

ONTARIO STEEL CLUSTER

Canada Ontario Hamilton

Cluster Description and Evaluation

		Scale	Evaluation	Estim.	Comments, Explanations
1000	CLUSTER (Name)	n/a			Ontario Steel Cluster
1100	BIOGR. INFO (Primary Citations:)	Text			
1101	Study/ Initiative Name	Text			
1102	Number of data points (quant. & qual.)	No.			
1103	Number of data points (quant. only)	No.			
1104	Done	1 Yes 0 No	0		
1105	Data entry by	Text			Mark Chaikelson, Impact Consulting Group Malcolm Jussawalla, Impact Consulting Group Amy Fisher, Impact Consulting Group Lizanne Correa, Impact Consulting Group David Woods, Impact Consulting Group
1106	Last change (date)	yy/mm/dd	12/07/2003		
1107	Issues raised in study which are not in template	Text			
1108	Research Note	Text			
1200	DESCRIPTIVE INFO	n/a			
1201	Extractive / Natural Resource Industry	1 Yes 0 No	0		
1202	Generic Cluster (Primary Association)	1 Materials 2 Forest/Paper 3 Petroleum 4 Semiconductor 5 Multipurpose 6 Transport 7 Power 8 Office 9 Telecom 10 Defense 11 Food 12 Textiles 13 Housing 14 Health	1	est.	
1203	Generic Vertical Stage (Primary Association)	1 Primary Goods 2 Primary Serv. 3 Machinery 4 Inputs 5 Support Serv.	4	est.	(Source: www.westac.com/pdfs/mfpowerfultrends.pdf provides definition of value-added and primary goods.)
1204	Number of Vertical Stages in Cluster and Product / Service Description	1 1 Stage 2 2 Stages 3 3 Stages 4 4 Stages 5 5 Stages	3		The steel mills in Hamilton receive two sources of raw materials, iron ore for integrated mills and steel scrap for mini-mills. Scrap is produced locally at steel recyclers. Steel mills then sell the steel to steel processors, steel service centres
1205	Number of Companies in Cluster	No.	28		There were 28 producers and processors in the Hamilton region in 2000. Leading producers include Dofasco (7000 employees), Stelco (6260 employees) and Slater Steels (490 employees). Major processors include Stelwire (553 employees), Taylor Steel (400 employees), Nelson Steel (300 employees), and Baycoat (250 employees)
1206	Cluster Employment	No.	16000		There are 16,000 people directly employed in the steelmaking and processing industry. (Source: Hamilton Steel Sector Profile (2000))
1207	Other Notable Cluster Info and	Text			
2000	LOCATION (Nation)	Text	Canada		
2001	Region	Text	Ontario	Estim.	
2002	City	Text	Hamilton		
2100	GEOGRAPHIC BOUNDS	3 city 2 metropolitan area 1 part of state 0 state -1 across state borders -2 nation	2		
2101	Size of Country	sq. km			
2102	Geo. Lat. and Lon. of Cluster Center	dd mm, dd mm	43.25N, 79.85W		
2103	Cluster Area Size	sq km	7850		
2200	REGIONAL ECO. DEV'T	n/a			
2201	National Per Capita GDP	U.S. \$ (1993/90)	29400		(Source: CIA 2002 World Factbook 2002 figure for per capita GDP)
2202	Cluster in OECD Area	1 Yes 0 No	1		
2203	Regional Per Capita Income	U.S. \$ (1993/90)	23009	2001 est.	

