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INVEST IN CANADA

2012 EDITION

Foreign Affairs, Trade and Dev
Affaires étrangères, Commerce et Dév

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Canada



CANADA

IS...

The best country in the world to do business

—Forbes Magazine, October 2011

A leader among the G-7 in low corporate tax rates

—OECD 2011

Home of the lowest business costs in the G-7 for R&D-intensive sectors

—KPMG Competitive Alternatives 2012

Fiscally strong, with the G-7's lowest net debt-to-GDP ratio

—International Monetary Fund 2011

Home to the world's soundest banking system

—World Economic Forum 2011

Number 1 in the G-7 for the quality of its educational system

—World Economic Forum 2011

*A great place to live, with the highest quality of life
for the G-7 and second highest in the OECD*

—OECD 2011

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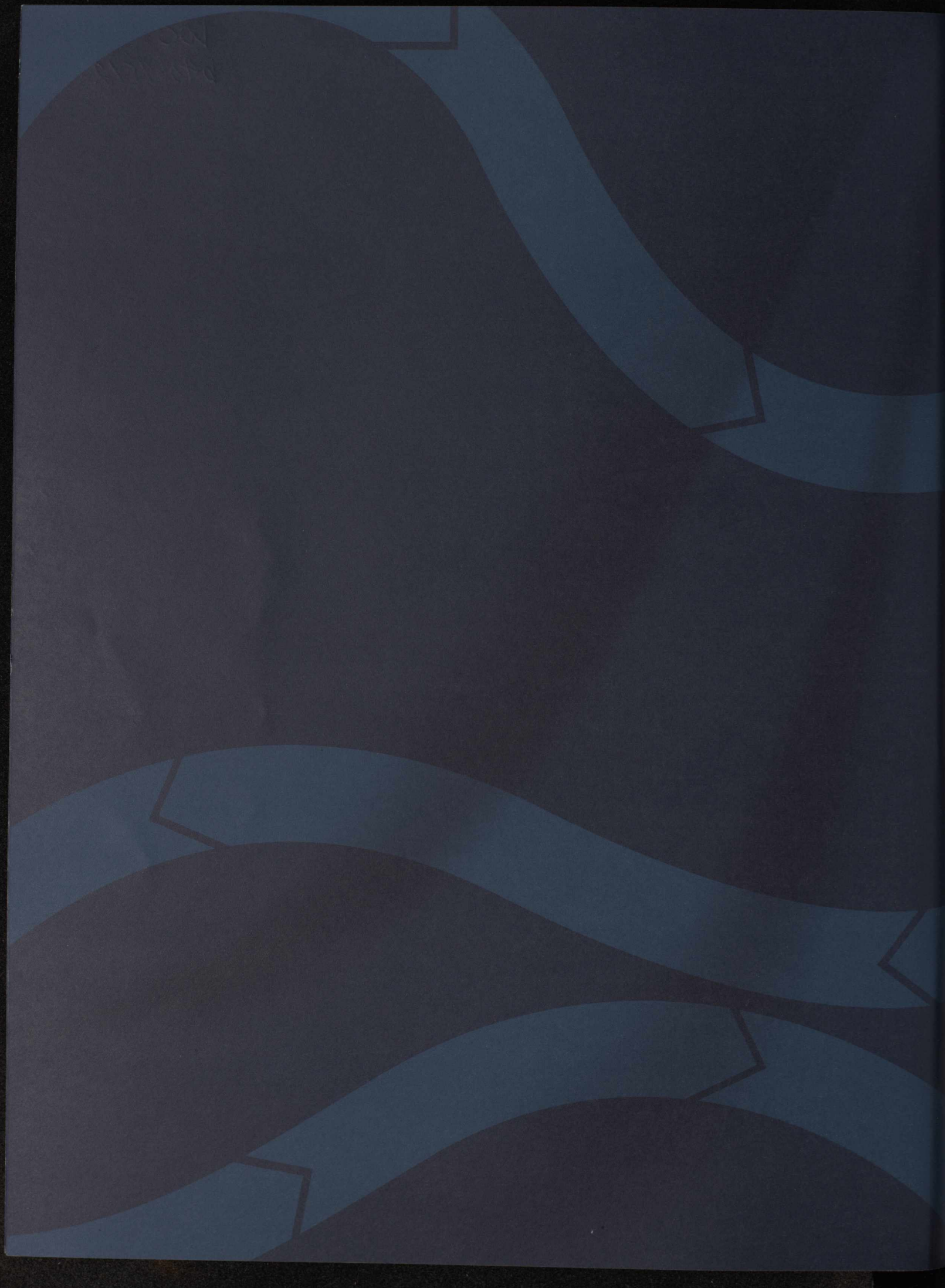
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MINISTER'S MESSAGE TO GLOBAL ENTREPRENEURS, INVESTORS AND BUSINESS LEADERS

As Minister of International Trade and Minister for the Asia-Pacific Gateway, it gives me great pleasure to introduce the 2012 edition of *Invest in Canada*.

Canada remains one of the most welcoming places in the world for international business and foreign direct investment. In what remains a challenging global economic climate, Canada's economy has outperformed those of most other industrialized countries.

In fact, since July 2009, our economy has created 758,600 net new jobs, making Canada one of only two G-7 countries to have recouped all of the jobs lost during the global recession.

Canada's leadership on the world stage is being noticed by respected and influential international organizations and in leading publications. For the fourth straight year, the World Economic Forum has rated Canada's banking system as the world's soundest. *Forbes* magazine has ranked Canada as the best place in the world for businesses to grow and create jobs, due in part to our low-tax environment, which includes the lowest overall tax on new business investment in the G-7. Our net debt-to-GDP ratio remains the lowest in the G-7, by far. As well, both the International Monetary Fund and the Organisation for Economic Co-operation and Development have forecast that Canada will be among the leaders of the world's major economies this year and next.

