Canada

The Canadian Steel Industry

REFERENCE
SERIES No. 3

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Prepared in the Iron and Steel Division, Resource Industries Branch, Department of Industry, Trade and Commerce

Published by Authority of
the Honourable Don Jamieson,
Secretary of State for External Affairs,
Government of Canada, 1979

Produced by
External Information Programs Division,
Department of External Affairs,
Ottawa, Ontario, Canada
K1A 0G2

Richelieu Graphics Ltd.

Contract No. 08KT. 08008-78-007

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The Canadian Steel Industry

The Canadian steel industry has come a long way in a short time. From 1736, when historical records documented forged-iron production at the St Maurice forges in New France, until the 1940s, the industry was almost non-existent, with peak annual production attaining only about 909 090 tonnes. From such humble beginnings the industry grew rapidly, encouraged by strong demand at home and abroad, with production attaining a peak in 1974 of about 13 636 363 tonnes.

The Canadian steel industry is of medium size by international standards, ranking eleventh in the world and producing approximately 2 per cent of total world output. The largest Canadian steel company, The Steel Company of Canada Ltd (STELCO), ranks twentieth in size in the world. In the past the Canadian steel industry experienced above-average long-term growth of 7 per cent annually, compared to the world average of just over 6 per cent. Through innovative management and rapid adoption of new technology, the industry has maintained high productivity and excellent quality standards. It is efficient and cost-competitive with the steel industries of most other advanced industrial countries.

The Canadian steel industry usually operates at about 90 per cent of its capacity, an average that is extremely high by world standards. It is a very efficient, dynamic, modern industry. The industry is price-competitive when competing on an equal basis, but high ocean-freight rates and the below-cost pricing practices prevalent in world steel trade often place it at a commercial disadvantage. The Canadian steel industry has pioneered the adoption of new technology such as basic-oxygen furnaces, continuous casting and direct reduction.

The Canadian industry falls into two basic groups – integrated and non-integrated producers. Integrated producers operate both iron-making and steel-making facilities and are often "integrated backwards" into iron-ore and coking-coal production. Non-integrated producers operate electric furnaces fed largely by scrap steel. In Canada, there are five integrated producing mills: three in Ontario, one in Quebec and one in Nova Scotia. In addition, there are 12 scrap-based, non-integrated plants located across the country. Ten of these make common steels, partly in competition with the integrated mills, while the other two, both operated by Atlas Steels, produce specialty steels for domestic and export markets. The specialty-steel business is quite different from the tonnage-steel business and, as such, needs to be considered separately.

Specialty steels include stainless steels, tool steel and high-performance steels for aerospace,

armaments and atomic-energy applications. Whereas common steels are sold by the ton, specialty steels are priced by the kilogram. The requirements for success in specialty-steel production differ from those for tonnage "mini-mills". Technical competence, marketing ability and metallurgical service to customers are important factors and a wide variety of tool-steel stocks have to be carried in all major market areas to provide fast deliveries. Unlike most tonnage mills, the specialty-steel mills serve the whole Canadian market.

Location of steel-making facilities

The Canadian steel industry is represented in all provinces except New Brunswick, Prince Edward Island and Newfoundland. However, about 80 per cent of Canadian production capacity is located in Ontario, most of it being accounted for by three integrated producers: The Steel Company of Canada Ltd, Dominion Foundries and Steel Ltd (DOFASCO) and the Algoma Steel Corporation. The other integrated producers are located in Quebec (Sidbec-Dosco Ltd) and Nova Scotia (Sydney Steel Corporation). Most non-integrated, electric-furnace plants are located in Quebec and Ontario, but additional electric-arc-furnace plants occur in Manitoba, Saskatchewan, Alberta and British Columbia.[1]

The Canadian steel industry is largely oriented to the domestic market. The small, non-integrated electric-furnace plants compete largely in local markets, producing special products such as rebar, angles and rods for that market. The larger integrated firms, in addition to satisfying local markets, tend to have a broader perspective and may ship finished steel products throughout Canada, as well as to the United States and, to a lesser extent, overseas.

Ownership and profitability

The steel industry in Canada is primarily privately owned by Canadians. Foreign ownership is significant only in the case of two non-integrated producers – Burlington Steel Company and Atlas Steels –, which account for only a minute share of Canadian output. The five large integrated producers (STELCO, DOFASCO, ALGOMA, SYSCO and SIDBEC) are wholly or predominantly owned by Canadians. STELCO, DOFASCO and ALGOMA are privately owned and account for 75 per cent of Canadian steel output. Sydney Steel Corporation is wholly owned by the Province of Nova Scotia and SIDBEC-DOSCO is wholly

[1] Attached as Appendix I is a table showing Canadian steel-making capacity as of January 1, 1976. Appendix II consists of a list by province of Canadian steel-rolling mills.

owned by the Province of Quebec. The governments of Saskatchewan and, indirectly, of Alberta also have part ownership of Interprovincial Steel and Pipe Corporation (IPSCO).