			Scale	Evaluation	Estim.	Comments, Explanations
3000			COMPETITIVENESS 3 world's strongest cluster 2 among world's top 3 1 among world's top 10 0 internationally significant -1 nationally significant -2 rather weak -3 uncompetitive		0 est.	Canada's steel industry is the 15th largest producer in the world (2002). (Source: www.worldsteel.org/csm_table.php)
3100			INDICATORS OF COMPETITIVENESS (Change in Competitive Position) 3 rapidly gaining 2 modestly gaining 1 gaining compet. position 0 holding compet. position -1 losing compet. position -2 modestly losing -3 rapidly losing		0	Canada has a 1.9% share (1995) of total world production. This number has stayed fairly constant (1.8% - 2%). For the first 6 months of 2003, Canada had a 12.86% market share of the North American steel production. Since the GHA produces approximately half of the steel in Canada, the GHA holds a 6.43%. In 2002, Canada had a 13.9% market share, resulting in a share of 6.95%. In 2001, Canada's share was 12.08%, resulting in a GHA market share of 6.04%. (Source: www.worldsteel.org/csm_table.php) (Source: www.steelworld.com/statistics.asp#%2024)
3101		Cluster's National Share of Production or Exports (against competing clusters in the nation)	3 predominant (>50%) 2 dominant (<50%) 1 major (<20%) 0 significant (<10%) -1 visible (<5%) -2 insignificant (<1%) -3 invisible (<0.1%)		3	The Hamilton cluster represents 52.9% of Canada's steel production capacity (as of year 2000)
3102		Cluster's National Economic Importance	3 predominant (>50%) 2 dominant (<50%) 1 major (<20%) 0 significant (<10%) -1 visible (<5%) -2 insignificant (<1%) -3 invisible (<0.1%)		-2 est.	There are 16,000 people directly employed by the steel sector in Hamilton. (Source: Hamilton Steel Sector Profile.) According to Statistics Canada, there are 15,412 million people employed in Canada. This means the Hamilton steel sector employs 0.103%
3103		Cluster's Local Economic Importance	3 predominant (>50%) 2 dominant (<50%) 1 major (<20%) 0 significant (<10%) -1 visible (<5%) -2 insignificant (<1%) -3 invisible (<0.1%)		-2 est.	Over 16,000 people in Greater Hamilton (total pop. = ~490,000, labour force = 380,000) are directly employed in steelmaking or processing - 4.2%; more than 500 firms are directly or indirectly involved in the industry. Success in the manufacturing sector (steel and other) is key to the city's economic strength. (Source: www.on.hrdc-drhc.gc.ca/english/offices/hamilton/lmi/content/lfp/ro/force/index_e.shtml)
3104		Annual Cluster Growth	3 rapid (>+10%) 2 fair (<+10% p.a.) 1 slightly (<+5%) 0 neutral (+/- 2%) -1 slightly (<-5%) -2 fair (<-10% p.a.) -3 rapid (>-10%)		1	Raw Steel production over 20 years is up 3.7% Raw Steel capacity over 20 years is down 11.8% Additional information on Form 3104
3105		Annual Export Growth	3 rapid (>+10%) 2 fair (<+10% p.a.) 1 slightly (<+5%) 0 neutral (+/- 2%) -1 slightly (<-5%) -2 fair (<-10% p.a.) -3 rapid (>-10%)		0 est.	Canada's net exports (in 000 tons): 1995: 5,108 • 1996: 5,304 (+3.8%) • 1997: 5,253 (-1%) • 1998: 5,207 (-0.9%) • 1999: 5,234 (+0.5%) • 2000: 5,531 (+5.7%) • 2001: 5,063 (-8.5%) (Source: Canadian Steel Producers Association press release, from www.canadiansteel.ca)
3106		World Export Share of Core Industry in Cluster	3 > 85% 2 > 70% 1 > 55% 0 45-55% -1 < 45% -2 < 30% -3 <15%		-3	Canada represents about 3% of total world steel trade (1995), therefore, Hamilton's proportion will be half. According to Worldsteel.org, Canada ranks 15th in the world in terms of world steel production, a 1.71% share. Within the Americas, Canada ranks 3rd behind US and Brazil.
3107		Local Firms Have own Foreign Marketing Organizations (vs OEM)	3 almost always 2 vast majority 1 majority 0 50% have -1 minority -2 small minority -3 almost never		-3	Stelco exports 1.7% and Dofasco sells 6.6% of their products to countries other than the US. (Source: 2002 Dofasco and Stelco Annual Reports). No evidence can be found of foreign marketing organizations.

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3108		Local Firms Sell Primarily under own Brand (vs. Unbranded Commodities)	3 almost always own brands 2 often have own brands 1 sometimes have own brands 0 don't have own brands -1 market under foreign brands -2 often sell commodities -3 almost always commodities		2	Although steel itself is generally a commodity, Canada's steel industry is known to provide value-added services and products. Stelco and Dofasco are moving toward producing less generic products and branding these (e.g. Extragal, Galvalume, etc). Dofasco brands more steel products than Stelco which sells at spot price.
3109		Local Firms Pioneer New Products or Processes (vs. Imitate)	3 usually pioneer 2 often pioneer 1 somet. pioneer 0 pioneer&imitate -1 somet. imitate -2 often imitate -3 usually imitate		2 est.	Innovation is a hallmark of Canada's steel producers; Dofasco and Stelco are world-class producers. Involved in push to expand North American steel market and in international initiative to develop new steels for auto industry. Canadians also moved aggressively to commercialize these technologies; achieved significant growth as a result. Over the last five years, Dofasco has been a leader in the development of hydroforming technologies. This technology allows steel to be blown in a mold which is pre-shaped for the auto industry. This technology bridges the gap between commodity
3110		Local Firms Compete Primarily within the Cluster's Industry (vs. Unrelated Diversification)	3 almost always 2 vast majority 1 majority 0 50% do -1 freq. related diversific. -2 freq. unrelated diversific. -3 frequently highly diversif.		3 est.	There is no evidence of unrelated diversification -- Dofasco, Stelco and Slater are all pretty focused on steel. Power lasers is only example found so far that shows diversification beyond direct steel.
3111		Local Firms Compete Primarily on ...	3 factors oth. than diff'n/cost 2 diff'n, cost is insignificant 1 differentiation, less on cost 0 differentiation and on cost -1 cost, less on differentiation -2 low cost due to innovation -3 inherited low input costs		-1 est.	Local firms are forced to compete on costs due to steel dumping effects and of rising Canadian dollar. Differentiation is becoming more of a factor as R&D / innovation continue.
3112		Foreign Direct Investment by Local Firms (% who do)	3 > 85% 2 > 70% 1 > 55% 0 45-55% -1 < 45% -2 < 30% -3 < 15%		3 est.	Stelco, Dofasco and Slater have foreign direct investment.
3113		Foreign Firms in the Cluster do more than just Marketing or Manufacturing (% who do)	3 > 85% 2 > 70% 1 > 55% 0 45-55% -1 < 45% -2 < 30% -3 < 15%		-3	Gerdau AmeriSteel, based in Brazil, has steel mills in Cambridge and Whitby, Ontario. Both appear to be solely manufacturing facilities and do not do any research.
4000		DIAMOND Primary reason behind competitiveness (+ order of importance)	1 FC 2 DC 3 R&S 4 FSR 5 Other		2	2 - 1 - 3 - 4 - 5
4100		FACTOR CONDITIONS	3 strong adv. 2 advantage 1 weak adv. 0 no effect -1 weak disadv. -2 disadvantage -3 decis. disadv.		2	
4110		General Factors	3 strong adv. 2 advantage 1 weak adv. 0 no effect -1 weak disadv. -2 disadvantage -3 decis. disadv.		2	The location of the cluster is a key competitive factor.
4111		Geographic Location	3 strong adv. 2 advantage 1 weak adv. 0 no effect -1 weak disadv. -2 disadvantage -3 decis. disadv.		3	A large percentage of total sales goes to the automotive industry. There are 14 auto assembly plants at an average distance of 127 km from Hamilton. Both Dofasco and Stelco have a front of their property on Lake Ontario. Additional information on Form 4111.