Despite ongoing global economic uncertainty, the Government of Canada is working to ensure that Canada continues to be a top destination for prosperity-generating foreign investment. As Prime Minister Stephen Harper has stated, Canada will seize and master its future with clarity and urgency and will be a model of confidence, growth and prosperity in the 21st century.

In our Economic Action Plan 2012, we announced key investments that focus on the drivers of job creation and economic growth—innovation, investment, education, skills and training. At the same time, we announced measures that will ensure the continued responsible management of public finances so that we return to a balanced budget over the medium term. To further position our country for long-term prosperity, our government is also undertaking the most ambitious trade expansion plan in Canadian history. This ambitious pro-trade plan will provide enormous long-term benefits to Canadian workers and businesses and to the growing number of investors who are making Canada their investment destination of choice.

The 2012 edition of *Invest in Canada* highlights Canada's many economic strengths and its rock-solid fundamentals.

In addition to reading more about Canada's world-leading advantages, I encourage you to visit InvestinCanada.com or contact our trade and investment professionals working around the world. They can help you expand and succeed here in Canada and abroad.

I look forward to working with you as we pave the way for further job creation, economic growth and long-term prosperity.

A handwritten signature in blue ink, consisting of several loops and a long horizontal stroke extending to the right.

The Honourable Ed Fast
Minister of International Trade and Minister for the Asia-Pacific Gateway



I
BECOME A PART
OF CANADA'S
SUCCESS STORY

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[1]

[INNOVATION X STABLE ENVIRONMENT] = LONG-TERM PROFITS

Canada offers a successful formula for foreign investment that leverages a capacity for innovation and a stable fiscal and economic environment. While innovation is the basis for high profit margins, Canada's predictable environment ensures the benefits of innovation can be maintained over the years. The result: profits over both the short and long terms.

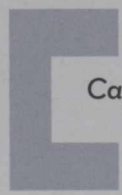
STABLE AND PREDICTABLE

A diversified economy and resource base combined with a stable banking and tax environment is one of the most important location factors for new international investment. Canada delivers a best-of-class performance.

Technology-Intensive Economy

Canada is one the world's largest and most advanced economies. The country shares a border and one of the world's largest and most stable commercial relationships with the United States, its southern neighbour. Geography also provides Canada a natural advantage for traffic between Asia and Europe: sailing times from Canada's Atlantic and Pacific deepwater ports are up to two days shorter than from other North American ports.

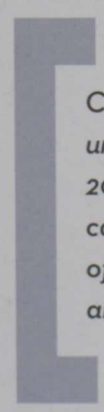
Canada is also an energy giant. The country's energy resources are comprised of a vast and exceptionally diversified mix of oil and gas, hydro, nuclear, solar, wind, biomass and even tidal power. Canada has the second-largest proven reserves of oil and is the world's third-largest producer of natural gas. In fact, Canada is one of the few industrialized countries in the world to be a net energy exporter.



Canada: The world's tenth-largest economy.

International Monetary Fund

Canada's diversified base of natural resources attracts scores of world-class capital projects from international investors. Currently, more than 100 projects valued at \$1 billion or more each, in oil and gas, mining and primary metals have been announced for the 2012-2020 period¹, complementing a well-established base of large multinational corporations in the resources industries.



Canada's resource sector attracts unprecedented levels of investment; for the 2012-2020 period, foreign and domestic capital investment projects worth a total of \$300 billion have been announced or are already under construction.

E&B Data

¹ E&B DATA. *Capital Investment Monitor*. 2012.

UPON THE CONSTRUCTION OF A NEW, STATE-OF-THE-ART CANADIAN HEADQUARTERS AND A MILESTONE ANNIVERSARY

"We've been committed to Canada and investing here for 100 years and our goal is to continue expanding this strong presence for the next 100 years. More than 4,400 employees from coast to coast are helping provide our customers with the solutions and technologies necessary to build more efficient cities, offer alternative energies, promote healthier lives, increase productivity in manufacturing and ensure Canada remains a sustainable place to live and do business."

Robert Hardt, President and CEO
Siemens Canada

This base has in turn helped build a large and growing pool of expertise and technologies in a number of advanced-manufacturing sectors that supports the profitable development, processing and sustainable management of resources.

Many Canadian supplier industries, such as machinery and instrumentation, initially selected for their proximity to large resource-development projects, have since developed specialized skills and technologies, which now give them a leading international position.

Canada also has competitive advantages in other strategic sectors, such as advanced manufacturing, aerospace, information and communications technologies, life sciences, and business and financial services. These advantages help propel the international profile and success of Canadian companies such as **Bombardier**, **CAE**, **CGI** and **Magna**. The advantages are also evident in the long and growing list of leading international investors operating—and expanding their operations—in Canada, such as **Google**, **IBM**, **Boeing**, **Samsung**, **Mitsubishi** and **China Investment Corporation**.

Canada's economy was the first among G-7 nations to recoup the employment losses recorded during the global recession.

LINKING THE ENVIRONMENT WITH INNOVATION AND PRODUCTIVITY

"Industry increasingly recognizes that environmental issues relating to their core businesses present genuine opportunities and not just challenges. For example, research and collaboration between our universities and industry is leading to the development of new techniques that promise to dramatically reduce the environmental footprint of Canada's oil-sands development while also increasing efficiency and viability of production."

Elizabeth Cannon, President
University of Calgary

A LESSON IN RESILIENCE

"As the world's appetite for energy, food and raw materials continues to expand, Canadians are fortunate indeed to be in a position to help meet the demand. But the commodities boom is not the only—nor even the most important—reason for Canada's recent economic resilience. Sound public policy played an even bigger role. A decade of federal budgetary surpluses and debt-reduction meant that the Canadian government was in a strong position going into the crisis and could afford to roll out a sizeable stimulus package—while at the same time taking steps to spur business investment."

