Petrochemicals-Chemical-Plastics Clusters
Québec

Avec la participation de :
• Ministère des Affaires municipales et des Régions
• Ministère du Développement économique, de l’Innovation et de l’Exportation

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Through its Economic Development Plan, the Communauté métropolitaine de Montréal (CMM), has adopted a competitiveness strategy centred on dynamic and innovative business clusters. In the fall 2003, the CMM launched a cluster identification program for metropolitan Montreal. This marked the first phase of a process leading to the development and launch of an integrated economic development and innovation strategy.

For each of the sectors studied, the CMM wishes to join forces with all the territorial bodies and economic stakeholders concerned. It means to concentrate its efforts on its own role of planning and coordination and does not intend to take the place of existing players and decision-makers in the field, whose role it is to agree on a development plan under the supervision of a relay organization representing their sector.

This document is divided into two distinct sections:

- The first section presents a configuration of the Petrochemicals – Chemicals – Plastics cluster;
- The second section groups together the ideas of the main players of that particular cluster and their thoughts on future development.

The cluster configuration was based on documentary research confirmed by stakeholders in the cluster itself. Comments were then made by industry officials in the ministries concerned. This first section describes the value chain of the cluster and goes on to identify the organizations or infrastructure contributing to its development. Finally, as economic development transcends administrative or political borders, potential links with other regions of Quebec are indicated, taking into account the niches of excellence developed by certain regions under the ACCORD (Action concertée régionale de développement) program.

While the first section of the document is inherently factual, the second is more subjective, since it reflects the perceptions of the main players in each cluster. These thoughts were gathered in the strictest confidence so as to produce a maximum amount of data. They are focused on two main themes, the state of relational assets and growth strategies. Since we know that relationships between stakeholders are the first source of innovation, it is necessary to identify the relational flow between the various components of the cluster. In the same way, in order to set priorities, we need to know which strategies for growth are favoured by the players in the field.

This document is thus intended as a catalyst for priority actions aiming to energize the strategic process of the cluster and to give direction to its innovative thrust. The process will be carried out in a spirit of openness and dialogue which will eventually enable the Montreal metropolitan area to assert its distinctive capabilities among the world’s most innovative and prosperous cities.

Michel Lefèvre
Consultant – Economic Development
Communauté métropolitaine de Montréal
Towards Diversification

**Industrial Chain**
- Petrochemicals
- Chemicals
- Plastics

**Development Factors**
- Research
- Training
- Financing
- Structuring Organizations
- Associations
- Specialized Services
- Marketing
- Environmental Management

**Interregional Links**
- Elsewhere in Quebec

**Relational Assets**
- Timid Inter-sector Relations

**Strategic Elements**
- Spotlight on Productivity

**Avenues for Growth**
- Three Priorities and Some Improvements

**Appendices**
- Sources, Individuals Consulted
- Credits
On Course Towards Diversification

The petrochemicals, chemicals and plastics cluster is a strategic element in the development of the Communauté métropolitaine de Montréal (CMM), whose territory houses the refineries and the majority of players in Quebec’s petrochemicals and chemicals industry. It is the same situation for plastics: the regions of Montreal and Montérégie account for 50% of companies and 60% of jobs in Quebec. Their processing activities are linked to very diverse markets, such as transportation, consumer goods, packaging, construction, the environment and pulp and paper.

The petrochemical sector today is a solid, dynamic cluster of subsidiaries of multinationals. Of limited size compared with its counterpart on the American coast of the Gulf of Mexico, the industry is competitive and compares favourably to other Canadian firms. Strongly dependent on imports of raw materials, it also benefits from access to natural gas from Canada’s east coast (Sable Island) and from Western Canada via Sarnia. Despite its skilled (but ageing) workforce, leading-edge technology, advantageous operating costs and integrated networks, the industry is dependent upon several important factors: access to a supply of raw materials at competitive prices, more stringent environmental standards, and diversification of its production.

The chemical industry ranked tenth in the province’s manufacturing sectors for 2002. It employs close to 13,000 workers in some 300 companies in Quebec, 80% of which are SMBs. The industry represents 22% of Canada’s production of chemical products and 15% of inorganic chemical product shipments (excluding pharmaceuticals). It exports nearly 47% of its production. To maintain its competitiveness, the industry must continue to exploit the efforts put in by all the industrial and socio-economic partners, especially with respect to networking, training and access to R&D. The cluster’s businesses are still spending less on these items than the average for the manufacturing sector as a whole.

Finally, the plastics industry continues to record significant growth. In Quebec, it comprises some 540 businesses, for the most part SMBs, and provides around 30,000 jobs. Its development outlook remains favourable, especially in the fields of packaging and car parts. The shortage of specialized labour is currently one of the main challenges the industry has to face. Furthermore, SMBs still lack the financial means to access research and development, even if they have a good R&D network at their disposal. In the face of increasing globalization, they will have to develop alliances to improve marketing, procure cutting-edge equipment, turn towards higher value-added products and export to new markets.
### Employment by Borough and City — Petrochemicals and Chemicals

<table>
<thead>
<tr>
<th>Borough and City</th>
<th>Employment</th>
</tr>
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<tbody>
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</tr>
<tr>
<td>Rivière-des-Prairies/Pointe-aux-Trembles</td>
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<tr>
<td>Montréal-Est (former city)</td>
<td>555</td>
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<tr>
<td>Anjou</td>
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<tr>
<td>Montreal Island – Central Core</td>
<td>1,530</td>
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<tr>
<td>Mercier/Hochelaga-Maisonneuve</td>
<td>195</td>
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<tr>
<td>Ahuntsic/Cartierville</td>
<td>50</td>
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<tr>
<td>Outremont</td>
<td>70</td>
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<tr>
<td>Plateau Mont-Royal</td>
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<tr>
<td>Rosemont/Petite-Patrie</td>
<td>90</td>
</tr>
<tr>
<td>Ville-Marie</td>
<td>550</td>
</tr>
<tr>
<td>Villeray/Saint-Michel/Parc-Extension</td>
<td>200</td>
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<tr>
<td>Sud-Ouest</td>
<td>190</td>
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<tr>
<td>Westmount</td>
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</tr>
<tr>
<td>Côte-des-Neiges/Notre-Dame-de-Grâce</td>
<td>115</td>
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<tr>
<td>Montreal Island – West End</td>
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<td>Town of Mount Royal</td>
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<td>Saint-Laurent</td>
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<td>Lachine</td>
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<td>LaSalle</td>
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<td>Verdun</td>
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<td>Lorraine</td>
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<tr>
<td>Mirabel</td>
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<td>Lanaudière</td>
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<td>L’Assomption</td>
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<td>Repentigny</td>
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<td>Boucherville</td>
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<td>Brossard</td>
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<td>Candiac</td>
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<td>Chambly</td>
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<td>Mercier</td>
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<td>Richelieu</td>
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<td>Saint-Bruno-de-Montarville</td>
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<td>Sainte-Catherine</td>
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<td>Saint-Lambert</td>
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<td>Montreal Metropolitan Area</td>
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<tr>
<td>Quebec</td>
<td>16,690</td>
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<td>Canada</td>
<td>66,340</td>
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</tbody>
</table>

1. Individuals 15 years of age or older who have a regular workplace or who work from home. People who have no fixed address are not included. N.B.: Figures were rounded to the closest multiple of 5; they may therefore not add up exactly to the sum of the components.

Source: Statistics Canada, Employment by Place of Work, 2001 Census – Figures on Petrochemicals/Chemicals represent NAICS codes 3251, 3252, 3253, 3255, 3256, 3259, i.e. chemical products other than pharmaceuticals.
### Employment by Borough and City — Refining

<table>
<thead>
<tr>
<th>Borough and City</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montreal Island – East End</td>
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<td>Rivière-des-Prairies/Pointe-aux-Trembles</td>
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<td>Montréal-Est (former city)</td>
<td>740</td>
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<tr>
<td>Anjou</td>
<td>100</td>
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<tr>
<td>Montreal Island – Central Core</td>
<td>225</td>
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<tr>
<td>Mercier/Hochelaga-Maisononneuse</td>
<td>20</td>
</tr>
<tr>
<td>Ville-Marie</td>
<td>170</td>
</tr>
<tr>
<td>Villeray/Saint-Michel/Parc-Extension</td>
<td>10</td>
</tr>
<tr>
<td>Sud-Ouest</td>
<td>10</td>
</tr>
<tr>
<td>Montreal Island – West End</td>
<td>50</td>
</tr>
<tr>
<td>Town of Mount Royal</td>
<td>20</td>
</tr>
<tr>
<td>Saint-Laurent</td>
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<tr>
<td>Montreal Island – South West</td>
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<td>Lachine</td>
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<td>LaSalle</td>
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<tr>
<td>Montreal – West Island</td>
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</tr>
<tr>
<td>Pointe-Claire</td>
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<tr>
<td>Montreal Island</td>
<td>1,645</td>
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<tr>
<td>Laval</td>
<td>50</td>
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### Employment by Borough and City — Rubber

<table>
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<tr>
<th>Borough and City</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montreal Island – East End</td>
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</tr>
<tr>
<td>Anjou</td>
<td>40</td>
</tr>
<tr>
<td>Montréal-Nord</td>
<td>90</td>
</tr>
<tr>
<td>Montreal Island – Central Core</td>
<td>70</td>
</tr>
<tr>
<td>Ahuntsic/Cartierville</td>
<td>15</td>
</tr>
<tr>
<td>Outremont</td>
<td>10</td>
</tr>
<tr>
<td>Villeray/Saint-Michel/Parc-Extension</td>
<td>50</td>
</tr>
<tr>
<td>Côte-des-Neiges/Notre-Dame-de-Grâce</td>
<td>10</td>
</tr>
<tr>
<td>Montreal Island – West End</td>
<td>150</td>
</tr>
<tr>
<td>Town of Mount Royal</td>
<td>15</td>
</tr>
<tr>
<td>Saint-Laurent</td>
<td>135</td>
</tr>
<tr>
<td>Montreal Island – South West</td>
<td>60</td>
</tr>
<tr>
<td>LaSalle</td>
<td>60</td>
</tr>
<tr>
<td>Montreal – West Island</td>
<td>25</td>
</tr>
<tr>
<td>Dorval/L’Île-Dorval</td>
<td>15</td>
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<tr>
<td>Beaconsfield/Baie-d’Urfé</td>
<td>10</td>
</tr>
<tr>
<td>Montreal Island</td>
<td>495</td>
</tr>
<tr>
<td>Laval</td>
<td>195</td>
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</tbody>
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1. Individuals 15 years of age or older who have a regular workplace or who work from home. People who have no fixed address are not included.