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4112		Cost of Production Inputs (Wages, etc.)	3 among world's lowest 2 very low 1 below average 0 world average -1 above average -2 very high -3 among world's highest		-1	Canadian firms have the fourth highest cost of production in the world. Additional information on Form 4112.
4113		General Physical Infrastructure (Roads, Ports, Airports, Telecom)	3 world's best 2 among world's best 1 above world average 0 world average -1 below world average -2 among world's worst -3 inexistant		2 est	Hamilton has strong general infrastructure including an international airport, railways, ports and telecommunications. Additional information can be found on Form 4113.
4114		Local Stock Markets Open to New and Medium-Sized Firms	3 strong adv. 2 advantage 1 weak adv. 0 no effect -1 weak disadv. -2 disadvantage -3 decis. disadv.		0 est	Many of the new or medium-sized firms in the cluster are too small to produce steel themselves. They are most likely steel processors or service centres, and many are too small to consider an IPO.
4115		Government: Macro-Economic Conditions such as Exchange Rates (effect on costs, prices)	3 strongly positive 2 moderately positive 1 slightly positive 0 no effect -1 slightly negative -2 moderately negative -3 strongly negative		0 est	The Canadian dollar is worth less than the US dollar. The exchange rate has been increasing rapidly since February, 2003 from a low point of \$0.65 USD/CND to a high of \$0.75 USD/CND. This expansion of the dollar causes a slightly negative effects on Canadian companies since costs are rising. However, in the long term it may force companies to find more innovative ways to reduce costs.
4116		Other	3 strong adv. 2 advantage 1 weak adv. 0 no effect -1 weak disadv. -2 disadvantage -3 decis. disadv.		-1	The steel industry is heavily burdened by legacy costs. Benefits owed to retirees and their families are one of the largest problems facing the steel industry today.
4120		Specialized Factors	3 strong adv. 2 advantage 1 weak adv. 0 no effect -1 weak disadv. -2 disadvantage -3 decis. disadv.		2	
4121		Cluster-Specific Natural Resources (Raw Materials, Energy)	3 among world's best 2 very good 1 possibly good 0 general purpose -1 possibly gen. purpose -2 poor general purpose -3 among world's worst		0 est	Except for scrap metal, raw materials are sourced from outside of the province. Electricity is sourced locally but is subject to large price fluctuations. Additional information can be found on Form 4121.
4122		Cluster-Specific Human Resources (Skilled Labor)	3 among world's best 2 highly specific skills 1 some specific skills 0 general skills -1 primarily unskilled -2 among world's worst -3 impossible to obtain		3	Most jobs within the major steel companies require a certificate of qualification, a license or a university degree. Stelco's current job postings require high level of qualification for trades-people. All the companies recruit top university level materials and mechanical engineering graduates. Mohawk College trains highly skilled technicians and technologists for the steel industry through apprenticeship programs. One of the new programs developed at the school is the material engineering technology program and metal casting technologist program. Other programs exist at McMaster and company specific programs. Since most of the training is done at public institutions, there is a greater flow of knowledge between companies and at
4123		Cluster- Specific Knowl.- Transfer Resources (Vocat., Univ. Training)	3 among world's best 2 highly specific 1 some specific 0 general purpose -1 poor general purpose -2 among world's worst -3 none available		3	There is specific training available at universities, colleges and CEGEP for all technical and engineering levels within the steel industry. Additional information on Form 4123.