Hartley T. Richardson, Chair,
Canadian Council of Chief Executives

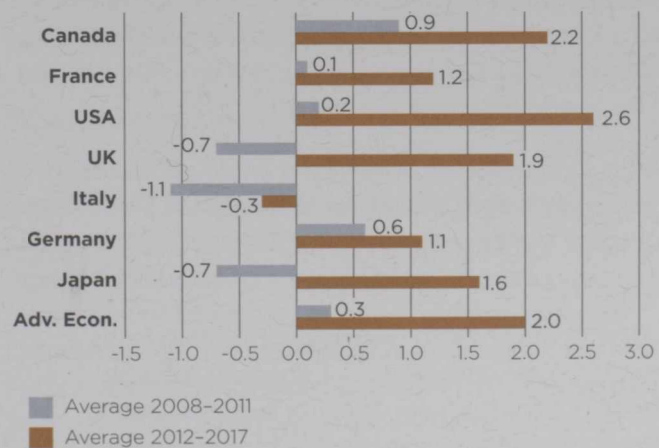
Consistently Outperforming G-7 Peers

The diversity and strength of Canada's economy are evident in its consistent and outstanding performance. For much of the past decade, the Canadian economy expanded faster than any other G-7 country. Indeed, Canada has been widely heralded for having weathered and recovered quickly from the global economic turmoil of recent years. Having topped the G-7 with an average real GDP growth rate of 0.9 percent between 2008 and 2011, Canada is now expected to be among the top G-7 performers through 2017 and to return to a balanced budget position by that year or earlier.

Canada is the best country in the G-7 in which to do business over the next five years.

Economist Intelligence Unit

**G-7 REAL GDP ANNUAL GROWTH RATE 2008-2017
(IN PERCENTAGE)**



Source: International Monetary Fund (2011)
Note: Forecast Data for 2012-2017

THE RISE OF TORONTO AS A MAJOR INTERNATIONAL BANKING CENTRE

“Canada’s financial capital has enjoyed a rapid expansion in recent years. According to Moody’s Analytics, Toronto is on track to overtake London by 2020 in the number employed in the financial services industry.”

Mark Hopkins, Senior Economist,
Moody’s Analytics

Sound and Stable Financial Sector

Canada’s economic strength is underpinned by one of the world’s most sophisticated and stable financial and banking systems. The **World Economic Forum** recently (2011) ranked Canada’s banking system as the soundest in the world for the fourth year in a row². Many international financial analysts share this view; **Moody’s** ranks Canada’s banking system number one in the world for financial strength³.

Banks in Canada are among the best capitalized in the world, exceeding **Bank for International Settlements’** norms by significant margins⁴. In fact, during the global financial crisis, no Canadian bank or insurer failed.

Today, as Europe’s sovereign debt crisis creates international concerns about financial stability, Canada’s banks remain open for business and fully committed to, and capable of, providing credit. Credit conditions in Canada remain favourable, and

Moody’s, Fitch and Standard & Poor’s all give Canada their top credit ratings.

firms and banks both benefit from capital costs well below historical averages. Investors find Canadian banks and financial institutions to be receptive to their investment and expansion plans both in Canada and globally. Canada’s banks and financial institutions provide competitive financing and risk-management solutions, along with specialized expertise, across a broad range of sectors.

Seven of the world’s 50 safest banks are Canadian. Six of the top ten safest banks in North America are Canadian.

-Global Finance Magazine 2011

Strong Public Finances

Canada entered the global recession with a strong record of balanced budgets and low debt. Such fiscal strength allowed the Government of Canada to take timely, meaningful action to temper the effects of the global downturn, while delivering on promises to lower corporate taxes and to make strategic investments in public infrastructure and industries of the future.

² World Economic Forum. *Global Competitiveness Report 2011-2012*.

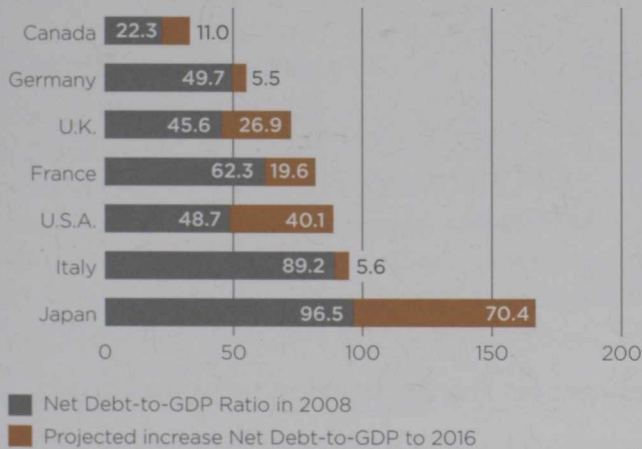
³ Retrieved on May 1, 2012 from <http://www.cbc.ca/news/business/story/2012/04/11/moodys-canada-banks.html>.

⁴ Canadian Bankers Association. 2012.



Toronto's Financial District

NET DEBT-TO-GDP RATIO IN CANADA AND ITS G-7 PEERS 2008-2016



Source: International Monetary Fund, World Economic Outlook Database, September 2011
 Note: Forecast for 2016

Today, Canada has the lowest net debt-to-GDP ratio in the G-7 and a concrete plan to return to a budget surplus by 2015-16. This puts Canada in a strong position to continue the pro-business strategies that support long-term economic growth and competitiveness, and help the country attract global investors.

A RECIPE FOR INNOVATION AND PROFITABILITY

Based on successful innovation clusters, efficient transportation infrastructure, competitive costs and low corporate tax rates, Canada offers winning conditions for profitable international investment.

