, an area of Canadian strength. In addition, federal government rebates on duties assessed on parts helped maintain Canadian production of front-end wheel loaders through the lowest periods of the 1981-1982 recession. With the exception of a decline in 1985, value shipped by the industry in real terms (measured in constant 1988 dollars) rose with business cycle activity from \$426.0 million in 1982 to \$758.4 million in 1989. Industry value shipped flattened in 1990 and fell to \$545.6 million in 1991. From 1983 to 1988, the domestic market share fell from 14 percent to about 8 percent. Activity in 1988 under the Front End Wheel Loader Remission Order accounted for approximately 34 percent of total Canadian shipments, 39 percent of total exports and 8 percent of imports. By 1991, the domestic market share recovered to 19 percent. This recovery in domestic market share from 1988 to 1991 resulted from a more rapid decline in both exports (46 percent) and imports (45 percent) than in shipments by construction equipment manufacturers (26 percent).

While the 1981-1982 recession did not result in massive closures of operations in Canada, it did affect the way the industry conducted business. Since 1982, fierce price competition has prevailed in the industry, as producers have tried to maintain market share. Prices for construction machinery were cut, both through deep discounts made by the manufacturers and through high trade-in allowances offered by the dealers. Moreover, instead of maintaining large, expensive inventories, as in prerecessionary times, suppliers and dealers reduced inventory levels and took other measures to adapt to a more competitive marketplace.

A handful of single-product firms, including rationalized subsidiaries of MNEs, have continued to increase their share of the Canadian industry's output. Exports as a percentage of shipments increased from less than 28 percent in 1973 to about 74 percent in 1983 and then decreased to 56 percent in 1991. Stemming from the recent recession in the United States and elsewhere, total export sales fell sharply from



\$453.3 million in 1990 to \$328.7 million in 1991. Canada's strength remains in the production of rubber-tired, earth-moving, construction machines, with six of the ten largest firms in Canada specializing in this type of machinery.

A very competitive market, together with the increasing number of companies having offshore suppliers, has rationalized the global production of narrow product lines. Since 1982, producers in the EC and Japan have increased their sales to Canada; in 1991, they accounted for about 12 percent each of total Canadian imports of construction machinery.

The drop in the U.S. share of the Canadian market, however, partly reflects the trend of U.S. firms to manufacture their equipment overseas through joint ventures (John Deere with Hitachi in Japan) or in their own subsidiaries in other countries (Caterpillar in the United Kingdom).

Producers in southern Ontario in 1988 were beginning to notice a growing shortage of certain types of skilled labour, such as welders. However, labour shortages generally have not been a major problem and the recent downturn in the automotive sector has eliminated this concern, as skilled labour is now available.

## Strengths and Weaknesses

### Structural Factors

The major competitive factors that affect the construction machinery industry include reliability, price and international market access as well as the availability of parts, materials and labour.

Increasingly, construction machinery is chosen for its reliability, because high-quality machinery is critical for the timely completion of large projects. High reliability is judged in terms of how little time is lost to downtime needed for repair and maintenance.

A second important competitive factor in the construction machinery market is price. Export-oriented companies are able to compete in the North American market because of specialization. By establishing a product niche or by rationalizing production, they are able to produce their goods in sufficient volumes to keep their costs in line with those of their competitors and thus remain internationally competitive.

Firms oriented solely to the Canadian market have been constrained by their inability to achieve economies of scale. Research and development (R&D), marketing and financing are often all arranged by the parent firm, constituting a constraint to the activities carried out by the Canadian industry.

Another factor limiting the value of construction equipment manufactured in Canada is that certain essential and expensive components, such as engines, drive trains and some axles,

are not available from Canadian sources. All manufacturers, large and small, must import these components, which can account for up to 50 percent of the value of a machine. However, many other high-quality and competitively priced components and materials are available from Canadian sources. These include steel, hydraulic cylinders, counterweights, booms, buckets and most fabricated metal components.

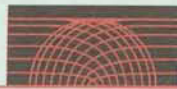
### Trade-Related Factors

The current Canadian General Preferential Tariff (GPT) assessed on construction machinery from newly industrialized countries (NICs) is 2.5 percent, while that on similar products from nations having Most Favoured Nation (MFN) status with Canada is 9.2 percent. The latter level is higher than tariffs on comparable Canadian machinery entering the United States (2.5 to 3 percent), the EC (6.5 percent) or Japan (3 to 5 percent). Under the FTA, which was implemented on 1 January 1989, Canadian tariffs on construction machinery from the United States (1.8 percent in 1992) were eliminated in five annual, equal steps ending 1 January 1993.