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4124		Cluster-Specific Scientific Infrastruct. (Research Institutes & Univ., Testing Labs)	3 among world's best 2 highly specific 1 possibly specific 0 general purpose -1 possibly gen. purpose -2 poor general purpose -3 among world's worst		3	McMaster University's Steel Research Centre, one of three university based centres in North America, provides research to the steel industry in various capacities. The University of Toronto also does some research, but most of the attention is placed with the Steel Research Centre. The Centre groups scarce R&D dollars and conducts the research which can be later licensed to industry. This compares well with the research conducted at the University of Pittsburgh. Additional information can be found on Form 4124.
4125		Cluster-Specific Capital Resources (Venture Cap., Knowledgeable Lenders)	3 among world's best 2 highly specific 1 possibly specific 0 general purpose -1 possibly gen. purpose -2 poor general purpose -3 among world's worst		2	There are no venture capital players in the market. Caisse Desjardins is the biggest bank in Stelco. Both TD and Bank of Montreal are traditionally involved. Currently there are two board members on Dofasco from banks (it is unclear, how much these banks have lent the company). (Source: Peter Warrian & Annual reports). Almost all major banks in Canada have analysts and groups focusing on the steel & metals industry. For example, Since June 2003, RBC Capital Markets is working with Slater Steel to find new opportunities for the company including deciding if it should sell specific operations or the entire company. (Source: www.newswire.ca/releases/June2003/20/c5866.htm).
4126		Cluster-Specific Physical Infrastructure (Specialized Facilities, Labs., etc.)	3 among world's best 2 highly specific 1 possibly specific 0 general purpose -1 possibly gen. purpose -2 poor general purpose -3 among world's worst		2	The ports which are on the property of Dofasco and Stelco help bring in raw materials. There is some specific construction contractors for furnace re-building.
4127		Cluster-Specific Administr. Infrastruct. (Legal System, Business Regulation)	3 among world's best 2 highly specific 1 possibly specific 0 general purpose -1 possibly gen. purpose -2 poor general purpose -3 among world's worst		3	The legal and regulatory system in Ontario is equivalent to other Canadian and American jurisdictions
4128		Cluster-Specific Info (Bus. Info, Corp. Disclos., Internet Access)	3 easily available 2 available 1 above world average 0 world average -1 below world average -2 hard to access -3 does not exist		3	Information among companies is readily available. This information sharing helps reduce the lost time spent continuously re-engineering similar technologies. Furthermore, strong ties with customers allow the companies to remain competitive and ensure a continuous client base. Additional information can be found on form 4128.
4129		Local Cluster-Specific Trade Show	3 world's premier 2 world known 1 nation's premier 0 nationally known -1 regionally known -2 exists		2	The McMaster University Steel Research Centre holds annual Iron and Steelmaking Symposium to assist technology transfer in the steel industry. Many steelmaking experts from the US and other nations attend this event.
4130		Prestige, Tradition, or Pride Allow Attraction of Best People in Cluster Area	3 most celebrated 2 prestigious 1 above average 0 national average -1 below average -2 low prestige -3 disdained		1 est	Most skilled labour is sourced locally. World renowned individuals are recruited to work at the McMaster Steel Research Centre. The University of British Columbia has the Centre for Metallurgical Process Engineering which also aims to attract a diverse group of researchers but has not been as successful as the McMaster Centre.
4131		Government: Subsidies	3 usually 2 often 1 sometimes 0 world cluster ave. -1 seldom -2 very seldom -3 never		-2	Human Resources Development Canada provided Dofasco with a \$94,602 targeted wage subsidy between 1998-99 and promised an additional \$154,020 between 1999 and 2000. (Source: Mark MacKinnon, Parliamentary Bureau, Globe and Mail (With editing) Wednesday, March 8, 2000). It is unlikely that there will be many grants or subsidies in the future because the Governments of Canada and Ontario had promised to introduce the US tax