Open for Business

Companies operating in Canada can count on fast, reliable access to North American and global markets. Thanks to the **North American Free Trade Agreement (NAFTA)**, companies in Canada have ready access to a massive market (which includes Canada, the US and Mexico) with an annual economic output valued at more than US\$16 trillion⁵. Dedicated "fast lanes" for pre-approved/low-risk travelers, expedited clearance processes for pre-authorized shipments and bilateral teams of customs officials at key border crossings are just a few of the mechanisms that help make Canada-US trade efficient and virtually seamless.

⁵ CIA World Factbook. 2011.

SUPERIOR LOCATION FACTORS

“Canada is very cost effective for AMD because of the combined advantages that come from its deep talent pools, great IT infrastructure and excellent research incentives.”

Ben Bar-Haim, General Manager
AMD Canada

Canada is committed to opening new markets and spurring continued global recovery through free and open trade. In the past five years, Canada concluded free-trade agreements with nine countries; negotiations are underway with 50 other countries and regions, including the European Union and India, while early discussions continue with other countries, such as Japan. Additional bilateral negotiations aiming at protecting and promoting foreign investment have been concluded with several countries, including China and India, and are underway with others, such as Vietnam, Indonesia, Mongolia, Pakistan and several in Sub-Saharan Africa.

Canada’s Atlantic and Pacific ports offer a two-day sailing time advantage over other ports in North America.

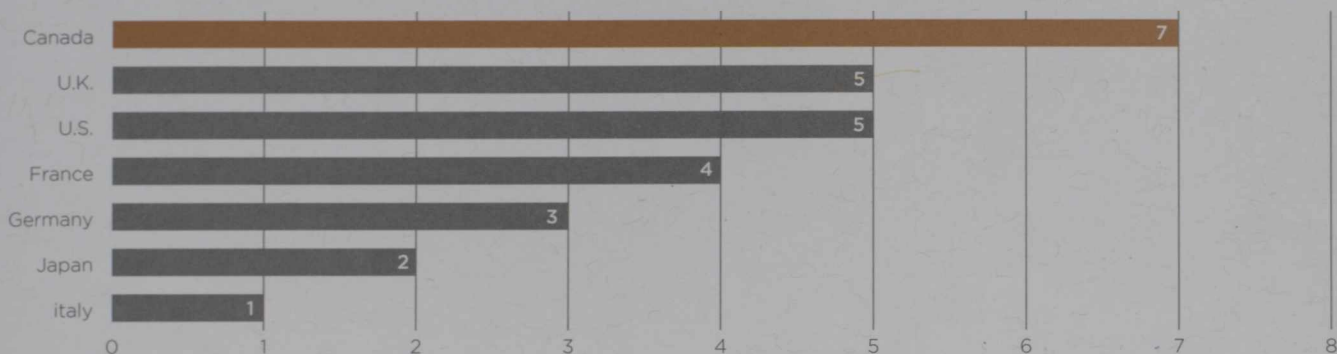
17 of Canada’s 20 largest cities are located within a 90-minute drive of the Canada-US border.

Advanced Transportation Infrastructure

Canada’s prosperity is a product of its success as a trading nation and of its well-designed transportation infrastructure. To support continued growth in international trade, the Government of Canada pursues a **Gateway and Corridor** approach with strategic investments in transportation systems. Since 2009, governments in Canada have invested more than \$30 billion in public infrastructure with the specific goal of stimulating economic growth by improving the movement of goods and people. The Asia-Pacific Gateway and Corridor Initiative is a prime example; infrastructure projects in the Corridor worth a total of more than \$3.5 billion are underway to better connect Canada with growing markets in Asia⁶.

⁶ Canada’s Pacific Gateway. Retrieved on May 1, 2012 from <http://www.pacificgateway.gc.ca/index2.html>.

CORE INNOVATION POLICY AREAS: CANADA'S G-7 RANKING



Source: The Global Innovation Policy Index-Information Technology and Innovation Foundation and the Kauffman Foundation-United States-March 2012. Graph designed by E&B DATA, reflecting the number of favourable innovation policy areas for which G-7 countries rank in the upper tier.

Redefining Innovation

Canada offers an appealing environment for leading-edge research and innovation in several regional clusters across the country. In addition to very favourable R&D tax credits and incentives, this environment is built upon several innovation-supporting policies. These policies provide a strong foundation for successful R&D programs which have been accessed by scores of international investors in Canada. This favourable environment includes policies addressing:

In 2010, IBM, Pratt & Whitney Canada, Ericsson, AMD, Alcatel-Lucent, Sanofi-Aventis group, Pfizer, Glaxosmithkline, Imperial Oil and Novartis were all top 25 R&D spenders in Canada. They have collectively invested more than \$10 billion in Canadian R&D over the past five years.

—Research Infosource

Much of the breakthrough research and innovation occurring in Canada is taking place in several innovation clusters that span the country.

- effective protection of intellectual-property rights,
- open competition in domestic market in the deployment of digital information and communications technologies and platforms,
- transparent government procurement practices, and
- openness to high-skill immigration.

A recent international study⁷ recognized the positive contribution to innovation made by these policies. Canada is in fact the world's leading country in driving economic growth through an integrated approach to innovation.

⁷ Information Technology and Innovation Foundation (Kansas City, Missouri) and the Kauffman Foundation (Washington, DC). *The Global Innovation Policy Index*. 2012.