N.B.: Figures were rounded to the closest multiple of 5; they may therefore not add up exactly to the sum of the components.

Source: Statistics Canada, Employment by Place of Work, 2001 Census – Figures on Refining represent the total of NAICS code 324 and those on Rubber represent the total of NAICS code 3262.
Employment\(^1\) by Borough and City — Plastics

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<td>Montréal-Est (former city)</td>
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<td>Anjou</td>
<td>325</td>
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<td>Montréal-Nord</td>
<td>125</td>
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<tr>
<td>Saint-Léonard</td>
<td>1,030</td>
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<tr>
<td><strong>Montreal Island – Central Core</strong></td>
<td><strong>1,385</strong></td>
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<tr>
<td>Mercier/Hochelaga-Maisonneuve</td>
<td>300</td>
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<tr>
<td>Ahuntsic/Cartierville</td>
<td>170</td>
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<tr>
<td>Plateau Mont-Royal</td>
<td>45</td>
</tr>
<tr>
<td>Rosemont/Petite-Patrie</td>
<td>70</td>
</tr>
<tr>
<td>Ville-Marie</td>
<td>200</td>
</tr>
<tr>
<td>Villeray/Saint-Michel/Parc-Extension</td>
<td>175</td>
</tr>
<tr>
<td>Sud-Ouest</td>
<td>120</td>
</tr>
<tr>
<td>Côte-des-Neiges/Notre-Dame-de-Grâce</td>
<td>305</td>
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<tr>
<td><strong>Montreal Island – West End</strong></td>
<td><strong>1,685</strong></td>
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<tr>
<td>Town of Mount Royal</td>
<td>160</td>
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<tr>
<td>Saint-Laurent</td>
<td>1515</td>
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<tr>
<td><strong>Montreal Island – South West</strong></td>
<td><strong>635</strong></td>
</tr>
<tr>
<td>Lachine</td>
<td>430</td>
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<tr>
<td>LaSalle</td>
<td>180</td>
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<tr>
<td>Verdun</td>
<td>25</td>
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<tr>
<td><strong>Montreal – West Island</strong></td>
<td><strong>1,300</strong></td>
</tr>
<tr>
<td>Dollard-des-Ormeaux/Roxboro</td>
<td>10</td>
</tr>
<tr>
<td>Dorval/L’Île-Dorval</td>
<td>260</td>
</tr>
<tr>
<td>Pointe-Claire</td>
<td>485</td>
</tr>
<tr>
<td>Kirkland</td>
<td>30</td>
</tr>
<tr>
<td>Beaconsfield/Baie-d’Urfé</td>
<td>490</td>
</tr>
<tr>
<td>Pierrefonds/Senneville</td>
<td>15</td>
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<tr>
<td>L’Île-Bizard/Ste-Geneviève/Ste-Anne-de-Bellevue</td>
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<td><strong>Montreal Island</strong></td>
<td><strong>7,105</strong></td>
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<tr>
<td>Laval</td>
<td>1,320</td>
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<td><strong>Montreal Metropolitan Area</strong></td>
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<table>
<thead>
<tr>
<th>Province</th>
<th>Employment</th>
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</tr>
<tr>
<td>Canada</td>
<td>87,015</td>
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\(^1\) Individuals 15 years of age or older who have a regular workplace or who work from home. People who have no fixed address are not included.

N.B.: Figures were rounded to the closest multiple of 5; they may therefore not add up exactly to the sum of the components.

Source: Statistics Canada, Employment by Place of Work, 2001 Census — Figures on Plastics represent the total of NAICS code 3261.
Configuration
Industrial Chain
Petrochemicals

Strongly reliant on the import of raw materials and exporting the majority of its production, the petrochemical industry in Quebec has had to deal with difficult world market conditions over the last few years. The current rise in oil prices, due partly to the growing demand in China and to geopolitical tensions in the Middle East, will undoubtedly have repercussions on the profitability of North America’s petrochemical industry and related industries.

A dynamic entity

Today, after being caught up in a wave of consolidation, Quebec’s petrochemicals-refining cluster forms a solid and dynamic entity. It comprises three refineries and about twenty petrochemical companies. Most of the petrochemical facilities are located in the Montreal area and are essentially subsidiaries of Canadian, U.S. and European multinationals.

In 2002, according to statistics published by the Quebec Ministry of Economic and Regional Development and Research (MDERR), the industry generates approximately 2,800 jobs. For that same year, shipments for this sector represented over $2 billion and exports, $750 million. Over 80% of petrochemical sector production (excluding refining) is exported, 86% of this to the United States.

The size of the petrochemicals-refining cluster is small compared to its counterpart on the American coast of the Gulf of Mexico. Despite this, the petrochemical industry is competitive, thanks to cutting-edge technology, skilled labour and advantageous operating costs. Given the magnitude of raw material imports, however, Montreal’s petrochemical centre is less integrated, less focused on basic products, and has very little product diversification.

The main petrochemical products can be found in a vast range of applications in construction (insulation, adhesives, structural shapes), packaging (films, cushioning material), chemicals (inks, lubricants, additives), transport (chassis and body parts, engine parts), aeronautics (composites, paints and surface treatments) and textiles (manmade fibres).

To increase the industry’s competitiveness, Quebec has set up a business environment that favours cooperation, training—industry matching, innovation, financing and marketing. The activities of these organizations are explained in more detail in the Development Factors section.

Refined Oil — The Shell and Petro-Canada refineries are located in the Montreal area, while Ultramar’s operations are based in Lévis. These refineries provide 40% of the raw materials required for the integrated manufacturing of petrochemical products in the petrochemical cluster of Montreal’s East End and Varennes. This means that manufacturers must procure raw materials from shipments arriving by sea to the east coast of the United States.

Quebec refiners target the markets of Eastern Ontario and the Northeastern United States. Quebec’s oil industry is a mature industry with very low profit margins. The geographic location of Quebec’s refineries means they have to face stiff competition and deal with the effects of globalization (arrival of low-priced gasoline or crude oil from various countries). Nevertheless, from a production efficiency standpoint, they compare favourably with refineries in the rest
of Canada. The survival and future development of the refining sector are thus all the more important, since the competitiveness of the petrochemical sector is strongly linked to them.

In this context, if Quebec is to play its cards right, it must encourage synergy and integration between the refining and petrochemical industries, ensure the production capacity of world-class units and focus its development strategies on higher value-added activities.

**Industrial gases** — This sector covers all the gases that can be processed in plants, with the exception of natural gas obtained from gas or oil operations. These gases include nitrogen, oxygen, hydrogen and argon. The sector supplies large chemical and petrochemical manufacturers as well as other manufacturing sectors such as metallurgy and agri-food. The gases can be separated in the plant, or they can be by-products of an industrial process or extracted from the air. Depending on the volume of gas required, companies can choose to be supplied by tanks or cylinders. Some companies sometimes require an on-site industrial gas production unit in order to have a constant supply of gas. The industrial gases sector, which is considered competitive, comprises 14 companies in Quebec, four of which are located on CMM territory.

**Primary petrochemicals**

The petrochemical industry in Quebec includes approximately twenty companies in the primary and secondary petrochemicals field. They are mostly subsidiaries of Canadian, U.S. and European multinationals, the majority of which are situated in the East End of Montreal.

They are connected by a pipeline system to the refineries, with which they exchange products and raw materials, but they are also largely dependent on outside supplies, especially of natural gas from Western Canada. These companies produce primary petrochemical products: olefins (ethylene, propylene, butylene) and aromatics (benzene, toluene, xylene). The products of these two sectors, processed into chemical products, polymers and resins, are present in a wide variety of applications, from construction to packaging, transportation, chemicals, aeronautics and electronics.

Several levels of processing are therefore required to end up with a finished product made from natural gas or crude oil. Each processing stage is usually carried out in a specific plant. To reduce production costs, petrochemical product manufacturers tend to invest in large plants that are increasingly integrated.

Some of these production activities are said to be integrated, because the plants weave strong webs amongst themselves and become reliant on the production of the others. They are generally located close to one another (Montreal’s East End, Varennes) and exchange materials via specialized trains or pipelines.

**Olefins network** — Quebec has a sole producer: Pétromont. The company operates two plants on CMM territory, in Varennes and in the East End. Although it is at the centre of the Quebec petrochemical industry, the Varennes olefin plant currently has two disadvantages compared with plants on the U.S. coast of the Gulf of Mexico: the price of raw materials and the cost of manufacturing. The latter cost is due to the size of the plant, which is half the size of a global-scale facility.
Access to natural gas from Canada’s east coast (Sable Island) and from Western Canada via Sarnia would probably enable Pétromont to negotiate better prices and be more competitive. A global-scale olefin plant would also allow Pétromont to become as competitive as U.S. producers and to weather economic cycles more easily.

**Aromatics network** — This has been one of the most well developed areas in the last five years, with total investments of over $1 billion. The MDERR and the SGF have contributed to setting up integrated structuring projects that mutually supply each other (see Development Factors section). This network is thus one of the CMM’s key assets.

The main players in the CMM aromatics network are located in or near the East End:

- Interquisa Canada (partnership between SGF Chimie and the Spanish group CEPSA), whose plant, inaugurated in November 2003, produces purified terephthalic acid, which becomes a raw material for making PET plastic (for plastic containers).

- As this plant requires the raw material paraxylene, the creation of Interquisa Canada enabled Coastal Petrochemical to restart production of paraxylene and benzene.

- PTT Poly Canada (Shell and SGF Chimie partnership), set to open a world-class plant in the fall, will use a part of Interquisa Canada’s production to make PTT (polytrimethylene terephthalate) for the textile market.

- Petro-Canada (petrochemical operations integrated into its refining operations). Producer of benzene, toluene and xylene, this company supplies Coastal with a portion of the xylene needed to operate its global-scale paraxylene unit.

- Outside the CMM, Petresa Canada, subsidiary of the Spanish group CEPSA, located in Bécancour, produces LAB (linear alkyl benzene), an intermediate chemical involved in the manufacture of detergents. In the past, this type of benzene was exported without being processed. The company also uses benzene from Petro-Canada. Situated in Napierville, the firm Recochem is a major importer of naphtalene.