While the Canadian steel industry as a whole is among the most profitable in the world, the production of steel normally provides only moderate rates of return. Profits fluctuate widely, because of the sensitivity of steel prices to the business cycle, and also vary significantly from firm to firm. In the past, the three major integrated steel-producers in Ontario have usually generated larger profits than Canada's small, non-integrated, electric-furnace producers. The wholly provincially-owned steel plants of SYSCO in Nova Scotia and SIDBEC in Quebec have generally recorded large annual losses in recent years.

Instability in profits is partly attributable to fluctuations in demand coupled with the high fixed costs of producing steel, which can create a fertile environment for dumping by foreign steel companies. Under such circumstances, rates of return can easily swing from high profitability to losses over the course of a single business cycle.

The level of government involvement in the steel industry throughout the world is also an important factor in explaining the industry's profit record. According to the latest estimates of the American Iron and Steel Institute, 72 per cent of the world steel industry is government-owned or experiences some form of government participation; in contrast, over 90 per cent of Canada's output is produced by privately-owned mills. Governments often base their decisions on social costs and benefits. Thus, although a steel mill may be losing money by conventional accounting standards, it may still be considered to be in the national interest to support it.

Investments

The Canadian steel industry has made substantial investments in plant and equipment during recent years. Canadian steel-production capacity was about 11 818 181 tonnes in 1970, and is expected to increase to about 18 181 818 by 1980. Substantial investments have been made and are continuing to be made by the five integrated steel-producers: Algoma Steel Corporation of Sault Ste Marie, Ontario; DOFASCO, of Hamilton, Ontario; The Steel Company of Canada Limited, Hamilton, Ontario, and at a new site at Nanticoke, Ontario; SIDBEC-DOSCO at Contrecoeur, Quebec; and SYSCO, Sydney, Nova Scotia. Many non-integrated electric-furnace producers have also invested heavily in new plant and equipment, including STELCO at Edmonton, Alberta, and Contrecoeur, Quebec; Ivaco Industries Ltd at L'Orignal, Ontario; Man-

itoba Rolling Mills, Selkirk, Manitoba; and Western Canada Steel Limited, Vancouver, British Columbia. Other Canadian companies, including Atlas Steels, Interprovincial Steel and Pipe Corporation Ltd and Slater Steel Industries Limited (Burlington Steel Company), have also initiated expansion plans during the past decade but, owing to the uncertain economic climate, some of these expansion projects have been deferred.

With the exception of the pipe-and-tube mills, the wire-and-tube mills, the wire-and-fastener plants and the forging industry, there has been relatively little investment made for expansion by the smaller manufacturers of secondary-steel products in Canada. However, the larger primary-steel companies have increased investment in the secondary sector to more than double their shipments of manufactured products, particularly for use in automotive parts and in structural steel. Considerable investment has been directed towards rationalization and pollution-control devices. The iron-and-steel foundries are investing heavily in pollution-abatement equipment. The steel-fabricating plants are investing in the modernization of their equipment.

Most investment has been directed to the expansion of capacity in flat-rolled products; the net result may be a capacity of 20 million ingot tons by 1980, of which ten million tons will be directed to flat-rolled products. The bulk of the investment in expansion plans for the steel industry has been concentrated in Ontario, Quebec and Nova Scotia.

Provincial authorities in Western Canada are currently working towards the expansion of the basic steel industries. The government of British Columbia, in co-operation with Nippon Kokan, the second-largest steel-producer in Japan, undertook detailed studies for the establishment of a large export-oriented steel-plant in British Columbia. Unfavourable conditions led to the shelving of this project. The government of Alberta has been aggressively attempting to diversify its resource-based economy by expanding its manufacturing base. As part of this policy, the government was instrumental in the creation of Steel Alberta, a vehicle for the pursuit of opportunities for steel-development in Alberta. Steel Alberta is owned 50 per cent by Alberta Gas Trunk Lines Ltd and 50 per cent by the Alberta Energy Company, which is itself owned 50 per cent by the Alberta government. The Western Steel Implementation Committee is encouraging the expansion of steel-making capacity in Saskatchewan.