Developing attosecond science. State-of-the-art laser equipment in the JASLab. Studying individual electrons. Photo courtesy of National Research Council Canada

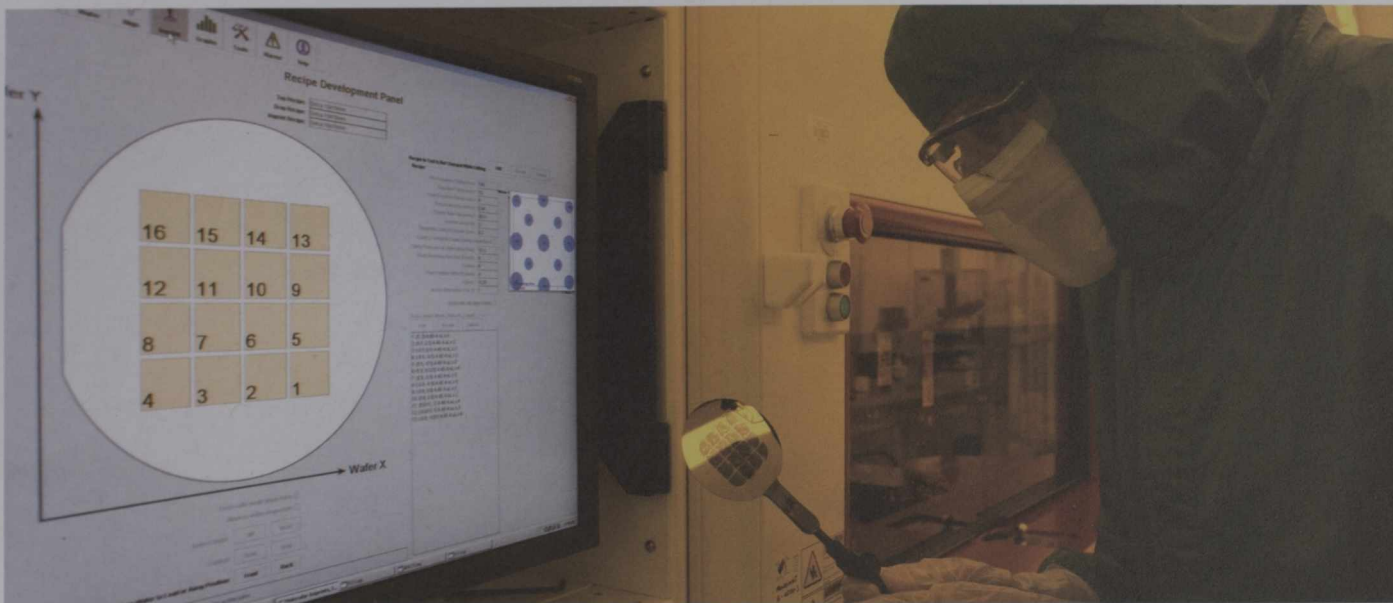
Canada has the recipe for turning research into innovation, and innovation into commercial breakthroughs and profits.

Canada is home to many impressive innovations that—while perhaps not as familiar as **Bombardier's** CRJ Series of regional jets, canola oil or **RIM's** Blackberry—generate a wealth of opportunities for international investors across a variety of sectors. Canada's world-leading mining companies, for instance, have developed advanced, higher-resolution imaging technology to optimize exploration programs. Canadian research into the potential health benefits of canola, probiotics and oat fibre enables food manufacturers to boost the health properties and international sales potential of processed foods. Finally, Canadian nanotechnology research enables the development of high-performance wood products that meet the demands of world construction markets.

All of these innovations have been achieved thanks to strong collaboration between industry and universities, and supportive, progressive government policies, R&D tax credits and other incentives. Part 2 of this document provides a number of examples of Canada's innovation advantages.

Much of Canada's breakthrough research and innovation occurs in several technology clusters that span the country. Some of these clusters grew out of local networks of companies; others emerged when a prominent company or educational institution spun off new businesses and attracted outside investors. Universities, colleges and research institutions actively align their research and training efforts to meet the needs of existing and emerging clusters. Examples can be found in every Canadian province:

- **British Columbia:** Home of the most successful product in medical history—**Angiotech's** coated coronary stent has been implanted in millions of patients worldwide; annual sales have reached US\$2.5 billion.
- **Alberta:** Canada's energy province is also home to a global centre for nanotechnology research and commercialization.



Nanoimprint.
Photo courtesy of National Research Council Canada

- **Saskatchewan:** Home to 44 percent of Canada's cultivated farmland, the province is also a centre of advanced agricultural biotechnology and home to Plants for Health and Wellness Cluster (PHW) that develops plant-based pharmaceuticals and disease-resistant crops.
- **Manitoba:** Home to a biomedical technology cluster that develops innovative medical devices. Over the past 20 years, the cluster has spawned more than 25 globally successful companies, including **Biovail**, **IMRIS**, **Intelligent Hospital Systems**, **Medicure** and **Cangene**.
- **Ontario:** Home to a massive agri-food cluster that represents the third-largest food manufacturing region in North America, Ontario also boasts one of the top five photonics clusters in the world. The cluster has diversified well beyond telecommunications and now encompasses healthcare (e.g. point-of-care blood testing), energy (solid-state lighting and solar energy) and numerous sensor applications.
- **Quebec:** In addition to hosting major knowledge-driven clusters in aerospace, digital media and life sciences, the province is home to a burgeoning aluminum-transformation technology cluster that advances the design and manufacture of value-added aluminum products.
- **New Brunswick:** The province's information technologies and e-business cluster helps bolster Canada's competitive advantages in the learning, health care and entertainment fields.
- **Nova Scotia:** Home to a life-sciences cluster that develops marine-based products for health and wellness, along with technologies to improve the safety of brain surgery.
- **Prince Edward Island:** Home to a nutrisciences and health cluster that develops effective treatments for health conditions such as Alzheimer's, stroke and diabetes.
- **Newfoundland and Labrador:** Home to a highly innovative ocean-technologies cluster that develops and tests technologies to address the needs of many sectors, including offshore energy, fisheries, marine transportation and ocean sciences.