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4132		Government: Impact from Spillovers (e.g. Military)	3 very high positive 2 high positive impact 1 some positive impact 0 none or no impact -1 some negative impact -2 high negative impact -3 very high negative		0	There seems to be very little, if any, sales directly to the government for military or infrastructure development.
4133		Government: Financed Research	3 ample, specialized 2 ample, general 1 some, specialized 0 some, general -1 seldom, specialized -2 seldom, general -3 none		3	Both the provincial and federal governments assist with research in the steel industry. The government along with universities in the area, which are public institutions, provide much needed R&D which the individual firms do not perform or are unable to do. According to the Industrial Research and Development 2001 Intentions report, about 71% of firms in Canada used government R&D tax credits. Additional information on Form 4133
4134		Impact of Selective Factor Disadvantages on Segment Focus or Innovation	3 major & beneficial 2 substant. & benefi. 1 some & benefi. 0 none or no impact -1 some & harmful -2 substant. & harmf. -3 major & harmful		0 est	No such disadvantage could be found.
4135		Other	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.			n/a
4200		DEMAND CONDITIONS	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.		2.0	
4210		Local Demand Size	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.		3	There is a large demand in a close proximity to the cluster. Additional information on Form 4210.
4211		Domestic Per Capita Consumption	3 among world's top 10 2 very high 1 > neighbor countries 0 world average -1 < neighbor countries -2 very low -3 among world's lowest		3	Based on a population of 30M, per capita consumption is 0.6 tons. According to Siderex, in 2001 Canada ranked 7th in per capital consumption of steel. (Source: www.bilbao.biscay.org/english/info/news_detail.asp?id_noticia=638)
4212		Domestic Private Sector Demand (% of Cluster Sales)	3 > 85% 2 > 70% 1 > 55% 0 45-55% -1 < 45% -2 < 30% -3 < 15%		1	Hamilton plus a 50km radius: steel production capacity is about 8.4 million tonnes and is approximately 50% of Canada's total capacity. Approx. 30% of Canadian steel production is shipped to the US. Automotive sector (private sector) accounts for more than 50% of Canadian steel shipments. Pipe and tube account for approx. 15% of Canadian domestic shipments. (2000 Hamilton Steel Sector Profile). Therefore, at least 65% of the demand is to domestic
4213		Other	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage			n/a

			Scale	Evaluation	Estim.	Comments, Explanations
4220		Local Demand Qualities	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.		2	Local demand qualities have forced the cluster to innovate in order to meet needs of customers and government requirements.
4221		Soph. / Demanding / Knowledg. Local Customers / Distrib. Channels	3 world's most soph. 2 sophisticated 1 above world ave. 0 world average -1 below world ave. -2 unsophisticated -3 world's least soph.		2	Automotive customers of Stelco and Dofasco are highly involved in the development of steel products and thus demand tight adherence to specifications. Service centres sell to customers who are looking for a product at the lowest price with little concern for quality.
4222		Timing of Local Demand (Trend Setting vs. Trend Adoption)	3 pioneers trends 2 adopts trends easily 1 earlier than average 0 world average -1 later than average -2 adopts trends late -3 lags behind most		2	Much of the innovation in the auto-related industry relating to steel has been internationally carried out. A global consortium of steel manufacturers set out to show the global auto industry that a light weight auto body can be made from steel. This project is known as the Ultra Light Steel Auto Body (ULSAB). Dofasco is one of the 35 global steel companies working on this project in order to meet the customer's needs. Ontario firms can execute faster in such projects because they are directly involved with the process. Compared to cheaper foreign imports, Ontario's steel producers are developing innovative
4223		Disproportionate Local Demand in Specialized Segments	3 leads world trends 2 fosters innovation 1 attracts attention 0 no impact -1 diverts attention -2 retards innovation		0	There does not appear to be any disproportionate Local Demand in Specialized Segments.
4224		Government: Stringent Regulatory Standards (Product, Energy, Safety, Enviro.)	3 triggers innovation 2 stringent 1 above world ave. 0 world average -1 below world average -2 lax		3	Several government enforced or influenced standards has aided the cluster in terms of process innovation including new furnace development and better automotive client relationships. Additional information on Form 4224
4225		Government: Consumer Information Laws and Consumer Recourse Laws	3 world's strongest 2 strong 1 above world ave. 0 world average -1 below world average -2 weak -3 inexistant		2	est There are no specific consumer protection laws that pertain to the Canadian steel industry. However, there are laws and regulations that protect against companies that perform predatory pricing, abuse market power or have anti-competitive behaviour. Overall, Canada is a fairly open economy, but there is a lot corporate concentration in the retail and producer environment. There are a small number of large players and sometimes the size of the Canadian economy and market is only able to support a few domestic players. This leads to more of a monopolistic environment where consumers may be disadvantaged. (Source: Personal communication with staff at the Office of
4226		Government: Demanding / Sophisticated Public Procurement	3 among world's most 2 demanding 1 above world ave. 0 world average -1 below world average -2 undemanding -3 among world's least		est	n/a
4227		Other	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.			n/a