Foreign investment

Foreign investment in the Canadian steel industry is limited. Two of the steel companies involved in

specialty-steel manufacture and forging operations (Atlas and Crucible) are 100 percent foreign-owned. Atlas is 100 percent owned by Rio Algom, which is a wholly-owned subsidiary of Britain's Rio Tinto group. Crucible is 100 percent owned by Colt Industries of the United States. Stanton Pipe, a subsidiary of the British Steel Corporation, owns 51 percent equity in Slater Steel, which owns Burlington Steel in Hamilton, Ontario. The British Steel Corporation has acquired, through Slater Steel, about a 20 percent interest in IPSCO. The Algoma Steel Corporation purchased the assets of Mannesmann Tube Ltd of Sault Ste Marie, Ontario, and leased Mannesmann's seamless-tube plant for a term of 15 years, with an option to purchase the plant. Mannesmann of Germany formerly held 25 per cent of ALGOMA'S outstanding shares, but these have since been acquired largely by Canadian Pacific Investments, and the latter company now controls ALGOMA. Cansteel Corporation is a Nova Scotia Crown corporation, which, with Estel N.V. of the Netherlands, Thyssen International of Germany, National Steel Corporation of the U.S. and DOFASCO, has been evaluating the emplacement of new, integrated steel-making facilities in Cape Breton, Nova Scotia. It was announced by Premier Regan in 1977 that the proposed project had been indefinitely postponed owing to depressed world steel-markets.

Product range

STELCO has the widest range of products in Canada. Though the firm is not a producer of rails or heavy structurals, its product "mix" covers almost all the remainder of the spectrum. Major products include plate, hot- and cold-rolled sheet and strip, tinplate, hot- and cold-rolled bars, reinforcing bars, wire and wire rods, pipes and tubing, fasteners and forgings.

DOFASCO's product-line is primarly limited to flat-rolled items and castings. Its carbon, alloy and steel castings – up to 25,000 lbs (about 11,340 kilograms) – include railroad-car products, steel valve casings, and components for mining equipment. The flat-rolled line embraces hot-rolled sheet and strip, skelp, plate, floor-plate, cold-rolled sheet and strip, electrical sheets, enameling sheet, galvanized sheet and tinplate of many types, as well as pre-painted sheets, which are produced in a plant owned jointly with STELCO.

Located at Sault Ste Marie on the St Mary's River, which connects Lakes Superior and Huron, the Algoma Steel Corporation currently ranks as the No. 3 producer in the Canadian steel industry. ALGOMA derives both benefits and losses from its geographical setting. For example, the firm is well located to export to the large mid-West market of the U.S., and as such exports a

greater percentage of its production to the U.S. than either STELCO or DOFASCO. ALGOMA is also more conveniently located to penetrate the Western Canadian market. On the other hand, ALGOMA is less-favourably located with respect to the major consuming industrial regions in Southern Ontario and Western Quebec. ALGOMA also has a markedly different product-range from STELCO and DOFASCO, with a much greater emphasis on heavy structurals for the building industry. The recent depressed conditions prevalent in construction have adversely affected ALGOMA'S performance. The firm's full product-range includes hot- and cold-rolled sheet and strip, plate, skelp, heavy and light rails and fastenings, beams and heavy structurals, reinforcing bars and light structurals.

SYSCO is the largest producer of railway rails in Canada. In addition, it produces tieplates and semi-finished steel products. SYSCO is favoured by its coastal location, which gives it good access to world markets. Unfortunately, high production costs and aging facilities severely limit its competitiveness; consequently, SYSCO is now operating at a low availability-rate and has experienced heavy financial losses in recent years.

SIDBEC-DOSCO has undertaken a major expansion of its facilities in recent years, which, effective in 1977, has made it Canada's fourth-largest steel-maker. Unlike the other integrated producers in Canada that have integrated facilities encompassing blast furnaces, coke-ovens, basic-oxygen or open-hearth steelmaking furnaces, SIDBEC's route to integrated steel-making has been through direct-reduced-iron and electric-arc furnaces. SIDBEC's product-range includes hot- and cold-rolled sheet, billets, slabs, rods and bars.

Technology

One of the major factors influencing the competitiveness of the Canadian steel industry has been its rapid adoption of new steelmaking technology. For example, DOFASCO was the first steel-maker in North America to adopt the basic-oxygen furnace in 1954. This rapid technological adaptation contrasts markedly with that of the U.S., where substantial tonnages of steel are still made in antiquated open-hearth furnaces. Other major technological developments that have received wide acceptance in Canada are continuous casting and direct reduction.