As world business leaders look to take their businesses to new horizons, they will find fertile ground for new ideas and game-changing innovation in Canada.



Photo courtesy of National Research Council Canada

World-Class Talent

Canada has one of the world's best-educated workforces and the highest proportion of post-secondary graduates among OECD countries⁸.

Its highly educated, flexible and multicultural workforce is ideally suited to today's knowledge-based economy. Canada's workforce is underpinned by a world-class education system that includes some 100 universities and more than 130 colleges. As a result, thousands of highly qualified students graduate each year. These schools also attract students and researchers from around the world. Canada's immigration system has traditionally been able to attract and retain the best and brightest minds to staff the most demanding projects.

Canada ranks number one in the G-7 for higher education research and development expenditures as a percentage of GDP.

OECD (2011)

Canada's educational system ranks number one in the G-7 for quality.

The World Economic Forum

FOREIGN-BORN LABOUR FORCE (AS PERCENTAGE OF TOTAL POPULATION—2007*)



Source: OECD
Most recent statistic available

⁸ OECD. *Education at a Glance*. 2011.

GROWING A \$2 BILLION SUBSIDIARY IN CANADA

"We have had a tremendous experience in Canada, having found great capabilities in R&D, engineering, processor development and software development. This has helped us grow from a company with \$52 million in Canadian revenues in 1994 to \$2 billion today."

Robert Lloyd, Executive Vice-President,
Worldwide Operations for Cisco, speaking at the *Focus on Canada* Financial Times Series, San Francisco,
January 18, 2012

As one of the world's most cosmopolitan countries—more than 200 languages⁹ are spoken here every day—Canada offers tangible advantages to companies seeking to serve a global marketplace. Multilingual and well-travelled, Canada's workforce is more and more recognized for its ability to work in international contexts. Canadians are often called upon to work on projects overseas, due to their strong reputation for delivering projects on time and on budget.

Cost-Competitive

Canada's business-operating costs are the second-lowest in the G-7 and five percent lower than those in the US, according to the most recent KPMG analysis¹⁰. This cost-competitiveness is particularly apparent in R&D-intensive industries such as biopharma and in other sectors that require a high proportion of skilled labour, such as digital entertainment and software design.

Overall business costs in Canada are second lowest in the G-7 and five percent lower than in the us

- KPMG *Competitive Alternatives*, 2012

Canada ranks no. 2 in the G-7 and no. 4 in the world for the quality of its management schools.

The World Economic Forum

A key factor in Canada's superior economic performance is a decade-long plan to lower corporate income taxes. In January 2012, Canada further reduced its federal corporate income-tax rate to 15 percent¹¹, bringing the combined provincial and federal rate to an average of 26 percent, well below the comparable rates of most other G-7 countries and more than 13 percentage points below those of the United States.

⁹ Statistics Canada.

¹⁰ KPMG. *Competitive Alternatives*. 2012.

¹¹ Canada Revenue Agency. Retrieved on May 1, 2012 from <http://www.cra-arc.gc.ca/tx/bsnss/tpcs/crprtns/rtts-eng.html>.

WHICH COUNTRY IS MORE COST-EFFECTIVE THAN CHINA?

“When it comes to the kind of advanced engineering we do to build high-end products never built before, we’ve discovered that Canada is actually more cost-effective than China.”

Michael Worry, CEO
Nuvation Engineering

Canada now has a combined federal-provincial statutory general corporate income tax rate averaging 26 percent. This tax rate is below the level of most other G-7 countries and more than 13 percentage points lower than that of the US.

Canada is also the first G-20 country to make itself a tariff-free zone for manufacturers by eliminating tariffs on manufacturing inputs, machinery and equipment. When factoring in accelerated capital cost allowance (CCA) treatment for investments in machinery and equipment, along with other deductions and credits, foreign investors will find that Canada has one of the lowest overall tax rates on new business investment among OECD countries and the lowest such rate in the G-7. All of these help make Canada one of the most cost-effective places to do business in the developed world.

Outstanding and Affordable: the Canadian Quality of Life

Canada's quality of life provides a significant advantage for international investors when it comes to relocating their top talent (as the two following tables illustrate). No matter where you live in Canada—even in major cities—spectacular coasts, lakes, forests and mountains are never far away and beckon outdoor adventurers of

COST OF LIVING INDEX—G-7 RATING
NEW YORK COST OF LIVING INDEX: 100
(THE LOWER THE SCORE THE BETTER)—2010



Source: IMD World Competitiveness Online – 2011



Montréal's Jazz Festival, named Festival of the Year 2011 by the Canadian Music and Broadcast Industry, ©Festival International de Jazz de Montréal Marie-Hélène Tremblay

all kinds. Multicultural cities and communities feature a mosaic of vibrant arts, entertainment and cuisine. Canada's public-health and education systems are rivaled by few in the world. And it is all affordable; indeed, Canada has the third-lowest cost-of-living among G-7 countries.

"Canada has been home to my family over the last five years. Canada's cities have strong neighbourhoods, a lot of public and open spaces and great schools. It's a great place to enjoy life—a really vibrant and fun place to be."

David P. Homer, President
General Mills Canada

Vancouver (#1), Ottawa (#2), Toronto (#3), Montreal (#4) and Calgary (#7) are tops in North America when it comes to quality of life.

Mercer

Canada has the highest quality of life in the G-7 and second highest in the OECD.

OECD

Canadian cities are safe, a reflection of widespread social stability. Furthermore, the Canadian way of life is inclusive and respectful of diversity and creativity—precisely the characteristics knowledge workers look for in a global marketplace. Canadian cities are finally being recognized for their livability and outstanding quality of life.