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4300	RELATED & SUPPORTING INDUSTRIES	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage	2		
4310	Suppliers	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.	1		The cluster benefits from an open economy and a historical base of companies providing goods and services. Except for energy and scrap metal, key inputs must be transported from outside the cluster. There are several industry specific consultants and knowledge providers in the area
4311	Degree of Local Sourcing	3 > 85% 2 > 70% 1 > 55% 0 45-55% -1 < 45% -2 < 30% -3 < 15%	-2		Key supplies are energy, coal, and iron ore. - Approximately 1/2 (12,500 MWh) of Ontario's electrical power is generated within the cluster. - Coal is sourced from states outside of the cluster - Iron ore is sourced from mines in Ontario, Quebec and Labrador, which are outside of the cluster. (Source: www.wlu.ca/~wwwgeog/special/vgt/English/can_mod2/unit5.htm AND www.opg.com)
4312	Local Components or Materials Suppliers	3 2&assist developm. 2 int'ly competitive 1 nat'ly competitive 0 many present -1 some present -2 uncompetitive -3 not locally present	-1		Key supplies are energy, coal, and iron ore. - There are no local (i.e. within the cluster) suppliers of iron ore, with the closest iron supplier in Wawa, Ontario. The mass majority of Canadian suppliers are along the Quebec-Labrador border. - Ontario produces a significant amount of electricity. - Coal is imported from the nearby coal-producing American states (this coal is also used in Ontario's coal-burning power plants) (www.wlu.ca/~wwwgeog/special/vgt/English/can)
4313	Local Process Equipment (Machinery) Suppliers	3 2&assist developm. 2 int'ly competitive 1 nat'ly competitive 0 many present -1 some present -2 uncompetitive -3 not locally present	-1		There are a few suppliers of process equipment within the GHA (Source: Hamilton Steel Sector Profile, 2000)
4314	Local Services Suppliers	3 2&assist developm. 2 int'ly competitive 1 nat'ly competitive 0 many present -1 some present -2 uncompetitive	2		There are many suppliers of services (Source: Hamilton Steel Sector Profile, 2000) - consulting services, repair services, etc. Some of these companies are internationally known such as Hatch (HQ in Mississauga) and Hoogovens.
4315	Government: Economy is Open to Importing Supplies	3 very open, much choice 2 open, limited choice 1 possible to import 0 neutral -1 difficult to import -2 almost impos. to import	3		Canada's economy is very open and has efficient transport systems to allow for the import of needed supplies.
4316	Other	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage			n/a
4320	Related Industries	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.	3		Automotive assembly plants have encouraged a number of automobile suppliers (e.g. steel-related, plastics, etc) to be close by. This development of other industries had benefited the steel cluster in Hamilton by making it attractive to the automotive industry to locate
4321	Competitive Related Industries That Share Common Inputs/ Skills / Technologies	3 very advantageous 2 strong links 1 exist, but few links 0 exist -1 absent, but no harm -2 absence is harmful -3 decis. disadv.	1		There is some competition between the aluminium industry and the steel industry for talent since both require metal working and metallurgical engineering skills. However, the aluminium industry is situated mostly in Quebec and thus limits the movement of individuals between industries. (Source:

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4322		Compet. Complementary Related Industries (Services, Reputation, Channels)	3 very advantageous 2 strong links 1 exist, but few links 0 exist -1 absent, but no harm -2 absence is harmful -3 decis. disadv.	3		The existence of the automotive assemblers and automotive parts suppliers provides a very strong advantage for the GHA steel industry - extremely important to the steel producers, processors and service centers. The presence of the automotive-grade plastics industry also increases this benefit since automotive companies can procure several materials from a close proximity.
4323		Other	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.			n/a
4400		FIRM STRATEGY & RIVALRY	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage	2		
4410		Rivalry	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.	1		Large firms dominate the industry, with the two integrated steelmakers (Dofasco & Stelco) and Slater accounting for over 60% of all steel made in Canada. The remaining steel is made by smaller mini-mill operations. In 1997, the four largest firms had a concentration ratio of about 74%, and the eight largest firms had a concentration ratio of almost 90%. (Source: www.innovationstrategy.gc.ca/cmb/innovation.nsf/Sectors/E/Steel)
4411		Vigorous Competition among Local Companies	3 drives innovation 2 strong, multidimensional 1 same as against foreign 0 primarily on price -1 sometimes lacking -2 collusive behavior? -3 cartel or monopoly	1		There is strong competition between Dofasco and Stelco. These companies do however, compete differently. Dofasco focuses more on the auto industry while Stelco tries to service several industries. Dofasco has long term contracts and thus has more predictable revenue whereas Stelco mainly purchases materials at the spot price and is unable to predict revenue. Recently, both companies are moving towards more servicing and working with their customers from the design stage. Dofasco will also be competing with service centres since they are doing more value added work. Dofasco has also been doing some cross-licenses of technologies with foreign firms (Cameron, Dutton, Morrison)
4412		Government: Strong Antitrust Laws	3 among world's strictest 2 well enforced 1 above OECD average 0 around OECD average -1 below OECD average -2 seldom enforced -3 among world's laxest	1.0		Canada has implemented general anti-trust laws. Competition policy appears to be stringent with criminal penalties, however, these penalties are rarely enforced consistently. Although there is improvement in this area in the last decade, there is still work to be done and the lack of consistent enforcement of competition policy appears to be "impairing opportunities for smaller firms, entrenching the position of some dominant ones, and encouraging others to look outside of Canada for growth." (Source: OECD Reviews of Regulatory Reform: Regulatory Reform in Canada. The Role of Competition Policy in Regulatory Reform (Paris: OECD, November, 2002)).
4413		Government: Cluster's Economy is Open to Import Competition/ Foreign Direct Investments (FDI)	3 open imports, open FDI 2 economy almost open 1 decreasing restrictions 0 considerable restrictions -1 increasing restrictions -2 economy almost closed -3 no imports, no FDI	2		There is currently a substantial amount of FDI as well as import competition with the cluster. In particular, Brazil's steel industry has made significant investments in the cluster, particularly in the tier-two companies. However, the Canadian government has in the past protected the Canadian steel industry by invoking anti-dumping legislation against India, Thailand, Indonesia and Brazil, according to the international rules of the World Trade Organization. (Source: www.fir.gc.ca/news08/08_130c.html)