Basic-oxygen furnaces account for about 55 per cent of Canadian steelmaking capacity, open-hearth capacity for about 25 per cent, and electric-arc furnaces for about 20 per cent. The Canadian steel industry has been aggressive in the adoption of continuous casting, and it is widely

agreed that, in the longer-term perspective, continuous casting is one of the keys to more efficient steel-making. As with any technological innovation, there have been the usual technical, product and consumer-acceptance problems, but most of these have been solved.

Direct reduction is a relatively recent innovation in iron-making, in the development and adoption of which Canadian industry has played a major role. In 1977, Canada possessed the second-largest direct-reduction capacity in the world. STELCO has been one of the pioneers in direct reduction and a member of an international consortium that has researched and developed the SL-RN (STELCO-Lurgi-Republic-National) direct-reduction process.

In 1975, STELCO installed a commercial plant at its Griffith iron-ore mine at Red Lake, Ontario. SIDBEC-DOSCO, as one of the world's first operators of the Midrex direct-reduction process, has also introduced technological refinements of that process. SIDBEC currently operates two Midrex direct-reduction plants with an annual capacity exceeding one million tons of reduced iron. Canada has also been the centre of extensive research-and-development efforts on other internationally-accepted direct-reduction techniques, including the Allis Chalmers (ACCA) and FIOR processes.

Market factors

Two major influences affect the market for steel: the business cycle plays a dominant role in the level of demand and world trade in steel is carried on at prices that frequently do not cover the average total costs of exporters. The potential margin for dumping steel (the difference between marginal and average total costs) is 30 to 40 per cent of normally-remunerative prices, and in some cases may be in excess of 50 per cent. Both factors have had an important bearing on the development of the Canadian steel industry in the past, and will probably continue to be important factors in the future.

A major element in steel demand is the production of capital goods (construction, pipelines, transportation equipment and machinery). Capital-goods industries exhibit marked fluctuations in output, and their fluctuating consumption of steel is reinforced by cyclical swings in inventories. As a result, the demand for steel is more cyclical than its consumption, particularly for structural shapes and plate, which are the steel profiles predominantly used by the capital-goods industries. These cyclical fluctuations are a problem for the steel industry in all parts of the world, but they are potentially most serious for the Canadian industry, which is privately owned, whereas government-owned

plants tend to maintain production as a social program despite heavy financial losses.

In order to contend with cyclical fluctuations in demand, the Canadian steel industry has generally kept capacity below cyclical peaks in demand. This has resulted in high rates of capacity-utilization and fluctuations in steel-production that are smaller than those in demand. Production levels have gained some stability by the shifting of some of the burden of domestic-demand fluctuations to foreign suppliers. However, this measure of production stability has been achieved by cutting prices to meet import competition when steel demand declined, and this in turn has resulted in sharp cyclical fluctuations in profitability.

Other steel-producers often add capacity, not only to meet peaks in domestic demand but also to provide a margin of additional capacity to supply traditional export markets. In the case of European producers, it is clear that, for the past 19 years, export revenues could not provide them with a return on investment sufficient to justify the investment in this margin of additional capacity. The unprofitability of export sales (except in years of peak world demand) had depressed the average return on investment in European steel-mills, and the low export prices have had a generally depressing effect upon world steel prices and the return on investment in the industry throughout the world.

Thus, while most world steel is produced for domestic sale, even small import tonnages can disrupt markets when they are sold at very low prices. In fact, in four years out of five, exported steel is sold on world markets at prices below the domestic price in producing countries.

In contrast to the European and Japanese industries, the Canadian steel industry has, in addition to keeping capacity below peaks in demand, concentrated on the domestic market and the immediately-adjacent U.S. markets. Total Canadian exports of steel are typically in the region of 10 per cent of production, most of which is exported to American customers in the area of the Great Lakes. Imports vary cyclically from year to year, but are about 15 per cent of Canadian consumption.

Domestic demand

The construction industry is the largest user of steel, accounting for an estimated 30 per cent of domestic shipments. This total includes 20 per cent to the construction industry directly and an estimated 10 per cent from steel shipped to warehouses. Over the past few years, the construction industry has shown only marginal real growth, and this has been a major factor contributing to the slow growth in Canadian steel demand in recent years.

Shipments to the domestic automotive and aircraft industries amount to about 11 per cent of total domestic shipments. The major automobile companies, whether directly or indirectly through auto-parts supplies, are believed to account for over 90 per cent of this total. The impetus to growth in this market goes back to 1965 with the signing of the "Agreement Concerning Automotive Products" between Canada and the U.S. The success of this agreement from the steel industry's point of view can be gauged by the consistent annual increases since 1965 in shipments to the domestic automotive industry.