Overall Lifestyle Experience in Country of Residence

Top 10 Countries

RANK	COUNTRY
1	Thailand
2	Canada
3	South Africa
4	Philippines
5	Malaysia
6	Australia
7	Spain
8	New Zealand
9	Belgium
10	United States

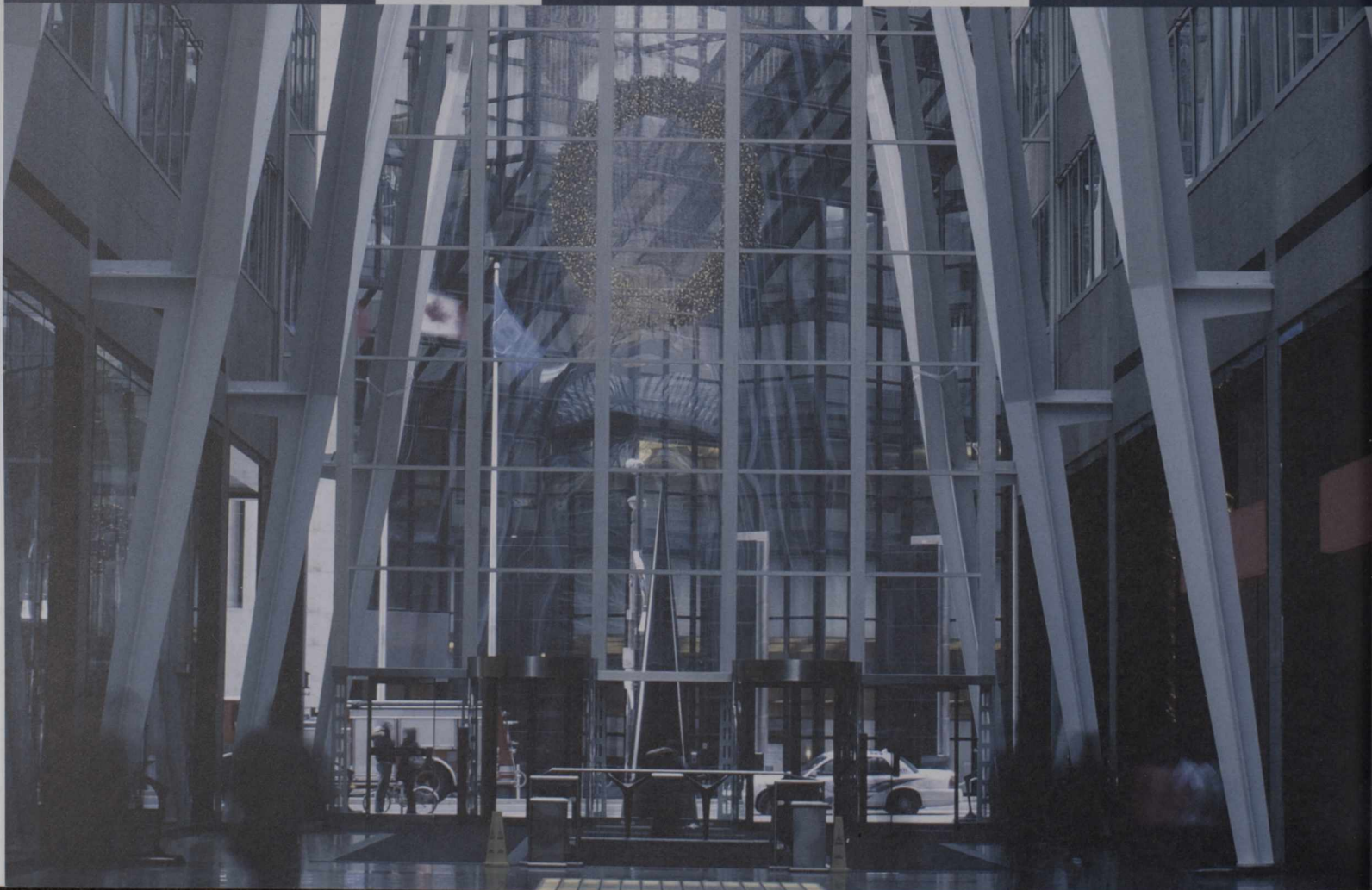
Source: HSBC Expat Explorer Survey 2012



II

A SAMPLE OF CANADA'S INDUSTRIES

**A WEALTH OF
OPPORTUNITIES**



Few people recognize just how diversified and innovative Canada's economy is. While so-called high-tech industries, such as information technology and life sciences reach new levels of sophistication, traditional industries are also undergoing radical change. In fact, Canada's various industrial sectors have all not only become high-tech, but are also closely interrelated.

Innovation tends to flourish at the intersection of apparently distinct sectors. Canada is a case in point. The development of many regional innovation systems spread across the country has favoured the formation of cross-industrial partnerships, with widespread support and collaboration from universities. Global investors frequently link with small but innovative Canadian firms and research groups. Public administrations are also supportive, through public R&D centres, as well as targeted incentives and stimulating regulations and policies.

The results are plain to see.

This section illustrates how Canada's innovation system participates in the emergence of next-generation products, be it the electric car, the paper phone or wood-based jet fuel. See how gaming converges with simulation technologies and aerospace support services. See in the following pages how agriculture and chemicals combine to create tomorrow's bio-economy.

Canada offers a wealth of opportunities and a world of innovation.