Certain non-tariff barriers (NTBs) also affect trade in construction machinery. In the United States, preferential buying legislation serves as an NTB in public sector purchases. In addition, the product certifications necessary to enter the European market have been difficult to obtain for new products, and Japanese product safety codes are elaborate and involve long processing times. The threshold above which government purchases in Canada and the United States are currently open to foreign competition under the General Agreement on Tariffs and Trade (GATT) Code on Government Procurement was lowered for Canadian and U.S. suppliers from US\$171 000 to the Canadian equivalent of US\$25 000.

Two Canadian government programs affect the industry: the Machinery Program and the Front End Wheel Loader Remission Order. Under the provisions of the Machinery Program, duty is levied on imported equipment similar to equipment manufactured in Canada. Where machines are not available from Canadian sources, duty is remitted to the importer. This program will be altered for Canada-U.S. trade as tariffs are removed under the FTA and perhaps under the North American Free Trade Agreement (NAFTA) discussed under "Evolving Environment." Duty remissions will continue to apply to imports from third countries.

The Front End Wheel Loader Remission Order has enabled several manufacturers of front-end loaders to rationalize production with their U.S. parents. All loader manufacturers using it were able to ship some or all of their machines duty-free. This order facilitated rationalization prior to the FTA. The outcome of this measure has been a significant improvement in competitiveness. However, as noted earlier,



the elimination of tariffs under the FTA as of 1 January 1993 removed the need for the remission order.

### **Technological Factors**

Production technology has been evolving steadily with the increasing use of computers in the design, production and co-ordination of plant functions. Several programs have been introduced by Canadian companies: computer-aided design and computer-aided manufacturing (CAD/CAM) equipment; improved materials handling within the plants; cell manufacturing technology, which centralizes similar operations, parts and assemblies; and computer-integrated manufacturing (CIM), which keeps all functions of the company in constant communication for more precise production scheduling.

MNEs that have assigned product mandates to their Canadian operations have made commitments to significant investments in world-class production technologies so that these Canadian facilities can stay competitive. Canadian manufacturers have also made an effort to keep up with new product and process technologies and are expected to reap similar benefits. However, most companies oriented only to the Canadian market, including the branch-plant operations of MNEs that have not moved to product mandating, have been unable to make these large investments. Therefore, they are not in as strong a position as their larger counterparts. Firms focusing on the Canadian market have not, up to now, been able to achieve production runs of sufficient length to enable operating costs to be reduced. The opening up of the American market should enable Canadian firms to invest in capital equipment in order to reduce costs.

The pace of technological change has not been an important factor in the development of this industry's mature products. The changes in product technology have been influenced more by market developments, such as reductions in the size of products and the introduction of sophisticated electronic controls to improve operating comfort and safety.

Canadian-owned export-oriented companies normally undertake their own R&D in Canada. However, rationalized subsidiaries of U.S. multinationals having only a production mandate in Canada conduct only limited independent R&D here.

### **Evolving Environment**

The recent recession has intensified price competition and efforts by all parts of the distribution network to reduce inventories and financing responsibility. While the overall impact on the industry will depend on the pace of the

recovery, demand for construction equipment worldwide is expected to remain at recession levels or to rise slightly over the next few years. Traditionally, gross profit margins on sales for North American construction machinery manufacturers have been in the range of 16 to 17 percent. However, during the early 1990s, they fell to as low as 4 percent.

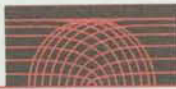
Japanese companies continue to hold a growing share of the market for certain types of earth-moving machinery, specifically mid-sized hydraulic excavators and front-end loaders and scrapers. Their competitive position is strengthened as a result of the economies of scale provided by their leading-edge production methods. In response to the pressure imposed by Japan's success and the continuing high cost of labour and of iron and steel in North America, U.S. multinational construction machinery manufacturers have had to establish cheaper, offshore production facilities in such newly industrialized countries as Brazil.

Several foreign-owned MNEs have established joint ventures with other large construction equipment manufacturers for part of their standard lines. There are several examples of this practice in excavator production. The establishment by Komatsu of Japan and Dresser Industries of the United States of joint manufacturing and marketing in the western hemisphere could make them the largest manufacturer of construction equipment in North America. Caterpillar has had a long-standing arrangement with Mitsubishi for the manufacture of excavators in Japan, and John Deere and Hitachi have made a similar arrangement for excavators and wheel loaders.