Pipe-and-tube is another important segment of the Canadian market, currently accounting for 15 per cent of steel demand in Canada. Pipes and tubes provide a particularly promising market for the Canadian steel industry, in view of prospective demand for large-diameter pipe for pipeline construction to bring oil and natural gas discovered in the Arctic to southern consuming markets. Both STELCO and IPSCO are well placed to meet the bulk of the spiral-weld pipe requirements for large Arctic pipeline projects. Furthermore, any constraints arising at IPSCO or STELCO at the skelp-making stage could be alleviated by ALGOMA, which has a new 166-inch plate mill capable of meeting the skelp specifications for Arctic-grade pipe.

The construction, automotive and aircraft and fuel-transmission industries together account for about 55 per cent of total domestic steel demand. The remaining 45 per cent of demand is accounted for by other end-use categories such as wire and wire products, containers, natural-resource industries, appliances, agricultural equipment, shipbuilding, machinery, tools, railways and railway cars and locomotives.

Growth in the market for steel in Canada, as well as opportunities for export, are vital to the Canadian steel industry's future growth. There is an important distinction between the Canadian steel market of the future and that of the past in that most rolled-steel products are now manufactured domestically and imports are largely price-competitive. Consequently, to displace or even resist the growth of imports will be a much more difficult task than was the case previously.

Competitive factors

The Canadian steel industry has performed very favourably over the past 20 years compared with the steel industries of most other countries. Several factors have accounted for this excellent performance.

Rate of growth is probably the most significant single factor affecting the international competitive position of steel-producers, since those that are expanding rapidly

have the best opportunity to adopt new technology. The rate of growth of Canadian production has been faster than the growth of domestic consumption because, over the past 20 years, Canada has been replacing imports. Canadian steel-production between 1956 and 1975 grew at an annual rate of about 6 per cent, compared to 2 per cent in the U.S., 5 per cent in the European Coal and Steel Community[2] and 14 per cent in Japan. As noted below, however, the growth-rate of steel consumption in Canada has been gradually declining.

With high rates of growth, the Canadian industry has been able to adopt new technology at an early stage and has, in fact, been a pioneer in some fields. It should be noted, however, that it does not spend as much money on research and development as many of its competitors but relies on technology developed by others, for which it pays a royalty. This course of action is more profitable for Canadian industry in the long run, since the development of new technology is most profitable for steel-producers, who also manufacture steel-making equipment. Thus the strength of the Canadian industry with respect to technology lies in the early recognition and implementation of the results of research rather than in the conducting of such research.

Adoption of new technology and rapidly-growing markets have enabled Canadian producers to increase average employee productivity to about 5 per cent *per annum*, compared to 3 per cent in the United States, 8 per cent in the European Coal and Steel Community[3] and 10 per cent in Japan. Although Europe's productivity gains have been higher than those of Canada and the United States, Europe started from a much lower productivity-base and still lags well behind North American steelmakers.

By judicious additions of new capacity commensurate with increases in steel demand, the Canadian industry has been able to maintain a high rate of capacity-utilization, and thereby partially protect itself against cyclical fluctuations in demand. Over the past 20 years, Canadian producers have operated at about 90 per cent of rated capacity, compared to 80 per cent in the United States, 82 per cent in the European Coal and Steel Community and 84 per cent in Japan. During the same 20-year period, steel prices rose by about 4 per cent a year in Canada, compared to 4 per cent in the U.S. and 5 per cent in the ECSC.

Canadian tariff protection is moderate, with a weighted average of about 7 per cent. Non-tariff barriers are more prevalent in the U.S., the ECSC and Japan than in Canada.

[2], [3]These figures refer to the six founding member states of the ECSC.

The structure of freight costs poses some difficulties for the international competitive position of Canadian steel-makers. Iron ore can be delivered to coastal mills in Europe from Sept-Îles, Quebec, at lower delivered prices than to the mills in Hamilton, Ontario. This is partly owing to the necessity of using much smaller vessels on the St Lawrence Seaway than can be used in ocean transport. The transportation costs for coal from the United States to Hamilton are higher than for American coal delivered to mills in Pittsburgh, Cleveland and Detroit (but about the same as coal delivered to Gary and Chicago). Because coal and iron-ore are carried on the Great Lakes, which are closed in the winter, the Canadian mills have large stockpiles of raw materials to carry through the winter, thereby incurring additional inventory interest costs.