			Scale	Evaluation	Estim.	Comments, Explanations
4414		Other	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage			n/a
4420		Cooperation	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.	2		
4421		Cooperation among Local Companies	3 joint labor / infrastr. upgrading 2 joint research in outside labs 1 vertical subcontracting 0 no cooperation -1 help each other in emergencies -2 horizontal subcontracting -3 outright collusion	2		Government and public institutions (e.g. universities) produce joint research that benefits entire cluster. Additional information on Form 4421.
4422		Local Industry Association (in Core Industry)	3 builds capacity 2 is trying to upgrade 1 gets execs together 0 exists -1 no impact/no assoc. -2 lobbies for subsidies -3 discour. competition	2		The Canadian Steel Producers Association is intending to bring executives together in order to discuss key issues facing the Canadian steel industry (including the GHA cluster), and to create a unified front for discussion with exterior bodies such as the government. Additional information on Form 4422.
4423		Relationship Among Cluster Participants who Know Each Other	3 strong social/family ties 2 sense of trust 1 promote cluster 0 compete and talk -1 cluster awareness -2 some cluster awaren. -3 distrust	2	est	There is no doubt that Canadian firms compete with each other both domestically and internationally. However, the cluster participants do promote the viability of the cluster itself, working together to improve economic conditions, quality of life, and work to benefit the entire Canadian steel industry.
4424		Other	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.	2		Joint ventures exist between cluster participants. For example, Baycoat was established by Dofasco and Stelco to supply the appliance industry.
4430		Strategy and Structure	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.	2		
4431		Unique Local Strategies	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.	2		Steel producers in the area have placed special emphasis on their abilities to provide value-added services to clients, in particular to the automotive industry. For example, Dofasco and Stelco both place their engineers in customers' plants, encouraging the use of steel products at the design stage. John Mayberry, the former CEO of Dofasco, even considered his company to be a service organization. In some cases, offering these added value services has put the large steel producers in direct competition with their own service centre customers (e.g. laser-welded cutting, blanks). Co-ventures with foreign companies (e.g. Stelco with the Japanese at Hilton Steel Works) are in place -- helps to bring new skills and ways of doing business to the cluster. (Source: Peter Warrian)

			Scale	Evaluation	Estim.	Comments, Explanations
4432		Other Unique Local Structures	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.		2	The 1st tier steel producers in the cluster (Dofasco, Stelco and Slater) have not undergone any significant structural change. However, the 2nd tier companies have undergone a transformation. There are several foreign firms which have taken ownership stakes in companies such as Gerdau taking over Algoma piping operations, Atlas steel and Co-Steel. This increase in foreign ownership brings new skills, new ways of doing business to these old companies. This in turn will increase competition within the cluster.
4440		Local Investment Context	3 strongly encourages any investments 2 encour. inv. in intangible/risky forms 1 encourages inv. in physical assets 0 neutral (world average) -1 discour. inv. in intangible/risky forms -2 discourages inv. in physical assets -3 strongly discourages any investm.	1		
4441		Government: Tax and Regulatory Environment	3 encourages risk inv. 2 encour. long-term inv. 1 encour. short-term inv. 0 neutral -1 discour. long-term inv. -2 discour. short-term inv. -3 discour. any investing		-1	Canada's tax system puts the industry at a disadvantage compared to its American counterpart. Building code regulations restrict the use of steel frames.
4442		Economic Stability	3 lowers hurdle rates 2 encourages invest. 1 above average 0 OECD average -1 below average -2 increases hurdle rates -3 discourages invest.		2 est.	Additional information on Form 4441. Canada provides a stable environment which encourages investment. Additional information on Form 4442.
4443		Government: Intellectual Property Protection	3 encourages investm. 2 is usually enforced 1 sometimes enforced 0 possibly enforced -1 seldom enforced -2 is not enforced -3 no protection		2 est.	Canada has a framework for implementing intellectual property protection laws. Although Canada's intellectual property legislation has faced some challenges, in 2001 Canada's patent laws were amended to conform to the World Trade Organization's standards. (Source: Trade Policy Review Canada: Report by the Secretariat; World Trade Organization Trade Policy Review Body, 12 February 2003, www.sice.oas.org/cty/index/wto/Canada/TPRS112a_e.asp) Many clients of the Canadian Intellectual Property Office (CIPO) have "indicated a strong desire for a significant reduction in the time required to examine and grant or register IP rights." (Canada Gazette, canadagazette.gc.ca/part1/2003/20030308/html/r
4444		Corporate Governance (Accountability to Shareholders)	3 mgt accountable 2 usually accountable 1 increasingly account. 0 OECD average -1 decreasingly account. -2 almost unaccountable		3	Dofasco and Stelco have outlined plans to ensure that the companies' managers are accountable to the shareholders. Additional information on Form 4444.
4445		Government: Targeting	3 does not occur 2 occurs seldom 1 occurs decreasingly 0 occurs -1 occurs increasingly -2 occurs often -3 distorts inv. patterns		-1	The Canadian International Trade Tribunal concluded on August 19, 2002 that significant increases of imports of certain steel goods were a principal cause of serious injury to the Canadian steel industry. "The CITT proposed that trade-restricting quotas be imposed for a period of 3 years, with certain import surtaxes reaching 25 percent for above-quota importations" (Source: www.fasken.com/WEB/FMDWEBSITE.NSF/0/A5D40004B05D199988256CDF006CBDB6/\$file/B EYOND_THE_HYPE_THE_STEEL_AND_LUMBER_TRADE_DISPUTES_IN_PERSPECTIVE.PDF?OpenElement)
4446		Other	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage			