Canadian export-oriented firms in the industry expect to benefit from the FTA, especially companies with well-defined market segments and sales and distribution networks in the United States. The FTA and NAFTA may encourage overseas manufacturers to locate in Canada to serve the North American market in order to be within the North American tariff system.

Canada, Mexico and the United States completed the negotiation of the NAFTA on 12 August 1992. The Agreement, when ratified by each country, will come into force on 1 January 1994. The NAFTA will phase out tariffs on virtually all Canadian exports to Mexico over 10 years, with a small number being eliminated over 15 years. The NAFTA will also eliminate most Mexican import licensing requirements and open up major government procurement opportunities in Mexico. It will also streamline customs procedures, and make them more certain and less subject to unilateral interpretation. Further, it will liberalize Mexico's investment policies, thus providing opportunities for Canadian investors.

Additional clauses in the NAFTA will liberalize trade in a number of areas including land transportation and other service sectors. The NAFTA is the first trade agreement to



contain provisions for the protection of intellectual property rights. The NAFTA also clarifies North American content rules and obliges U.S. and Canadian energy regulators to avoid disruption of contractual arrangements. It improves the dispute settlement mechanisms contained in the FTA and reduces the scope for using standards as barriers to trade. The NAFTA extends Canada's duty drawback provisions for two years, beyond the elimination provided for in the FTA, to 1996 and then replaces duty drawback with a permanent duty refund system.

The elimination of Canadian duties on construction equipment could cause some adjustment problems for firms oriented solely to the domestic market. It will be important for these companies to shift their focus to a North American market by establishing sales, distribution and service networks in the United States. Firms with operations in both Canada and the United States as a result of the increasingly competitive world environment are reviewing the performance of all of their plants frequently, modifying product mandates, adjusting product mix and volume, and closing plants in some cases and expanding plants in other cases. Thus, cost competitiveness through modernization will mean the difference between success and failure for plants operating in Canada.

## Competitiveness Assessment

Most manufacturers of construction machinery in Canada survived the depressed market of the early 1980s, many by competing successfully in domestic and export markets. The most successful exporters in Canada are those that have concentrated on well-defined market niches, and they are expected to remain internationally competitive despite depressed prices at the bottom of the current business cycle.

In this rapidly changing environment, even rationalized MNEs could benefit from further streamlining. Because of supplier linkages, a loss of any of the major multinational subsidiaries would significantly affect the Canadian industry's performance as a whole. To keep their Canadian plants competitive, the MNEs may need to make additional investments in plant modernization and automation. Some of them have already announced plans to upgrade their plants. Long-term viability of Canadian operations could improve with the location of R&D in Canada due to Canada's tax credits for R&D and commensurate market sensitivities. On the other hand, smaller Canadian-owned producers may undertake more R&D in the United States in order to assist them in entering U.S. markets and facing increased pressure from imports.

The FTA will provide new growth opportunities for existing Canadian exporters of construction machinery.

Canadian firms oriented solely toward the domestic market will have to overcome significant adjustment problems to remain competitive and take advantage of the same opportunities. The proximity and availability of timely customer service and product reliability will become even more important in meeting customer needs.

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## PRINCIPAL STATISTICS<sup>a</sup>

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Establishments	N/A	N/A	N/A	N/A	85	95	110	N/A	N/A	N/A
Employment	N/A	N/A	N/A	N/A	5 000	5 600	6 500	N/A	N/A	N/A
Shipments (\$ millions)	364.0	414.4	520.1	482.3	571.2	637.9	736.8	779.5	798.3	586.3
(constant 1988 \$ millions)	426.0	465.9	555.2	497.8	590.6	653.3	736.8	758.4	757.1	545.6

<sup>a</sup>ISTC estimates. For complete industry statistics, see *Machinery Industries, Except Electrical Machinery*, Statistics Canada Catalogue No. 42-250, annual (SIC 3192, construction and mining machinery and materials handling equipment industry).