Mills on the Prairies also face high transportation costs for raw materials, so that their size has been restricted by the local availability of scrap, including nearby U.S. supplies.

Foreign trade

There has been a gradual increase in Canadian steel exports during the past 20 years. The largest customer for Canadian steel is the United States; Latin America is a distant second, and relatively small amounts are exported to European countries and to Southeast Asia. Similarly, Canada is the largest market for U.S. exports.

Steel-producers throughout the world primarily supply domestic markets. Competition in world markets is intense and export prices are often significantly lower than domestic prices. Japan has achieved the highest level of exports, about 40 per cent of production, while the European Community typically exports about 20 per cent of production. The United States is a net importer of steel, its imports amounting to over 10 per cent of its consumption. Canada is usually a net importer of steel, its imports including some items it does not make.

The United States, notably the Great Lakes region, is the largest market for Canada's exports, accounting for an average of about 66 per cent since 1968. The largest part of this — an estimated 33 per cent — was accounted for by the automobile industry. The growth prospects in non-American markets appear uncertain. However, expected increases in Canadian capacity could induce Canadian producers to become more aggressive in export markets.

In the struggle between Europe and Japan for world steel markets, governments have played an active support role. The Japanese Government and those of several European countries control their steel indus-

tries in relation to social objectives, industrial development and the earning and conserving of foreign exchange. International competition in the steel industry therefore involves group-buying of raw materials, price controls and price discrimination, as well as government financial assistance to producers and bilateral agreements in restraint of trade.

Although the Canadian steel industry has grown rapidly in recent years, its capacity has not always been large enough to satisfy the peak demands that have occurred during periods of strong growth in the economy, or to provide the full range of required steel products. Imports of steel have thus been required to provide specifications or sizes it was not economical, for reasons of scale economies, to produce in Canada. These filled capacity-voids when peak domestic demand over-taxed Canadian capacity, or when strikes at Canadian steel mills caused shortfalls.

International trade

International trade in steel is dominated by the ECSC and Japan, which together supply about two-thirds of the world's steel exports. Such trade does not necessarily reflect competitive factors, since the world steel industry is characterized by below-average returns on investment, exports sales at unprofitable prices and government intervention in support of domestic steel industries. The Canadian Government interferes little in the activities of the steel industry, its sole intervention to date having been to limit iron-and-steel scrap exports in times of scarcity.

The present hostile world steel-market environment, characterized by an oversupply of steel flowing into world markets and severe competition, has prompted bilateral discussions between many major consuming countries in an attempt to reconcile problems of world steel trade. Meetings and studies are conducted under the auspices of the Organization for Economic Co-operation and Development (OECD) in the attempt to resolve the fundamental structural problems pervasive in world steel trade.

The present situation is aggravated by ambitious plans in many less-developed countries to install large-scale steelmaking capacity, part of which will be used in generating steel products for export. This reflects a policy promoted in the United Nations Conference on Trade and Development and at the Second General Conference of the UN International Development Organization, held in Peru in March 1975. The "Lima Declaration" and the "Plan of Action on Industrial Development and Co-operation", which were adopted by the General Assembly of the United Nations at its seventh special session, reasserted the role

of industry as a dynamic instrument of growth essential to the rapid economic and social betterment of the under-developed countries. It was proposed that the developing countries' share of world industrial production should be increased from its present level of 7 per cent to at least 25 per cent by the year 2000. Since the iron-and-steel industry is viewed as fundamental to a country's industrial diversification, its growth is foremost in the national strategies of many less-developed countries. While the ambitious plans for investment in large steel plants may remain at the drawing-board stage in many poor countries, in many others the creation of such plants has been realized. As the scale of these plants often exceeds domestic demand, large tonnages of steel products from the under-developed countries concerned may be sold on world markets. Plants already in operation and under construction will ensure the emergence of several under-developed countries as major steel-exporters in the near future – for example, South Korea, Brazil, Iran and Venezuela. This is expected to exacerbate the hostile environment of the world steel trade. Canada has already lost markets in developing countries that have installed sufficient plant and equipment to meet their domestic requirements for certain products as well as to export to industrialized countries. A case in point is the market for tinplate in Peru.

It is not surprising that, in the current hostile steel-trade environment, dumping has emerged as a major problem. As the industry has become more capital-intensive, the potential margin for dumping has grown. Dumping is a world-wide phenomenon, but the brunt of it tends to be borne by the North American market. Here the margin for dumping is far greater owing to the limited protection offered by governments and the restricted opportunities for price-cutting available to privately-owned, profit-oriented, steel companies.