**Secondary petrochemicals**

Other petrochemical companies, subsidiaries of so-called non-integrated multinationals, specialize in secondary petrochemicals. All of them, except for Basell and Pétromont, obtain their supplies of raw materials from outside Quebec and produce resins, polymers and other products known as intermediary chemicals, such as ethylene glycol and PTT. Some of the largest employers on the CMM territory include Basell, Dow Chemicals, Solutia and Dynea.

The companies from the refining-petrochemicals cluster are quite competitive because of their cutting-edge technology and high productivity; however, none in Quebec, apart from PTT Poly Canada, can be qualified as world-class, as their production volumes are well below those of their U.S. competitors.

With respect to by-products and polymers, Quebec could attract investment in the manufacture of innovative products (specialized polymers, biopolymers and composite wood/polymer fibres) destined for the North American market. High-performance polymers and engineering polymers
could penetrate the markets hitherto reserved for traditional polymers, especially since their production no longer depends solely on petrochemical products. They can now be made from renewable resources, such as agricultural discharge or inorganic compounds.

**Massive recruitment needed**

Being a process industry, petrochemicals requires a highly specialized workforce. A study carried out by the Comité sectoriel de la main-d’œuvre de la chimie, de la petrochemicals et du raffinage (chemical, petrochemical and refining labour sector committee) found that the petrochemicals workforce is generally older and has more seniority than that of the chemicals industry. Over the next five years, the industry will need to mass recruit around 200 college graduates with diplomas in one of the three chemical specializations, half of whom need to be trained in techniques and processes. It is highly likely that we will see a major shift of the most highly-skilled process technicians from jobs in other companies towards the refining and petrochemicals sector, which offers better working conditions.

**Development outlook**

Quebec’s petrochemical industry is doing a good job positioning itself on the North American marketplace. It has several advantages over its competitors when it comes to attracting investors, including:

- An advantageous geographic location from which it can serve the markets of Eastern Canada and the Northwestern and Midwestern United States, access via the Saint-Lawrence seaway and an extensive north-south and east-west rail network linked to an efficient inter-modal transport system;

- Skilled labour (35.4% less costly than in the United States) and advantageous operating costs (11.7% lower than in the United States);

- Advantageous tax programs linked to R&D, even though no petrochemical R&D is currently being done in Quebec;

- Electricity supplied at relatively low and stable cost.

However, the development of the petrochemical industry in Quebec is hindered by the fact that most raw materials must be imported. Furthermore, Quebec’s low demographic load puts the province at a disadvantage when local sales are a factor in the choice of location for a major investment.

The forthcoming construction of a gas pipeline giving access to natural gas from the Maritimes and the potential of oil and gas reserves in Eastern Quebec could generate investments in this sector.
Chemicals

The chemical industry, which has close ties with the refining-petrochemicals cluster, is the tenth-largest manufacturing sector in Quebec. A key industry in the province’s economy, it transforms raw materials into products that we all use on a daily basis. These products are found everywhere – in cosmetics, transportation, textiles, pulp and paper, construction, food, electronics and the environment.

In 2002, the chemical industry represented 16% of Canadian shipments of chemical products and 15% of shipments of inorganic products (excluding pharmaceuticals). Close to 45% of its production is exported. Quebec shipments and Canadian exports from Quebec amount to $4.76 billion and $2.2 billion respectively.

Eighty percent of the industry is made up of SMBs employing 50 people or less. Its 350 companies employ almost 15,600 highly skilled workers, specializing in chemicals, engineering and computing. According to Statistics Canada, the chemicals industry employs more university graduates than any other manufacturing industry.

Quebec offers a business environment that encourages the development and competitiveness of this industry. Public and private organizations, associations, research and development resources and training centres all work to facilitate networking and synergy throughout the industry. They are presented in the Development Factors section.

The MDERR classifies the chemical industry into 40 sectors, from additives to paints and varnishes to toiletry products. The cluster’s structure diagram (page 5) shows the different sectors of the chemical industry located on CMM territory. There are detailed cells for each industrial sector.

The companies listed in the chemical sector were identified using the MDERR directory for Quebec chemical industry sectors.

Organic chemicals

Fine chemicals — These are active ingredients for the pharmaceutical, neutraceutical, cosmeceutical and cosmetics industries. This sector is both deficient and competitive at the same time. Its companies are highly productive, but there are very few of them. The critical mass is insufficient for the local market. The sector is characterized by small production volumes with high added value. Considerable R&D is carried out, since the current market is well-balanced and growth is achieved through the development of new products. The largest company on CMM territory is Delmar, in Lasalle, with 60 employees.

Plasticizers — The sector of additives for petrochemicals and plastics includes companies that make products that are added to basic products, such as lubricants, gasoline or plastic resins, to alter their chemical or physical properties. For plastic resins, for example, there are fire-resistant products, plasticizers and antioxidants. Only one Montreal company, Blachford, makes additives for rubber and plastics.
**Inorganic chemicals**

**Pigments** — This sector comprises companies making titanium oxide pigments for the paint, plastics, rubber and paper industries. (Lead chromate and lead and iron oxide pigments are not made in Quebec.) They are considered inorganic because they are made from minerals containing titanium, iron and lead oxides. There are three such businesses in Quebec, two of which are situated in the CMM. The largest is Kronos, in Varennes, with 420 employees. Quebec does not have the critical mass necessary for more companies, so there is no real market to develop.

**Halogen components** — Halogens are chemical components containing fluorine, chlorine, bromine or iodine. Quebec is a key producer of halogen components, especially chlorine, caustic soda and hydrochloric acid, which are destined for various industrial markets, and sodium chlorate, which is used by the paper industry to bleach pulp. There is only one such company on CMM territory: Eaglebrook, in Varennes. The vast majority of these firms are located in the western Montérégie region, primarily in Beauharnois and Salaberry-de-Valleyfield. The largest, with around 175 employees, has set up operations in Bécancour, in the Central Quebec region.

**Formulated products**

This sector includes 276 companies in Quebec, 80% of which are SMBs with fewer than 50 employees. Most have to buy their raw materials elsewhere, from the United States or Europe, which weakens their position. They lack support for product development and therefore do very little research and have few value-added products. They also lack the financial backing to modernize their equipment. The sector also appears to suffer from weaknesses in management, know-how and communications.

The challenges for these businesses are to develop specialized products and to export — approximately 45% of them do not export. They seem to be sufficient for local market needs. They need to work together and develop niches (resins for particle boards, specialty products, pulp and paper, powder paint, waste water treatment, agri-food, etc.).

**Adhesives** — This sector includes companies making adhesives and sealing agents for the packaging, automobile, construction, furniture and electronics industries. These are essentially products formulated from a mixture of pigments, plasticizers, fillers, polymers and various chemical additives.

This sector is deemed competitive. There are 26 companies in Quebec, 19 of which are in the CMM. Three of them employ more than fifty people: Mapei in Laval (162 employees), Nacan Products in Boucherville (78 employees) and the Dural division of De Multibond, in Dorval (75 employees).

**Additives** — These include producers of additives for the food, concrete, metals, petrochemicals and plastics sectors. There are no metal additive manufacturers in Quebec, however. In general, this sector is deficient here, and there is great potential for product development, particularly in the agri-food industry.

One food additive firm operates on CMM territory: BGR Chemical Products in Pointe-Claire (15 employees). Three specialize in concrete additives, the largest of which is Handy Chemicals in Candiac (100 employees). Finally, in the field of petrochemicals and plastics, there are three
companies producing additives based in Montreal: Blachford (31 employees), Aderco Chemical Products (7 employees), and Fabricants Adex (4 employees). Dow Chemical in Varennes (135 employees), which produces latex SBR, primarily for the pulp and paper industry, can also be added to this list.

Cement — This category includes companies that make clinker, Portland cement and masonry cement for the construction industry and civil engineering works. This sector is considered competitive and there are sufficient companies to meet local market needs. There are two firms in the CMM: Ciment Québec in Saint-Basile Sud (200 employees) and Lafarge Canada in Saint-Constant (104 employees).

Inks — Inks are mixtures of pigments dispersed in resins, oils, solvents, water and various chemical additives. They are used in printing processes and to produce books, forms, catalogues, packaging, etc. It is a competitive sector. Quebec houses 10 companies, of which 8 are in the CMM. The two largest are Schmidt Printing Inks in Saint-Laurent (66 employees) and Sun Chemical in Boucherville (43 employees), which also has a subsidiary in Anjou (23 employees).

Explosives — This category comprises manufacturers of commercial explosives for the construction and mining industries, as well as producers of powder propellant, pyrotechnic devices, detonating cords and percussion detonators for commercial and military applications. Twelve companies specialize in explosives in Quebec, but none are situated on the territory of Montreal. Just on the edge of the CMM, however, are Expro Technologies in Salaberry-de-Valleyfield (500 employees) and SNC Technologies in Repentigny (540 employees). They are competitive enterprises.

Paints — This sector includes companies producing paints for the residential, commercial and industrial sectors, and those manufacturing powder paints for the metal products industry, as well as fillers, lacquer primers, shellacs, varnishes and stains for the woodworking industry. This segment is considered competitive. Of the 45 enterprises in Quebec, 23 are situated in the CMM, including major firms such as Sico in Longueuil (325 employees) one of the province’s rare international players in this sector, Protech Chemicals in Saint-Laurent (140 employees) and Bétonel in Terrebonne (100 employees).

Cleaning products — These are manufacturers of detergents and specifically formulated cleaning products for the domestic, industrial, institutional and commercial markets. Quebec is home to 73 firms, 54 of which are in the CMM. In this sector, there is one small plant belonging to the multinational Colgate Palmolive in Laval (10 employees) operating alongside Canadian firms such as Lavo in Montreal (180 employees), Avmor Group in Laval (123 employees), Recochem in Saint-Laurent (185 employees) and others with fewer than 50 employees. This sector is considered competitive.