N/A: not available

## TRADE STATISTICS

	1982	1983	1984	1985	1986	1987	1988 <sup>d</sup>	1989 <sup>d</sup>	1990 <sup>d</sup>	1991 <sup>d</sup>
Exports <sup>a</sup> (\$ millions)	267.9	305.0	382.8	379.5	415.5	414.5	566.7	477.9	453.3	328.7
(constant 1988 \$ millions)	313.5	342.9	408.6	391.7	429.6	424.5	566.7	464.9	429.4	306.3
Domestic shipments <sup>b</sup> (\$ millions)	96.1	109.4	137.3	102.8	155.7	223.4	170.1	301.6	345.0	257.6
(constant 1988 \$ millions)	112.5	123.0	146.6	106.1	161.0	228.8	170.1	293.5	327.2	239.3
Imports <sup>c</sup> (\$ millions)	604.0	661.8	905.4	1 178.8	1 335.3	1 439.1	1 833.1	1 707.3	1 469.1	1 083.1
(constant 1988 \$ millions)	706.8	744.0	966.5	1 216.8	1 380.5	1 473.9	1 833.1	1 660.8	1 393.3	1 009.4
Canadian market <sup>b</sup> (\$ millions)	700.1	771.2	1 042.7	1 281.6	1 491.0	1 662.5	2 003.2	2 008.9	1 814.1	1 340.7
(constant 1988 \$ millions)	819.3	867.0	1 113.1	1 322.9	1 541.5	1 702.7	2 003.2	1 954.3	1 720.5	1 248.7

<sup>a</sup>See *Exports by Commodity*, Statistics Canada Catalogue No. 65-004, monthly.

<sup>b</sup>ISTC estimates.

<sup>c</sup>See *Imports by Commodity*, Statistics Canada Catalogue No. 65-007, monthly.

<sup>d</sup>It is important to note that data for 1988 and after are based on the Harmonized Commodity Description and Coding System (HS). Prior to 1988, the shipments, exports and imports data were classified using the Industrial Commodity Classification (ICC), the Export Commodity Classification (XCC) and the Canadian International Trade Classification (CITC), respectively. Although the data are shown as a continuous historical series, users are reminded that HS and previous classifications are not fully compatible. Therefore, changes in the levels for 1988 and after reflect not only changes in shipment, export and import trends, but also changes in the classification systems. It is impossible to assess with any degree of precision the respective contribution of each of these two factors to the total reported changes in these levels.



### SOURCES OF IMPORTS<sup>a</sup> (% of total value)

	1982	1983	1984	1985	1986	1987	1988 <sup>b</sup>	1989 <sup>b</sup>	1990 <sup>b</sup>	1991 <sup>b</sup>
United States	87	87	80	74	68	72	68	67	68	72
European Community	7	8	11	15	13	15	13	13	12	12
Asia	4	4	8	10	18	12	14	15	15	12
Other	2	1	1	1	1	1	5	5	5	4

<sup>a</sup>See *Imports by Commodity*, Statistics Canada Catalogue No. 65-007, monthly.

<sup>b</sup>Although the data are shown as a continuous historical series, users are reminded that HS and previous classifications are not fully compatible. Therefore, changes in the levels for 1988 and after reflect not only changes in import trends, but also changes in the classification systems.

### DESTINATIONS OF EXPORTS<sup>a</sup> (% of total value)

	1982	1983	1984	1985	1986	1987	1988 <sup>b</sup>	1989 <sup>b</sup>	1990 <sup>b</sup>	1991 <sup>b</sup>
United States	62	74	81	86	78	80	76	75	68	67
European Community	5	7	3	4	5	7	6	7	8	7
Asia	6	5	3	1	7	3	3	3	8	9
Other	27	14	13	9	10	10	15	15	16	17

<sup>a</sup>See *Exports by Commodity*, Statistics Canada Catalogue No. 65-004, monthly.

<sup>b</sup>Although the data are shown as a continuous historical series, users are reminded that HS and previous classifications are not fully compatible. Therefore, changes in the levels for 1988 and after reflect not only changes in export trends, but also changes in the classification systems.

### REGIONAL DISTRIBUTION<sup>a</sup> (average over the period 1986 to 1988)

	Atlantic	Quebec	Ontario	Prairies	British Columbia
Establishments (% of total)	4	14	59	11	12
Employment (% of total)	1	11	70	9	9
Shipments (% of total)	7	7	70	6	10

<sup>a</sup>ISTC estimates.



## MAJOR MANUFACTURING FIRMS

Name	Country of ownership	Location of major plants
Champion Road Machinery Limited	United States	Goderich, Ontario
Cypress Equipment Co. Limited	Canada	Delta, British Columbia
Komdresco Canada Inc.	United States/Japan	Candiac, Quebec
Lovat Tunnel Equipment Inc.	Canada	Rexdale, Ontario
Thomas Equipment Ltd.	Canada	Centreville, New Brunswick
VME Equipment of Canada Ltd.	United States	St. Thomas, Ontario

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