Trade promotion

The Iron and Steel Division of the Canadian Department of Industry, Trade and Commerce is responsible for industrial and trade promotion in iron-ore products and primary and secondary iron-and-steel manufactured products, as well as for the development of recommendations for Canadian iron-and-steel policy. The division is the control centre for the activities of the Steel Committee of the European Economic Commission and the *Ad Hoc* Steel Committee of the OECD. The Canadian steel industry has an interest in being kept informed of the progress in the erection of new steel facilities abroad, and of all steel-sector-related activities.

APPENDIX I

Steel-furnace capacity as of January 1, 1976

	Annual capacity Tonnes
Ingots:	
Basic open-hearth	3 742 137
Electric	3 894 997
Basic oxygen-furnace	9 267 799
Ingots – total	16 904 933
Steel castings	418 938
Ingots and castings – total	17 323 871

APPENDIX II

Steel-rolling mills
(As of mid-1977)

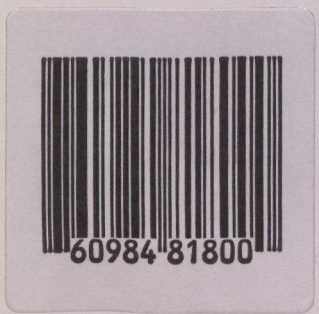
Company and address	Location of plant	Product	Capacity
NOVA SCOTIA			
Enheat Ltd, 100 Main Street, Sackville, New Brunswick E0A 3C0	Amherst, N.S. (Plant 4)	Concrete reinforcing bars, merchant bars, wharf and machine bolts	20 000 net tpy approximately
Sydney Steel Corporation Sydney, Nova Scotia	Sydney, N.S.	Blooms, billets and slabs, rails, tie plates, mine arch and reinforcing bars	900 000 net tpy, approximately
QUEBEC			
Atlas Steel, Division of Rio Algom Mines Limited, Welland, Ontario	Tracy, Que.	Stainless-steel sheet and strip in widths up to 48"	
Sidbec-Dosco Limited Montreal Works, 5870 St Patrick Street, P.O. Box 67, Montreal H4E 1B3, Quebec	5870 St Patrick St, Montreal Que.	Merchant and reinforcing bars, structural sections Hot- and cold-forged bolts, nuts, rivets, hi-strength bolts and nuts, track spikes Heavy and fine high- and low-carbon wires, screws, aluminum and steel nails Continuous buttweld pipe and nipples	
Sidbec-Dosco Limited Contrecoeur Works P.O. Box 100 Contrecoeur, Quebec J0L 1C0	Contrecoeur, Que.	Merchant and reinforcing bars in bar form and in coils, controlled cooled rods in coils; hot- and cold-rolled sheet and strip	
Steel Company of Canada Limited, The Hilton Works, Hamilton, Ontario L8N 3T1	McMaster Contrecoeur, Que.	Pipe and hollow structural tubing, merchant bar, reinforcing bar, and light structural shapes	

Company and address	Location of plant	Product	Capacity
ONTARIO			
Algoma Steel Corporation Limited, The Steelworks Division, Sault Ste Marie, Ontario	Sault Ste Marie, Ont.	Steel products ingots, blooms, billets and slabs, wide-flange shapes, welded wide-flange beams and columns, H-bearing piles, standard angles, channels and beams, elevator tees, zees and special car-building sections, bevelled-edge grader blade bars, heavy and light rails, tie plates and splice bars, hot-rolled bars, reinforcing bars, forged-steel grinding balls, grinding rods, hot-rolled sheet and strip, cold-rolled sheet and strip, Plate-sheared and gas cut – universal mill – floor	
Atlas Steels, Division of Rio Algom Mines Limited, Welland, Ontario	Welland, Ont.	Tool, alloy and stainless steels: bars, billets, high-speed steel, hollow and solid mining drill steel, machinery steels, aircraft steels Stainless steel: hot- and cold-rolled sheet to 48" wide and strip to 18" wide, and bar, wire and special forged and machined sections	