Personal care products — This group includes manufacturers of personal hygiene products such as shampoo, hair products, skincare products and bath products, perfumes (all kinds, from eau-de toilettes to colognes), cosmetics (make-up and nail care products). This sector comprises both multinationals and SMBs. Among the 50 firms in the CMM, the largest are Avon Canada in Pointe-Claire (801 employees), Johnson & Johnson in Montreal (800 employees) and L’Oréal Canada in Saint-Laurent (400 employees). This is considered a competitive sector.
Specialty products — This sector comprises manufacturers of lubricants, fertilizers, fragrances, pesticides and specialty products for textiles, among others. Certain products are not made in Quebec and must therefore be imported. These include ammonia, phosphorus, synthesis intermediates, surfactants, chlorines and by-products. It does not seem worthwhile for Quebec to develop these sectors right now.

Lubricants — These include producers of lubricant preparations, with or without crude oil, for the transport, leather processing and textile materials industries, as well as manufacturers of lubricating oils and fluids for brakes and hydraulic transmissions. The CMM houses seven companies, all of which employ fewer than fifty people. The largest is Tribospec in LaSalle (30 employees). This is considered a competitive sector.

Fertilizers — These include a small number of multinationals that manufacture primary nutrients derived from nitrogen, phosphorus and potassium for crops. These primary nutrients are integrated into the manufacture of mixed fertilizers by regional businesses catering to farmers. On the CMM territory, we find mainly SMBs employing between 6 and 20 people. There is practically no growth in Quebec, and the sector is considered deficient.

Flavourings and fragrances — This sector comprises manufacturers of artificial and natural aromas, flavours and fragrances. Its main markets are in food, cosmetics, toiletry products, soaps, detergents, wax and various cleaners. Quebec is a small market, home to only five companies, two of which are on CMM territory.

Pesticides — This sector includes herbicides, insecticides and fungicides. The herbicide market is the largest in terms of volume and sales. A very small number of multinationals dominate this sector, which has high technological content and is heavily reliant on the input of synthetic organic products. Two firms are located in the CMM, Interag in Vaudreuil Dorion (6 employees) and Produits chimiques Supérieurs in Laval (5 employees). This sector is considered deficient, with practically no growth in Quebec.

Specialty products for textiles — In this category we find manufacturers of industrial chemical preparations for the treatment of textiles and water and for paper manufacturing. They are fairly similar to chemical specialty products, so most manufacturers serve all three markets. The sector is primarily made up of SMBs (fewer than 50 employees), which have to compete with the multinationals. Quebec has 22 companies, of which 12 are situated on CMM territory. The largest are Tri-Tex in Saint-Eustache (160 employees) and ADM/Ogilvie in Candiac (100 employees).
The presence of the petrochemical and chemical industries in Quebec has stimulated the development of a plastics industry. This industry is particularly dynamic and has been growing rapidly since 1995, with an annual increase in shipments of 8.6%. According to MDERR statistics, shipments in 2002 amounted to $3.6 billion. Quebec exports have risen annually by 12.9% since 1995, which is almost double the figure for the province's manufacturing sector as a whole (6.9%). In 2001, these exports stood at $1.7 billion, an increase of more than 20% over 1999. Investments also grew: $160 million was invested in 1999, representing a rise of $6 million compared to the previous year. Of these sums invested, 85% was spent on machinery and equipment, and the rest on infrastructure construction.

In 2002, the plastics industry in Quebec comprised 567 businesses and some 30,000 jobs, almost 77% of which were in plastic materials processing and 23% in composite materials processing. The vast majority of these businesses were SMBs. Around 75% of them had fewer than 50 employees and their business volume varied between $500,000 and $10 million. The industry in Quebec is now facing a serious shortage of specialized labour.

The plastics industry in Quebec is concentrated in the Montreal area and in Montérégie, which account for almost half the companies and available jobs. This concentration on CMM territory is an undeniable asset for local economic development. The Quebec CityChaudière-Appalaches region ranks second in Quebec for its concentration of businesses, particularly those involved in composite materials processing. The sub-sector comprises 130 companies, 26 of which manufacture composites.

**Promising outlook**

Although the plastics industry is relatively fragmented, its main processing activities are packaging (semi-rigid, rigid, flexible), representing approximately 47% of shipments, construction (exterior siding, doors and windows, insulation products, plumbing fixtures, tubes, hoses and sockets), 29%, and transportation (car parts, heavy trucks and aeronautics), 5%. As the trend is towards lighter vehicles, there may be promising future outlets for parts made of plastic and composite materials in this field. Over 80% of industry shipments are for the above-mentioned markets, while the rest are destined for electronics, household, recreational and advertising items, and furniture.

Plastics and composite materials are constantly evolving in terms of substances and methods. They contribute to the industry’s growth and constitute a solution for the future as they continue to replace other materials. The large number of aeronautical firms in the CMM provides the plastics companies with a natural client base. The same goes for packaging, since several major industries such as food and chemicals are increasingly using plastic containers instead of those made of metal, glass or cardboard.

**Challenges to be met**

The rise in the cost of raw materials will have repercussions on the whole plastics sector (higher resin prices). This is a sizeable challenge for companies, who will have to face reduced profit
margins. Naturally, this price rise is cyclical and impacts the industry both at home and abroad. Plastics manufacturers must also deal with increasingly fierce international competition, especially from China.

The industry also has other concerns:

- The massive introduction of leading-edge processing equipment;
- Access to skilled labour;
- The development of exports;
- The introduction of value-added production;
- The drop in productivity deficit;
- The importance of innovation for developing products and applications in niche markets.

Although the industry devotes much of its efforts to recycling materials, it still recycles comparatively little. According to MDERR statistics, the industry recycles around 6% of its materials, compared with 60% in Europe. It is worth mentioning however, that the Lavergne Group in Anjou, with 200 employees, ranks third in North America in the processing of resins from post-consumer recycled plastics, virgin plastics and PET plastic sheets.

### A research network

The industry has an R&D network at its disposal, which includes the Industrial Materials Institute (IMI), the Centre de recherche industrielle du Québec (Quebec industrial research centre – CRIQ), the Composite Materials Centre in Saint-Jérôme (CMC) and several universities. However, the SMBs do not really have access to these bodies, as the costs are often too high for them. They therefore need to develop alliances and networking. For more details, see the following section on Development Factors.
Development Factors
Research

The majority of companies in the refining-petrochemicals cluster are subsidiaries of Canadian (Pétromont, Nova), American (Dow Chemical) or European (Shell) multinationals. They use high-tech procedures that have generally been developed outside Quebec and Canada. For efficiency, their R&D activities are situated close to their head offices. Quebec establishments concentrate more on concretizing specific technical applications for their clients. Some companies collaborate with university partners on R&D projects in order to improve their environmental performance.

The MDERR estimates that around 30% of Quebec’s chemical companies carry out R&D activities, for total spending in 2001 of around $35 million, which is less than the average amount for the manufacturing sector as a whole. It is not as if resources are lacking in this field – some 50 players (research centres, universities, the ICP) offer their expertise to firms in the chemical industry – but it is rather a result of the fact that 80% of the companies in the sector are SMBs that make little use of these resources because they do not know much about them and because the costs involved are often too high.

The ICP (Institute of Chemicals and Petrochemicals) also offers technology transfer services through its Centre d’études des procédés chimiques du Québec (Quebec chemical processes study centre – CÉPROCQ). It is primarily aimed at SMBs, to help them develop lower-cost research and development projects.

Along with the Centre de recherche industrielle du Québec (Quebec industrial research centre – CRIQ) the CÉPROCQ is a founding member of the chemicals network a watchdog previously set up by the MDERR, then known as the Ministère de l’Industrie et du Commerce (Department of Industry and Commerce – MIC). Although this service is of interest to the SMBs, they still hesitate to pay for this strategic information. Ongoing efforts are being made to increase awareness in this respect among SMBs.

Businesses can also call on the CRIQ for R&D and marketing development. The CRIQ’s R&D activities are focused on manufacturing technologies in the sectors of automation procedures, environment technology and industrial equipment development.

In addition, there are about thirty private laboratories operating on CMM territory, such as Bodycote in Pointe-Claire and Labo SM in Varennes, carrying out trials and analyses of materials.

Among the universities in the CMM area, there are the chemical engineering department of the École Polytechnique de Montréal and its applied polymer research centre (CRASP), which work on composite materials, plastic wear and gear performance. The school also houses a thermochemical calculation research centre (CRCT) and a gas technology research group (GREG), which participate in applied research projects in collaboration with the industry and other partners.

The Université de Montréal has a Canada Research Chair in polymeric biomaterials for use in the biomedical and pharmaceutical industries and industry in general.
Meanwhile, Concordia University houses a Centre for Composites associated with its mechanical engineering department, including a laboratory conducting trials and analyses of plastics and composites.

Founded in 1978, the Industrial Materials Institute (IMI) of the Canada National Research Council (CNRC) in Boucherville, is a research and development centre focusing on materials, their shaping and formulation, and process control. It offers R&D services centred on metals, polymers, ceramics, including composites and alloys. Every year the institute works with close to 150 partners on more than 200 projects.

Industry representatives can also benefit from tax credit programs for scientific research and experimental development. Federal programs include the NRC's Industrial Research Assistance Program and the programs offered by the Business Development Bank of Canada and Technology Partnerships Canada, while provincially, there is the Impact PME program, designed to help small businesses develop their markets and exports; which includes an innovation component, and the Programme d’aide à la concrétisation des projets d’investissements (PACPI) which helps companies carry out investment projects by assuming a part of the costs of feasibility studies.

Training

The Comité sectoriel de la main-d’oeuvre de la chimie, de la pétrochimie et du raffinage (chemicals, petrochemicals and refining workforce sector committee) is responsible for evaluating the labour training needs of these industrial sectors. According to a recent study, this committee estimates that over the next five years, the industry will need to recruit some 200 college and Cégep graduates.

Technical courses — The mandate of the Institut de chimie et de pétrochimie (chemicals and petrochemicals institute – ICP) of the Collège Maisonneuve in Montreal, created in 1990, is to meet all training needs relating to the implementation and use of chemical processes. It offers Cégep-level training and career development courses, as well as services adapted to each company’s needs, namely information, project evaluation, technical support and research. Its flexible training programs are adapted to the needs of future employers. The ICP’s programs are aimed at four types of clientele:

- Young high school graduates looking at going into a 3-year vocational Cégep program in chemical processes;

- Adults who are changing careers or going back to school, and who can obtain an attestation of collegial studies in a year and a half;

- Current industry employees, who can come to the ICP for specific professional courses with personal tutoring. This method boosts and adds value to their professional experience and at the same time provides them with the extra training they need;

- An international clientele from the training or industry sector hoping to use the ICP’s various services (technical support, academic projects, applied research implementation).
Labour training coordination for the plastics industry is assured by Plasticompétences, in partnership with Emploi-Québec. No fewer than 21 establishments offer sector-specific vocational and technical training. There are five specialized institutions (vocational schools) in the CMM area, including Cégep Ahuntsic – the only Cégep in the province to offer a diploma in processing techniques for plastic materials.