			Scale	Evaluation	Estim.	Comments, Explanations
4500			OTHER ADVANTAGES 3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage	0		
4501		Chance	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage	0		No evidence of this can be found.
4502		Individual Entrepreneurs	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage	1	est	Individual entrepreneurs exist within the cluster, however all of them have started small companies which are service centers or suppliers to larger firms and thus have little impact on the cluster.
4503		Early Mover Advantages	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.	0		Of the 3 major firms (Dofasco, Stelco and Slater), Stelco was founded first in 1910 with Dofasco starting 7 years later and Slater starting much later in 1960. The order of the firms arrival does not seem to indicate which firm has a clear advantage. Additional information on Form 4505
4504		Government: Other Influence	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage	0		n/a
4505		Other	3 strong adv. 2 advantage 1 weak adv. 0 neutral -1 weak disadv. -2 disadvantage -3 decis. disadv.	1		Web based technology has provided some advantages to the industry. Additional information on Form 4505.
5000			EVOLUTION n/a			
5001		Evolutionary stage of cluster	3 among world's top 3 2 highly developed 1 critical mass present 0 partly developed cluster -1 critical mass lacking -2 rudimentary -3 unclear if even a cluster	2		
5100			BIRTH n/a			
5101		Primary reason behind cluster birth (+ sequence of events)	1 FC 2 DC 3 RSI 4 FSR 5 Other	2		2,1 The cluster was born in the early 1900s, as a result of the demand for iron and steel products. Construction was beginning to make heavy use of structural iron/steel, and tools such as stoves, street-lamps and roof-tops were readily made of steel. (Source: www.nrcan.gc.ca/mms/efab/mmsd/minerals/ironore.htm) In the 1920s, a number of American companies opened up branch plants because of the following factor conditions: - proximity to raw materials and markets; - a well-established industrial base; - a skilled workforce; - an abundant supply of electricity; - relatively cheap land; - many local tax incentives
5102		Birth of Cluster (Year)	Year	1895		collections.ic.gc.ca/industrial/20cent.htm
5103		¹ Birth due to Unique Factor Conditions	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor	2		
5104		² Birth due to Unique Domestic Demand Conditions	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor 3 no factor	2		

			Scale	Evaluation	Estim.	Comments, Explanations
5105		3 Birth due to Related Industry or Suppliers	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor -3 no factor	1		Existence of suppliers of electricity and raw materials.
5106		4 Birth due to Firm Strategies, Structure or Rivalry	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor	-1		A number of American firms established themselves in the Hamilton area due to the factors described above.
5107		5 Government: Birth due to Initiative or Policy Shift	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor -3 no factor	-3		No evidence of this can be found.
5108		5 Birth due to Isolated Company or Plant (i.e. Chance)	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor	-3		No evidence of this can be found.
5109		5 Birth due to Other Reasons (Chance, Isol. Innov./Entrepreneurism)	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor	-3		No evidence of this can be found.
5200		DECLINE	n/a			
5201		Primary reason behind cluster decline (+ sequence of events)	1 FC 2 DC 3 RSI 4 FSR 5 Other			
5202		Begin of Decline (Year)	Year			
5203		1 Decline due to Change in Factor Conditions	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor			
5204		2 Decline due to Shift in Buyer Needs or Other Change in Demand Cond.	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor			
5205		3 Decline due to Loss of Suppliers or Related Industry	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor			
5206		4 Decline due to Loss of Rivalry or Other Change in Firm Cond.	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor			
5207		5 Government: Decline due to Interference	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor			
5208		5 Decline due to Other Reasons (Chance, Technical Discontinuity)	3 sole factor 2 main factor 1 major factor 0 contrib. factor -1 minor factor -2 minusc. factor			