Company and address	Location of plant	Product	Capacity
Burlington Steel Company, Division of Slater Steel Industries Limited, Sherman Avenue N, Hamilton, Ontario L8L 6N2	Hamilton, Ont.	Merchant and concrete reinforcing bars, steel rounds, squares, flats, angles, channels, agricultural shapes, steel fence-posts, steel grinding balls	250,000 net tpy
Dominion Foundries and Steel Limited, Burlington Street E, P.O. Box 460, Hamilton, Ontario L8N 3J5	Hamilton, Ont.	Steel plate, skelp, hot-rolled sheets, coils and strip, galvanized sheets and coils and strip: cold-rolled sheets, coils and strip; electrical sheets, coils and strip; enamelling sheets, coils and strip; blue-plate; electrolytic tinplate, sheets and coils; tin-mill black plate, sheets and coils; precoated steels	
Lake Ontario Steel Company Limited, Hopkins Street S, Whitby, Ontario L1N 5T1	Whitby, Ont.	Concrete reinforcing bars, merchant-mill products, low-alloy bars, grader blades and structural angles and channels	350,000 net tpy
Stanley Steel Company Limited, 57 Gerrard Street, Hamilton, Ontario L8L 4E7	Hamilton, Ont.	Cold-rolled strip steel	89,085 net tpy

Company and address	Location of plant	Product	Capacity
Steel Company of Canada Limited, The Hilton Works, Hamilton, Ontario L8N 3T1	Hamilton, Ont.	Blooms, billets, slabs, wire rods, hot-rolled products including carbon and alloy merchant bars, bolt, nut and spike rods, light structural shapes, railway spikes, tie plates, reinforcing bars, washers, etc. Ships, tank structural, sheared and universal plate Hot-rolled coils, sheet and strip: cold reduced including galvanized coils, sheet and strip; blackplate coils, sheet and strip; electrolytic tinplate coils, sheet and strip; electrical and enamelling coils, sheet and strip	
MANITOBA			
Dominion Bridge Company Limited, Manitoba Rolling Mills Division, Box 2500, Selkirk, Manitoba R1A 2B4	Selkirk, Man.	Steel reinforcing merchant bars, flats, rounds, squares, angles, etc.	165,000 net tpy
SASKATCHEWAN			
Interprovincial Steel and Pipe Corporation Ltd., P.O. Box 1670, Regina, Saskatchewan	Armour Siding, Regina, Sask.	Steel plate, skelp, strip, hot-rolled sheets, plates and coils	600,000 net tpy

Company and address	Location of plant	Product	Capacity
ALBERTA			
Steel Company of Canada Limited, The, Edmonton Steel Works, P.O. Box 2348, Edmonton, Alberta	Edmonton, Alta.	Full range of merchant mill steel products	235,000 net tpy
Western Canada Steel Limited, 450 Marine Drive SE, Vancouver British Columbia V5X 2S9	52nd St & 26th Ave. SE, Calgary Alta	Concrete reinforcing bars, merchant bars, grinding balls	65,000 net tpy
BRITISH COLUMBIA			
Pacific Continuous Steel Limited, 7690 Hopcott Road, Delta, British Columbia V4K 3N3	Delta, B.C.	Grinding balls	25,000 net tpy
Western Canada Steel Limited, 450 Marine Drive SE, Vancouver, British Columbia V5X 2S9	Vancouver, B.C.	Merchant bars, concrete reinforcing bars, light structurals	200,000 net tpy



APPENDIX III

Domestic iron and steel*
(Tonnes)

Year	Capacity as at Jan. 1	Production**	Imports	Exports
1970	11 542 905	10 938 971	1 175 073	1 301 477
1971	12 198 005	10 767 808	1 736 231	1 255 569
1972	13 528 440	11 602 625	1 735 647	1 270 090
1973	13 984 020	13 094 298	1 775 180	1 216 639
1974	16 146 720	13 315 896	2 688 639	1 280 822
1975	16 596 500	12 706 340	1 291 297	1 308 633
1976	16 771 050	12 866 836	1 029 523	1 417 090

*Production does not include castings.
**Includes ingots and blooms, billets and slabs.

Source: Capacity and production – Statistics Canada catalogue No. 41-001 (monthly)
Imports – Statistics Canada catalogue No. 62-007 (monthly)
Exports – Statistics Canada catalogue No. 62-004 (monthly)

APPENDIX IV

Primary iron and steel mills by province
(As of January, 1977)
(Tonnes)

	Integrated	Non-integrated	Crude steel-making cap.	Per cent
Nova Scotia	1	–(*)	1 000 000	6.0
Quebec		5	1 380 000	8.3
Ontario	3	4	13 100 000	78.4
Manitoba		1	167 000	1.0
Saskatchewan		1	545 000	3.3
Alberta		2	318 000	1.9
British Columbia		1	180 000	1.1
	4	14	16 690 000	100.0

(*) A small plant at Amherst has closed down for an indefinite period.

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