As a result of its growth and the increasingly specialized knowledge required, however, the industry is suffering from a severe labour shortage. Plasticompétences has predicted an annual employment growth of 3% from 2003 to 2005. The group believes that the industry will need to hire more than 800 workers each year to guarantee its expansion.

University training — In the university network, the École Polytechnique de Montréal offers a program in chemical engineering and a new program with a major in plastics. Meanwhile, the Université de Montréal runs undergrad and graduate degree programs in chemistry, and McGill University offers bachelor’s, master’s and doctorate level degrees in the same field. Financing

Financing

The Société générale de financement (SGF), with its subsidiary, SGF Chimie, acts as a development partner to the petrochemical, chemical and plastics industries. It mainly backs major projects of more than $100 million having high technological impact and strong added value, often in collaboration with Québec and foreign partners, for example Shell (Netherlands), Dow Chemical (United States) and the CEPSA group (Spain).

For projects of under $100 million, there are over thirty venture capital companies, such as the Fonds de solidarité FTQ, the Caisse de Dépôt, Desjardins Venture Capital, etc. However, those that finance the petrochemicals/chemicals/plastics sectors are rare, to the point that some players readily admit that these three sectors appear to be short-changed. In 2003, of the hundred or so companies listed in Québec, the Réseau Capital bulletin No. 1, Vol. 14, mentions only one company from the plastics sector – Interplast, of Terrebonne, a container manufacturer as having received an amount of $1 million, half from the FTQ Laurentides and and half from FTQ Laval, for the development of plastic products.

Alternatively, whether it be for business start-up or market development, companies can seek the help of federal and provincial government financial assistance programs or those of organizations such as the Business Development Bank of Canada and Export Development Canada. It is also worth mentioning the market development programs offered by the MDERR, such as the Programme d’aide à la diversification des marchés dans les Amériques (assistance program for market diversification in the Americas) under Québec’s Decade for the Americas program. These seem to be little used by the SMBs, as when they export, they still do so in large part to the United States.
Structuring Organizations

The Table de concertation pour l’industrie de la pétrochimie et du raffinage (petrochemical and refining industry issues table) was set up in 1992. Coordinated by the MDERR and the Ministry of Natural Resources, it brings together some twenty decision-makers from these two sectors as well as representatives of associations and consulting engineering firms, who meet twice a year to discuss actions to be taken for industry development. Its mission also consists in strengthening the integration of these two industries to achieve a larger critical mass and improve productivity.

In 1995, the Comité sectoriel de main-d’œuvre de la chemicals, de la pétrochimie et du raffinage du Québec (chemical, petrochemical and refining labour sector committee) was created in collaboration with the MDERR, Emploi-Québec and Human Resources Development Canada. This committee analyzes the training needs of these industries and takes action to meet these needs. It also offers employers training support and backs them in their pursuit of quality.

There is no issues table for plastics but, as previously mentioned, Plasticompétences acts as a sector committee for labour training. Furthermore, in 2003, the Canadian Plastics Industry Association (CPIA), with the help of Canada Economic Development, launched a number of regional tables on productivity and innovation in the plastics industry. One of the primary aims of these tables is to expand the productivity of SMBs and to raise them to a world-class level.

The first regional table was set up in the Québec-Chaudière-Appalaches region in February 2003. Four others were formed in Laval-Lanaudière-Laurentians (September 2003), metropolitan Montreal (November 2003), the Eastern Townships (March 2004), and Montérégie-Centre-du-Québec (June 2004). Each table is composed of about a dozen plastics companies, which can rely on experts in innovation and productivity. They benefit from a structured approach to improving productivity, including an analysis of competitiveness and an action plan.

Associations

Associations play a major role in promoting and developing their industry both at the various levels of government and in the eye of the general public.

The Association pour le développement de l’industrie chimique québécoise (Québec chemical industry development association – ADICQ), created in 1992 in Repentigny with the backing of the MDERR, comprises 80 small businesses from various sub-sectors in chemicals, basic chemicals and compounders. Its mission is to represent its members at the government level and to develop a network involving all the stakeholders in the sector (research centres, socio-economic partners).
Each year, in partnership with the MDERR, the Association organizes the Forum de l’industrie chimique québécoise (Québec chemical industry forum). The 4th edition was held in May 2004. This modest-size event attracts about 150 visitors, mostly from SMBs. The Forum is a meeting place for companies, allowing them to exchange ideas and focus on the issues at stake. The two partners would like to enlarge the event to attract more international visitors. They are working with the organizers of the Interchimie trade shows in France, in an attempt to attract them to Québec in 2006.

Meanwhile, the Canadian Chemical Producers’ Association (CCPA) represents the interests of the larger companies. It has 70 member companies with over 200 plants in Canada, representing 90% of chemical products manufactured. It has four regional offices across Canada, including one in Québec, located in Montreal. Its current concerns relate to competitiveness, trade, the environment, transportation and safety. The Canadian Paint Association also plays a key role in this sector.

Associations also play an active part in the plastics sector, notably the Canadian Plastics Industry Association (CPIA), which plays a major role. It has offices in Montreal and over 110 members throughout Québec, including plastic products manufacturers, raw materials manufacturers, machinery and equipment manufacturers, mould makers and industrial consulting firms.

Another related association is the Society of Plastics Engineers (SPE), in Westmount, with 450 members in Québec, including technicians, researchers, students and managers. It holds technical seminars in addition to its well-known scientific and technical annual conference, ANTEC. Other associations are the Packaging Association of Canada, in Sainte-Thérèse, the Canadian Association for Composite Structures & Materials (CACSMA), in Boucherville, and the Regroupement des industries des composites du Québec (Québec composite industries group) in Saint-Jérôme (outside the CMM), whose goal is to improve communication with respect to environmental impacts.

Specialized Services

Consulting engineering — One of Québec’s largest consulting engineering firms is SNC-Lavalin Group, in Montreal, which plays a key role in the implementation of major projects: engineering cost estimates, management, etc. It was involved in the installation of Interquisa and PTT Poly. It also works in collaboration with Tecsult on environmental issues. These large firms export their services throughout the world. There are of course other, much smaller consulting firms which offer engineering expertise as well.

Additional expertise — In the chemicals sector, there are a number of experts within the CMM that offer specialized services in fields as diverse as compliance with environmental regulations (Kemika XXI, in Blainville), health and safety (Prévention Formation SST, THESE
Solutions, in Montreal), and the transportation of chemical products (DG – Maestro, in Saint-Hubert). These experts work with an international network of partners on five continents.

There are also other Canadian organizations offering services to the chemical industry. The mandate of the Chemical Institute of Canada, headquartered in Ottawa, is to promote common scientific and technical interests and provide services to all its members in Canada. The Institute has 26 different local sections, each one responsible for local activities and networking. The Institute is actually a federation of three societies: the Canadian Society for Chemistry (CSC), the Canadian Society for Chemical Engineering (CSChE) and the Canadian Society for Chemical Technology (CSCT). The Institute has 5,700 members, including chemists, chemical engineers and chemical technologists working in the industry, in governments and in teaching establishments across the country.

Other specialized professional and technical services are provided by about sixty industrial design companies, mostly grouped in the Montreal area, and over a hundred legal services agencies which, depending on their specializations, assist companies in their export activities, intellectual property issues and management concerns. The big law firms tend to woo the larger companies.
Marketing

The subsidiaries of chemical and petrochemical multinationals are well-organized and can rely on solid and efficient networks to market their products in Canada and abroad. SMBs that export are few and far between, due to the high cost of exporting. However, 80% of companies in the sector are SMBs. Those that do export have developed high value-added products. Their main export market is the United States.

In an effort to help chemical SMBs face the competition from the multinationals and improve their purchasing power, the MDERR and the ADICQ seem to have found a winning formula in the creation of the Coopérative d’achats stratégiques intégrés (integrated strategic purchasing cooperative – CASI). Launched in 2002, this program is the first of its kind in Canada. Thirty-five SMBs form a cooperative to obtain products from their suppliers at lower prices (raw materials, transport contracts, packaging cartons, telecommunications, etc.). This initiative could also be of interest to other sectors, such as the plastics industry.

In 2001, Québec’s plastic products industry exported $1.7 billion worth of goods – 20% more than in 1999. There are very few exporting companies, however. In this respect, the main challenges for this industry are the use of leading-edge processing equipment, the implementation of value-added production and better access to product development resources.

To promote exchanges and encourage marketing among companies, all the associations offer Internet portals or Intranet services to members seeking or offering contracts. Sodec-PAT-RDP, in the east end of Montreal, also rallies a strong contingent of chemical and plastic companies and offers a web site and free watchdog service for both sectors.
Environmental Management

Finally, in 1985, the Ministry of the Environment recognized the “Responsible Care” standard launched by the Canadian Chemical Producers’ Association (CCPA). This is a way of achieving environmental standards through a voluntary approach, a much more beneficial method than the more legalistic and technical framework existing in the United States.

Since its launch in Canada, Responsible Care has gained international recognition as an exceptional model of a voluntary project to promote health and safety and the environment. This standard has been adopted in 46 countries to date.

This model of chemical industry responsible care has helped develop the expertise of firms specializing in environmental standards (see consulting engineering) whose services are internationally recognized.

Changes in Canada’s environment laws with respect to gasoline emissions are leading to significant immobilizations by oil refiners in Canada and Québec. Nevertheless, these new standards are resulting in the production and availability of raw materials for the industry and may incite investments in the Québec petrochemical industry (benzene, propylene, hydrogen, etc.).
Interregional Links
Elsewhere in Québec

Companies in the petrochemicals and chemicals sub-clusters are highly concentrated in the CMM, but there are also other petrochemicals groupings in the Québec City region, and chemical products groupings in the Montérégie and Mauricie regions. Chemical industry businesses are, however, more widely spread out than those of the petrochemicals sector.

It is a somewhat different story for the plastics sub-cluster. Although almost half the companies of this sub-cluster are situated on CMM territory, the plastics industry, along with the metal products and wood products industries, is one of the most fragmented in the entire province. Apart from a fairly high concentration in the Chaudière-Appalaches region, there are pockets of production in the Eastern Townships, Central Québec, Lanaudière and the Laurentians, to name only the largest.

Petrochemicals: Québec, Bécancour and Potton

Although the petrochemicals cluster is mainly concentrated in the Montreal area, the Québec City region also houses Ultramar, the third-largest refinery in the province, whose operations are in Lévis, and Borden, which recently completed the construction of a new urea formaldehyde resin plant, also on Québec City’s south shore.

In the Bois-Francs region, in Bécancour, Petresa Canada, a subsidiary of the Spanish group CEPSA, manufactures linear alkyl benzene (LAB), an intermediary product used in detergent making. In the non-integrated network of secondary petrochemicals, the largest company, Huntsman Chemical Company of Canada, is located in Potton, in the Eastern Townships, and employs 50 people.

Chemicals: Large firms in Valleyfield

Chemical product facilities are also present on CMM territory, although there are also pockets of companies in the Beauharnois-Salaberry and Trois-Rivières-Bécancour regions, as well as a certain number, more widely dispersed, in the Eastern Townships and Québec City regions. Most of these companies have fewer than 100 employees, except for three, located in Valleyfield (Grace, 125 employees; Expro, 250 employees) and in Beauharnois (PPG, 100 employees). There are also the two Sterling Chemical Products plants in Buckingham, in the Outaouais region, totalling around a hundred employees.

With regard to training, the chemistry departments of the Université de Sherbrooke and the Université Laval offer bachelor’s, master’s and doctoral programs. At the Cégep level, the Cégep de Jonquière offers a diploma in chemistry.

«Plastics Valley»

Québec’s plastics industry is more highly concentrated in the Montreal area, which accounts for approximately half the companies and jobs available. Note that the Chaudière-Appalaches region is in second place in Québec for its concentration of companies, especially in composite materials processing. The network includes 130 companies, 26 of which operate in the composites sector. Together, these businesses employ some 5,000 people, around 16% of the total 30,000 jobs in this industry in Québec.
IPL, one of North America’s leading producers of moulded plastic products by injection and extrusion, has two of its four plants in the Beauce area – in Saint-Damien and Saint-Lazare. The company employs over 1,100 people and produces more than 400 different products. The Chaudière-Appalaches region considers itself a leader in this niche market, in the framework of the Accord program.

The Accord program (Action concertée de coopération régionale de développement) was created jointly by the Société générale de financement (SGF) and the Ministry of Economic and Regional Development and Research (MDERR). The program aims to establish a regional production system that is competitive in both North American and world markets by identifying and developing preferred markets of excellence in each region that will become those regions’ mark of distinction.

The Plastics Valley concept was launched in 2003 in the Québec City-Appalaches hub, by regional representatives of the plastics industry. The area is home to at least five research establishments with activities in the plastics and composite materials fields: the Centre de recherche en sciences et ingénierie des macromolécules (macromolecules science and engineering research centre – CERSIM) at the Université Laval, Defence R&D Canada in Valcartier, the CRIQ in Québec City, the Centre de technologie minérale et de plastics (minerals and plastics technology centre) in Thetford Mines and the Centre sectoriel des plastiques (plastics sectoral centre) in Saint-Damien.

The businesses in this region can rely on skilled labour at all stages of production, since the science and engineering faculty of Université Laval now offers the only bachelor’s-level university degree program in plastics in Canada. It also offers plastics majors in its bachelor’s programs in chemical engineering, mechanical engineering and materials and metals engineering, as well as master’s and doctoral programs in the field of polymers. At the Cégep level, the region houses the Envolée vocational training centre in Montmagny and, at the high-school level, the École polyvalente in Saint-Damien, which offers a vocational diploma in the operation and adjustment of moulding machinery for plastics.

Other regions are also active in the plastics sector, including, in decreasing order with respect to number of jobs, the Eastern Townships (40 companies and 2,899 jobs), Lanaudière (26 companies and 1,669 jobs), Central Québec (44 companies and 1,336 jobs) and the Laurentians (30 companies and 939 jobs). They form part of the regional round tables for plastics set up by the CPIA. In Thetford Mines there is the Centre de technologie minérale et de plastics (minerals and plastics technology centre), which operates from the premises of the Collège de l’Amiante and offers technical training in plastic materials processing.

**Transportation material in the Eastern Townships**

Although it has not yet confirmed its participation in the Accord project, the Eastern Townships region considers itself a leader in the preferred market of “transportation material and components” (rubber, plastic and composite materials). This field has been the focus of major technological advances over the last few years and offers several interesting opportunities for new applications.

No fewer than 4,600 new jobs in this niche market were created in the region between 1992 and 2001. Rubber alone represents 3,300 jobs, in companies such as Saargummi and Waterville TG. There are also large order originators such as Bombardier (recreational products) and a few equipment suppliers and sub-contractors.
Finally, the region possesses research and training infrastructure such as the Université de Sherbrooke and the Lake Memphremagog vocational training centre, which offers training in composite materials.

**Technology transfer in the Laurentians**

The Laurentians town of Saint-Jérôme is home to the Composite Materials Centre, which works on the design, study and transformation of industrial and commercial products made from composite materials. These products are destined for use in various sectors: transportation, aeronautics, shipbuilding, construction, electrical equipment, anti-corrosive products, recreation and leisure, and biomedical. Some of the structuring organizations are the Regroupement des industries des composites (composite industries group) in Saint-Jérôme and the Packaging Association of Canada, in Sainte-Thérèse.

... and in Chaudière-Appalaches

Oleotek, a collegial centre for technology transfer in industrial oleochemistry was created in Thetford Mines in 2002. It is a joint initiative of the Cégep de Thetford and the Technopole en Oléochimie Industrielle (industrial oleochemistry technology centre – TOI) work group. Oleochemistry is used to describe physicochemical transformations applied to oils, and animal and vegetable fats. Initially associated with the production of soaps, oleochemistry is now a part of daily life: food products, cosmetics, pharmaceutical and industrial products (paints, varnishes, resins, plastics, rubber, lubricants, etc.).
Perceptions
Relational Assets
Timid Inter-sector Relations

As we have seen in the first part of this document, the CMM region seems to be well-endowed with development stimulation factors. But how will what is the relationship between the companies and all the organizations involved in helping them develop? What are the avenues for growth?

That is what we have attempted to find out from the people directly involved in these industries. While their perceptions, which both diverge and converge, are not exhaustive, they will at least serve to lay the basis for discussions enabling the possible development of new relational channels and the exploration of new avenues for growth.

Increase the efficiency of business networks

In an era of globalization, communication between companies and inter-sector exchanges are essential development vehicles. Associations, discussion tables, sectoral labour committees, economic development companies, research organizations and public agencies are increasing their activities and developing Internet sites to encourage meetings and networking among companies. But will this be sufficient to make the industrials talk to one another to develop a common synergy?

One thing is clear: everyone interviewed recognizes that the networks exist and that international competition is pushing companies to open up to external markets, but they sometimes question whether information is being relayed efficiently and to what extent businesses are willing to work together.

Strengthen ties between SMBs and big businesses

Another observation is that the agendas of the large companies and the SMBs are not easy to reconcile. Dialogue between the two types of businesses often fails and everyone wonders about finding the best way to work together. Joint or common projects could be developed, especially in the areas of the environment and technology (see the following section, Avenues for Growth).

Naturally, exchanges follow the various levels of interest and revolve around common projects. Thus, the large petrochemical, refining and chemical companies work together whenever their activities form a production chain. They are usually located near one another (Montreal’s East End, Varennes) and the exchange of materials is carried out by specialized trains or pipeline.

The big companies also sit at the discussion table of the petrochemical and refining industry, which brings together some thirty participants who meet twice a year, along with representatives from the Ministry of Economic and Regional Development and Research (MDERR) and the Ministry of Natural Resources, Wildlife and Parks (MRNFP). Current priority projects include access to natural gas (the Sable Island project, the Gaz Métro methane terminal project in Beaumont, downstream from Québec City, and the LNG project with TCPL and PétroCanada in Grand Cacouna), electricity rates and work relations. The Sable Island project is being discussed at federal government level, and the second project will not be carried out before 2006-2007 as it must be brought before the Bureau d’audiences publiques sur l’environnement (public hearing committee for the environment – BAPE).
Involve the chemical industry

The chemical industry and its SMBs do not have an issues table, to the great chagrin of the Association pour le développement de l’industrie chimique québécoise (Québec chemical industry development association – ADICQ). Despite efforts made to attract them, companies appeared to abandon the proposed table. The MDERR therefore created an event to bring stakeholders together, the Chemical Industry Forum, which attracts around 150 participants who discuss better business practices, among other things.

“It’s very interesting, but it would also be a good idea to group the 35 chemical sub-sectors according to theme and to set up an advisory committee to allow wider discussions on financing, research and training, because the chemical industry in Québec does not include only petrochemicals. We tend to forget that, because the large companies account for almost 50% of jobs,” points out Pierre Plante, President of the ADICQ.

Identify who does what in Québec

In their client-supplier relationships, chemicals and plastics SMBs that obtain their raw materials from the larger companies are obliged to create ties with these companies. After that, it is up to each business to maintain these ties by offering specialized and personalized services, as is the case for any type of business relationship.

With respect to client-supplier relations, however, Québec companies get their supplies mainly from outside Québec, in silo fashion, due to a lack of well-structured resources to help identify who does what in the province. Of course, with over one million raw materials, not all of them can be available locally, and the distribution network is well organized for importing raw materials from other continents such as Asia or Europe.

In 2002, the Coopérative d’achats stratégiques intégrés (integrated strategic purchases cooperative – CASI) was set up by the MDERR and the ADICQ with the aim of providing SMBs access to joint purchasing of raw materials and services. However, although 35 companies now use this formula, certain issues remain.

“Many companies don’t want to communicate their raw material needs for confidentiality reasons. The cooperative focuses primarily on essential services, such as telecommunications or equipment purchasing, but not on strategic services,” says the ADICQ President, who is also Vice President of Delmar Chemicals.

In the plastics sector, client-supplier relations follow the same vein. Rationalizations due to market globalization are leading more and more companies to turn towards Asian or other overseas suppliers.

Moreover, due to smaller volumes, it would seem that Québec businesses are paying more for raw materials than their counterparts in Ontario.
**Develop links between associations**

Do the heterogeneous nature of the chemical industry and the strong presence of SMBs prevent the development of more effective business relations? Is the chemical industry doing what is necessary to create such alliances? It appears that the industry finds it easier to develop business relations with foreign partners than with partners on its own turf. Each player is jealously guarding its own information for itself.

Whatever the case may be, business networks and inter-company exchanges are mainly carried out through sectoral associations of large and small companies. They play an important role in the promotion and development of their industry, by offering a whole series of structuring activities in line with the needs of their members (Internet sites, lunch seminars, forums, symposiums, recognition awards, training, networking, etc.) to improve the synergy, competitiveness and networking among companies. They also work alongside numerous socio-economic partners.

A number of industry representatives recognize the positive effects on the relations established in this context. Others, however, consider these associations to be self-contained entities, because it is always the same industrialists that participate. They believe that relations between associations should also be developed, following the model of the European federations.

**Boost the synergy between laboratories and companies**

The organizations and laboratories committed to research are very proactive and present in all the associations and business networks. Relations between researchers and businesses are relatively good, each research organization having business development personnel who are able to understand the companies’ needs and to speak their language.

Partnerships with SMBs are high on the agenda. For example, the Industrial Materials Institute (IMI) promotes financing for research by grouping companies together for common projects. The IMI, 40% of whose activities are dedicated to research in processes (chemical, petrochemical, plastics) for the development of materials with SMBs, has developed customized collaboration models: a dozen companies work on the same technology in order to reduce costs. They often work in parallel sectors and do not seem to be afraid of competition.

“Even if they are competing with one another, they prefer to have access to development benefits,” says Nafez Melhem, Manager, Strategic Initiatives and Liaison Officer. Melhem believes nevertheless that progress still needs to be made in the adoption and mastering of technologies and their implementation within each company. The IMI is working on a project to enable companies to stay on longer at the institute – between six months and a year – before going on to implement the technology at their place of operation over a shorter time period.

Not all industries are able to work together, however, as is the case for the “product formulation” section of the Centre de recherche industrielle du Québec (Québec industrial research centre – CRIQ), which works closely with the SMBs in applied research (60% in plastics, 25% in petrochemicals and 15% in chemicals). “We have to consider each case individually, as formulations are, by nature, confidential. Our clients do R&D first and foremost to meet the demands of an order originator, and secondly to grab a market share and get ahead of a competitor or reduce their manufacturing costs,” explains Guy Genest, a technology development advisor. The CRIQ supervises SMBs by drawing up a work plan to monitor their research projects and to explain to them the main advantages of tax credits.
Meanwhile, the Centre d'études des procédés chimiques du Québec (CEPROCQ) informs SMBs (especially those in chemicals and petrochemicals) on the financing methods available to them and helps them obtain tax credits. “Despite all that, however, we still have a lot of explaining to do to make them realize that research pays and that it improves their productivity. The first reaction is always that it's too expensive,” says Danièle Miousse, project manager at the CEPROCQ. The Centre also offers industrial clients a wide range of services, from technical production support to the development of new technologies.

**Put researchers in contact with one another**

There is a sufficiently large number of researchers in Québec and, although partnerships between research centres do exist, they could intensify their networking to optimize their skills and equipment. New research centres are appearing, tied to regional development (political desire), but resource pooling is paramount for improving synergy. A group such as the Association of Provincial Research Organizations (APRO) encourages this type of inter-province exchanges.

**Create partnerships with unions**

There is a consensus that relations with the unions often hinder company development and the arrival of foreign developers. Close to 40% of companies in Québec are unionized, compared with 22% in Ontario and 18% in the United States. Many people mentioned that difficult relations with the unions result from the fundamental structure of unionism in Québec.

The government of Québec needs to intervene to modernize the unions. In Germany, for example, unions play a partnership role and often sit on company boards. They endorse the common development visions of those companies.
Strategic Elements
Spotlight on Productivity

All the groups and associations mentioned previously recognize that productivity is everything in the present context. Although difficult to measure, current figures tend to show that productivity levels in Québec are 18% lower than in the rest of Canada and 34% lower than in the United States.

The ADICQ states that productivity is a tough challenge for SMBs, since all sectors of the company are affected: management, transport, handling, shipping, payroll, packaging, etc. Computerization and automation are the mainstays, and most companies need to improve their business methods. The association is also working in partnership with the Institut de chimie et de pétrochimie (College de Maisonneuve’s chemicals and petrochemicals institute) to further develop automation.

Integrate value-added production

In the plastics sector, almost 50% of SMBs sub-contract their services and are always lagging behind the large order originators, who leave them to bear the costs of R&D, which does not make their task any easier. The Canadian Plastics Industry Association for the Québec region (ACIP Québec) is also focusing on productivity and the enhancement of human capital and is creating regional tables on competitiveness and innovation. Businesses are forming small committees (about a dozen) and have the support of experts in innovation and productivity. They benefit from a structured approach to improve productivity, including an analysis of competitiveness and an action plan (see section on Development Factors).

At the Plastics and Composite Industry Summit organized by ACIP Québec in Montreal in May 2004, which attracted about 200 participants, one of the plastics industry’s priorities was competition with China. A five-point strategic revitalization plan was voted in, with lean manufacturing (value-added production) being considered an urgent factor in the competition optimization strategy.

Play the alliance card

Other factors favoured by companies are the enhancement of human capital (including the benchmarking and promotion of know-how and individuals) commercial positioning worldwide, international partnerships to improve the manufacturing value chain in Québec, e-business and e-collaboration. The ACIP carried out an industry characterization study, expected to be available to members as of the fall of 2004.

Alliances are also a good way of helping companies position themselves on world markets. Thus, mould makers joined forces to execute the contracts of a large order originator. “Even if our businesses are competitive, they have to work together if they want to be present on international markets,” says Odette Mercier, Executive Director of the CPIA for the Québec region.

Intensify research efforts within SMBs

When it comes to research, not all companies are in the same situation. The large subsidiaries of U.S. or European multinationals, especially in the petrochemical and chemical sectors, do not do basic research in Québec. These decisions are made in corporate head offices.
In applied research, large firms operating in Québec appear to be working on the leading edge. They carry out applied research either in their own laboratories or in collaboration with university research laboratories, or other labs such as the Industrial Materials Institute or the Centre de recherche industrielle du Québec (Québec industrial research centre).

With regard to small- and medium-sized businesses, their R&D efforts are progressing, but still appear to be insufficient. Although everyone interviewed agreed that one should not generalize, the weaknesses seem to be linked to the SMBs’ perception of research costs, regardless of sector.

**Simplify access to research**

The tools available to enhance research seem to be under-used and many companies are still not very familiar with assistance programs and tax benefits granted by federal and provincial governments, or with research implementation methods. “Although it may seem surprising, many SMBs are unaware of the existence of incentive schemes and the fact that they could use them to reinvest,” points out Pierre Guimont, Executive Director of Plasticompétences.

The large companies handle their tax credit management very well. However, although some tax credits granted by the federal government still appear to be competitive, some industry representatives note that the tax benefits offered by the provincial government are not as attractive now as they were before the last provincial elections. In fact, for every $100 spent on research in Québec in 2004, the net cost for an SMB is $40.25 and for a large company it is $49.57.

Some representatives point out that the governments should set up simplified tax credit formulas or small-scale assistance programs, to encourage SMBs to purchase equipment and help them change their habits with respect to R&D.

Others note that industry stakeholders are unaware of the role played by those involved in the research field. The new MDERR portal, online since June 2004 and positioned as a one-stop window offering all the information that companies need, especially in the areas of research and financing, may enable businesses to become better informed. It can be viewed at www entreprises.gouv.qc.ca.

**Reinforce the desire to innovate**

Investments in research and development depend on the desire and a vision for innovation. How are industries behaving in this respect?

On this issue, the perceptions of our industry representatives diverge somewhat. Most say that businesses act just like they do everywhere else, with different levels of desire for innovation: some are leaders that initiate new technology, others are followers who wait for new technologies to appear before taking the plunge, and others stand still.

It all depends on existing resources, too: SMBs, which have fewer specialized resources, tend less to keep up to date with current research and instead made do as best they can, while those with scientists freely at their disposal turn outwards when they can’t seem to solve a particular problem.
Other views are less optimistic. In the chemical (formulators) and plastics sectors, for example, it appears that not enough importance is given to innovation. Family-run businesses that are used to working in a particular way, generally do not have the R&D reflex.

Associations like the ADICQ are intensifying their efforts to relay information to their members in order to put them in touch with outside experts. “Labour standards and bylaws respecting the environment, transportation and handling are highly complex. SMBs don’t have the means to get all the skilled labour they need in-house, which is why we invite them to use the services of outside consultants,” says Marcel Belhumeur, Executive Director of the ADICQ.

As far as the CPIA is concerned, it is currently developing its partnership with the IMI and was expected to move into the same premises in February 2005.

Satisfying labour needs in the petrochemicals sector

As a process industry, petrochemicals requires a highly specialized labour force and over the next five years needs to hire about 200 Cégep-level graduates with diplomas in one of the three chemical specializations, half of whom need to be trained in techniques and processes. It is highly likely that we will see a major shift of the most highly skilled process technicians from other companies towards the refining and petrochemicals sector, which appears to offer better working conditions.

In the chemicals industry, observers feared a shortage of laboratory technicians and chemists for 2002. Although these fears did not come true, it is possible that the industry will have a shortage of chemical operators in 2010, when the baby-boomers retire.

Another concern is that there appear to be fewer and fewer students in training programs. Lack of interest in science and negative perceptions regarding salaries could partly explain this disinterest.

Create specific training for formulators

It is also observed that there is no training available in the area of formulation, whereas 75% of chemical companies are formulators. “Here, we buy ingredients from around the world and create recipes. But they are made by chemists who have learned on the job, and not by formulators. In Europe, on the other hand, they have a formulation tradition and specific training. The development of customized training would really enable us to have value-added products,” adds Pierre Plante, President of the ADICQ.

On this subject, last fall, the ADICQ organized three two-day training sessions in collaboration with the Institut textile et chimique (Textile and chemical institute – ITECH) in Lyons for paints and cleaners; ten companies participated. The organizers believe that this formula should be continued. The ADICQ is exploring different partnership possibilities with the French organization to develop formulation courses. In order to persuade the most reticent companies to climb on board, it is also proposing that companies hire ITECH interns, and hopes to obtain government backing. This initiative was introduced thanks to the financial support of the MDERR and the participation of the Institut de chimie et de pétrochimie at the Collège de Maisonneuve.
**Tackle labour shortages in plastics**

In the plastics industry, labour shortages are a daily concern. The greatest difficulty is to adapt study programs to successfully match the industry’s wide diversity of needs (including equipment) with the number of people employed. The composites sector comprises a quarter of the 30,000 jobs in this industry, the others being in the plastics sector.

The composites sector, mostly located in the Beauce and Eastern Townships areas, suffers from a severe lack of candidates to fill available jobs. Training centres seem to be ignored by students. Young people are still somewhat unaware of these relatively recent sectors and the industry lacks visibility. Recruitment problems arise mainly in entry-level and the more highly-skilled jobs.

**...and change negative perceptions**

This industry is often seen as a sector in which employees are not well paid. Much work remains to be done to increase awareness about the sector, change perceptions and expose half-truths. In this regard, a promotional “open house” project is underway throughout Québec. Companies seem very interested, but they will have to contribute financially ($25,000 for the whole industry).

Another problem is how to retain employees, even if the plastics industry did put a lot of effort into the training of employees. On an annual basis, 40% of the industry is affected by personnel movements (layoffs or job changes), which are often due to seasonal activities. Cycles fluctuate from one sector to another. For instance, the construction sector starts laying off workers in November just as the toy industry starts having significant staffing needs.

How can employment be stabilized? In the summer, Plasticompétences initiated a pilot project in the Greater Montreal Area to survey, qualify and quantify labour movements and to see how far companies are willing to collaborate, the aim being to enable seasonal workers to stay employed. It is expected that by the beginning of April 2005 it should be known whether this project has a future or not.

**Find financing for small projects**

In line with its new investment criteria, the Société générale de financement (SGF) will continue to invest in and prospect among the chemicals, petrochemicals and plastics sectors. As part of the development of its five-year plan, currently underway, the SGF is analyzing investment opportunities according to the scope of the projects and their regional character.

In the petrochemicals sector, the SGF currently has projects with existing and integrated petrochemical companies, but these projects are confidential. Broadly speaking, they are projects worth between $20 million and $100 million involving new technologies and the upgrading of various infrastructures.

In the chemical industry, the organization faces the same constraints. The SGF is questioning the validity of companies’ consolidation plans, while it appears that foreign promoters are currently seeking infrastructures that are underused and can be re-evaluated.

In plastics, the average size of SGF projects was around $15-20 million. With its new investment criteria, the SGF anticipates carrying out on average one project per year. All sections of the industry are considered: composites, extrusion and injection. Nothing seems to indicate, however, that these changes will slow down the development of this industry.
So who is going to take on the job of prospecting for small projects in petrochemicals, chemicals and plastics? Companies that want to set up shop or invest here will have to turn to the Fonds de solidarité of the FTQ or to Desjardins Venture Capital or seek private funding. In these more traditional sectors, however, returns are usually lower, and the proposed projects may find themselves at a disadvantage compared to technological sectors such as biotechnology or information technology.

The government was expected to come to a decision about the adoption of a new SGF strategic development plan in the fall.

**Set up international events**

It is absolutely necessary to open up to the world and engage in dialogue with foreign players. Projects are underway for the chemical industry, which should be playing host to a new international-scale event, in collaboration with sector associations in Québec. This event, scheduled to take place in 2006, probably in Montreal and Mont-Tremblant, will unite the major world players of the chemical industry and aims at attracting some 500 participants. The format of the event is not yet known, but the various activities — international conferences, meetings with suppliers and order originators, developments in technology and innovation — would be held over three days. However, the necessary funds still need to be obtained before the event is confirmed.

The CPIA, in association with the MDERR, also wants to create an international event, entitled APAC International (plastics, business and composites), so as to encourage networking between companies. It is to be held in October 2005 at the Palais des Congrès in Montreal and will bring together 325 decision-makers from Québec, Europe, the United States and China, with a format identical to that of Futurallia.
Avenues for Growth
Three Priorities and Some Improvements

During our interviews, a number of people mentioned certain priorities to be implemented, which we have grouped here by sub-cluster.

**Attract raw material suppliers**

The petrochemical sector must continue to work on its integrated networks, which seems to have had positive results, compared to the other sites in Canada. Thanks to recent investments, the industry is picking up, both nationally and internationally. For instance, petrochemical activities in Oakville, Ontario, have been stopped in favour of those in Montréal Est. Compared to Sarnia, Ontario, Québec is recording better results, due to the recent wave of solicitations and investments. Ontario is losing out to the Americans due to lack of solicitation and now needs to invest in its development.

Petrochemical and chemical companies in the major centres are nonetheless going through more difficult times because of the fierce competition led by other countries to try and attract these businesses to establish themselves there. North America is at a disadvantage compared to Asia, as many companies are choosing to set up facilities on that continent. In North America, investments are being made closer to the source – in Alberta, Texas and the Gulf of Mexico. In addition, Québec could attract more raw materials suppliers.

**Put the accent on the technologies of the future**

In the chemicals and plastics sector, the technologies to be developed are nanotechnology, biomedical, composite biomaterials and biodegradable materials. For example, manufacturers could develop fibres encapsulated in chemical molecules to produce textiles with stain-repellent, anti-odour or anti-bacterial qualities. Applications can also be developed in the fields of paint, adhesives, etc. Sector stakeholders need to meet international experts and sign development partnerships.

As environmental regulations become more and more stringent, environment-related technologies are emerging for all industrial sectors concerned. In this regard, the CPIA aims to set up a responsible management program based on the chemicals model. Companies in the composites sector must adhere to very strict environmental standards which can only be met with sophisticated equipment; hence the importance of having adequate financial leverage to enable the purchase of this type of material.

**Keep attention focused on small-volume markets**

The plastics industry continues to experience good growth. Productivity needs to be improved, however, if it is to stay in the globalization race, otherwise Québec businesses run the risk of losing low value-added markets to China, Bangladesh and India over the next few years.

We need to help companies find ideas, and they must improve on what they do best: small-volume markets in construction and packaging, transportation and aeronautics that follow other game rules. Asia poses a serious and worrisome threat to companies in the plastics sector and this is motivating those in the injection and extrusion sector to group together on common projects.
This threat is also pushing them to reduce their production costs and to use their resources to the maximum. It should also be noted that the trend is towards the reclamation of residual wastes.

**Improve the business environment and its infrastructures**

The general opinion of those interviewed is that Québec offers a competitive business environment and infrastructure. But, there is always room for improvement. Below is a summary of their comments.

**Petrochemicals:** The tax credit programs in Québec used to offer very good returns on investment, which have dissolved since the last provincial elections. Although it is generally believed that these programs were not the key factor in business localization, they do help maintain the level of research and development, attract skilled researchers and create a synergy that is beneficial to all. The investments of the last few years have enabled integrated networks to be developed. These production chains should continue to be reinforced.

Québec also has numerous assets that it needs to exploit. The Port of Montreal is essential to its development and its foundations need to be maintained. Safer traffic flow on Notre-Dame Boulevard is encouraged, by linking it to Highway 25. Nevertheless, we need to keep in mind that the flow of trucks on this street should not be interrupted by lights every 100 metres. Meanwhile, Montreal’s East End has almost 20 million square feet of contaminated land that needs to be remediated in order to house businesses.

**Chemicals:** Interviewees insist on the SMBs’ need for financing. Small tax credit programs urgently need to be set up to facilitate SMB access to R&D and equipment purchasing. SMBs tend to depend on the major banks, but these financial institutions do not take risks with the chemical industry. On the other hand, although the existence of venture capital for this industry seems to be lacking, some observers point out that expansion projects are in any case pretty rare. It is also noted that insurance companies demand very high coverage costs, which the SMBs have to absorb.

Another issue arising is that it would be desirable to create an advisory committee to group the goals of the chemical companies. The industry regrets the fact that the government has no strategic action plan for its development. The ADICQ recommends specific training in product formulation, which would be an asset for formulation companies, many of which are fighting for survival. It would be desirable to set up partnerships with European players. With respect to exports, SMBs need more technical support to assure their business development internationally. Existing programs do not carry their follow-up procedures far enough.

**Plastics:** Observers believe that Québec should create financial leverage adapted to SMBs to enable them to access R&D and to buy foreign equipment to improve their productivity. Enriching the workforce is also a priority.
Appendices
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Technical Support from the Ministries Involved
André Dufour, Chemistry, Plastics, Metallurgy and Facilities Division, MDERR
Martin Roberge, Chemistry, Plastics, Metallurgy and Facilities Division, MDERR
Luc Chouinard, General Division of Industry and Trade, MDERR
Individuals Consulted

Nafez Melhem, Manager, Strategic Initiatives, Industrial Materials Institute (IMI)

Guy Genest, Technical Development Advisor, Centre de recherche industrielle du Québec

Danièle Miousse, Project Manager, Centre d'études des procédés chimiques du Québec (CEPROCQ)

Pierre Guimont, Executive Director, Plasticompétences

Pierre Charbonneau, Vice President, Chemicals, Société générale de Financement (SGF)

François Racine, Director, Textiles and Plastics, Société générale de Financement (SGF)

Louis Rail, President, Round Table for Chemicals, Petrochemicals and Refining; Director, Legal Department, Péromont

Pierre Plante, President, Association pour le développement de l’industrie chimique québécoise (ADICQ); Vice President, Delmar Chemicals

Marcel Bellehumeur, Executive Director, Association pour le développement de l’industrie chimique québécoise (ADICQ)

Odette Mercier, Director, Canadian Plastics Industry Association (CPIA)
Credits

Editorial Director  Michel Lefèvre

Research and Copywriting  Isabelle Chassin

Research Assistants  Charles-Albert Ramsay
                     Jean-Philippe Meloche
                     Julie Ranger

Language Editing  Frédéric Simmonot
                  Dominique Chichera

Graphic Design  Pascale Detandt

Metropolitan Cluster Technical Committee

Michel-Marie Bellemare
Economist – Regional Policy,
Ministère du Développement économique et régional et de la Recherche

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Michel Lefèvre
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Communauté métropolitaine de Montréal

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Ministère des Affaires municipales, du Sport et du Loisir

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Société générale de financement du Québec