**ADVANCED
MANUFACTURING**



Photo courtesy of National Research Council Canada

ADVANCED MANUFACTURING *Investors in the advanced-manufacturing sector understand Canada's unique benefits: the lowest overall tax rate on new investment among G-7 countries, integration with the North American industrial and consumer markets, lucrative R&D incentives and a skilled manufacturing labour force that consistently delivers high levels of quality and productivity.*

AEROSPACE

Canada's aerospace and related industries sector is robust and dynamic, and has a long history of innovation and global success. With exports accounting for 80 percent of the industry's annual revenues of more than \$21 billion¹², Canada's aerospace producers have earned an outstanding worldwide reputation for quality, value, performance and reliability. More is to come due to an intensive R&D effort: between 2002 and 2010, the R&D investment in this sector grew by 46 percent to reach \$1.5 billion¹³.

Strong Performance

Today, Canadian aerospace firms are suppliers of choice for a broad spectrum of products and services, including regional and corporate aircraft, avionics, commercial helicopters, aircraft engines, flight simulation, landing gears and space systems. Canada's aerospace-manufacturing sector has achieved impressive gains in productivity in recent years. In fact, from 2000 to 2009 the sector's productivity growth was four times the average among Canadian manufacturers and was also larger than that recorded by the US aerospace industry¹⁴. Companies in Canada are also globally competitive

**The Canadian aerospace industry:
81,050 employed in more than 400 companies.**

suppliers of airframe and wing structural assemblies, power conversion and distribution systems, integrated electronic controls, environmental-conditioning systems, air-traffic control and management systems, aviation communications systems, as well as aircraft maintenance, repair and overhaul services.

Canada's **Bombardier Aerospace** is a world leader in the design and manufacture of innovative aviation products and services for regional, business and amphibious aircraft. The company's family of commercial and business aircraft includes the pioneering Bombardier CRJ Series of regional jets and the cost-efficient Q Series turboprop. In 2013, Bombardier C Series will set new standards for operational flexibility, cost effectiveness and passenger comfort in 100- to 149-seat aircraft.

¹² Aerospace Industries Association of Canada. *Canadian Aerospace Industry Performance*. 2010.

¹³ Industry Canada. Economic modelling based on data from Statistics Canada (Business Registry and Cansim) and firm level observations. 2012.

¹⁴ Industry Canada estimate 2012, based on data from Statistics Canada.

MITSUBISHI HEAVY INDUSTRIES CANADIAN SUBSIDIARY EXPANDS

A subsidiary of Japan-based **Mitsubishi Heavy Industries, MHI Aerospace**, opened its new facility in the Greater Toronto Area in 2012—less than five years after setting up shop in Ontario. Mitsubishi Heavy Industries' first aerospace production facility outside Japan fabricates wings for **Bombardier's** high-speed business jets, and currently employs 270.

"We selected Toronto because it provided us with the highly skilled workers we need—many of them from around the world, which is also an asset—a facility that fit the bill and proximity to our client. This is the first trial for MHI Aerospace outside Japan in more than two decades and we've demonstrated manufacturing quality and efficiency."

Haruhiko Machiyama, President
MHI Aerospace

Leading-Edge Innovation

Collaborative innovation, a defining characteristic of the Canadian aerospace industry, results from a wide variety of public-private partnerships that drive the sector's global technological leadership. A public-private collaboration involving six aerospace companies in Quebec provides a good example of this approach. With a total investment of \$150 million over four years, the **Greener Aircraft Catalyst Project** seeks to accelerate the development of lighter, more efficient, quieter and less carbon-intensive aircraft¹⁵. A second example is the **Green Aviation Research and Development Network (GARDN)**, a business-led initiative to promote more environmentally-friendly aerospace technologies.

Some of the largest international investors in the aerospace industry have operations in Canada, including **Bell Helicopter, Boeing, Bombardier, Eurocopter** (a division of **EADS**), **GE Aviation, Goodrich, L-3 communications, Messier-Dowty, Pratt-Whitney Canada, Rolls-Royce, Thales** and **Ultra Electronics**.

In Manitoba, a good example of such collaborative innovation is the **Composites Innovation Centre (CIC)**. It is a not-for-profit corporation that works on industry-sponsored projects to support and stimulate economic growth through innovative research, development and application of composite materials and technologies for manufacturing industries. The CIC is driven by industry requirements in key sectors such as aerospace, and supports project coordination, engineering, design and testing.

Boeing, the world's largest aerospace company, has facilities in Richmond, British Columbia, and in Winnipeg, Ottawa and Montréal, that produce parts, components, assemblies, and software applications for all of the company's commercial aircraft.

¹⁵ Aéro Montréal. Retrieved on May 1, 2012 from <http://www.aeromontreal.ca/projet-mobilisateur-de-lavion-plus-ecologique-en/>



Bombardier Aerospace Global Family, International Paris Air Show 2011.
Source: www.aviationnews.eu/2011/06/12/

Top-Quality Talent

Deep talent pools are another key reason international investors in the aerospace industry choose to set up operations in Canada. This key locational advantage is underpinned by a top-quality education system that turns out some 3,000 aerospace graduates each year¹⁶. Some 20 universities, along with several specialized trade schools, offer advanced degrees in aerospace and aerospace engineering at the undergraduate, graduate and PhD levels.

Many Canadian-based operations contributed to the Airbus A380, including Pratt & Whitney Canada (auxiliary power units), Messier-Dowty (landing gears) and CAE (first flight simulator).

¹⁶ Conference Board of Canada. *Canada's Aerospace Industry*. 2011.

GE AVIATION OPENS AN AIRCRAFT-ENGINE TESTING, RESEARCH AND DEVELOPMENT CENTRE IN WINNIPEG, MANITOBA

In 2012, the US-based **GE Aviation**, in partnership with **StandardAero**, announced a \$50 million investment in a research, development and testing centre in Winnipeg, Manitoba. The centre will increase the company's capacity to test commercial and military aircraft engines.

"Winnipeg's climate is a natural choice for icing-certification testing. There is a secure site location, and we have access to StandardAero's skilled workforce who are trained and familiar with GE's engine testing and test-cell design."

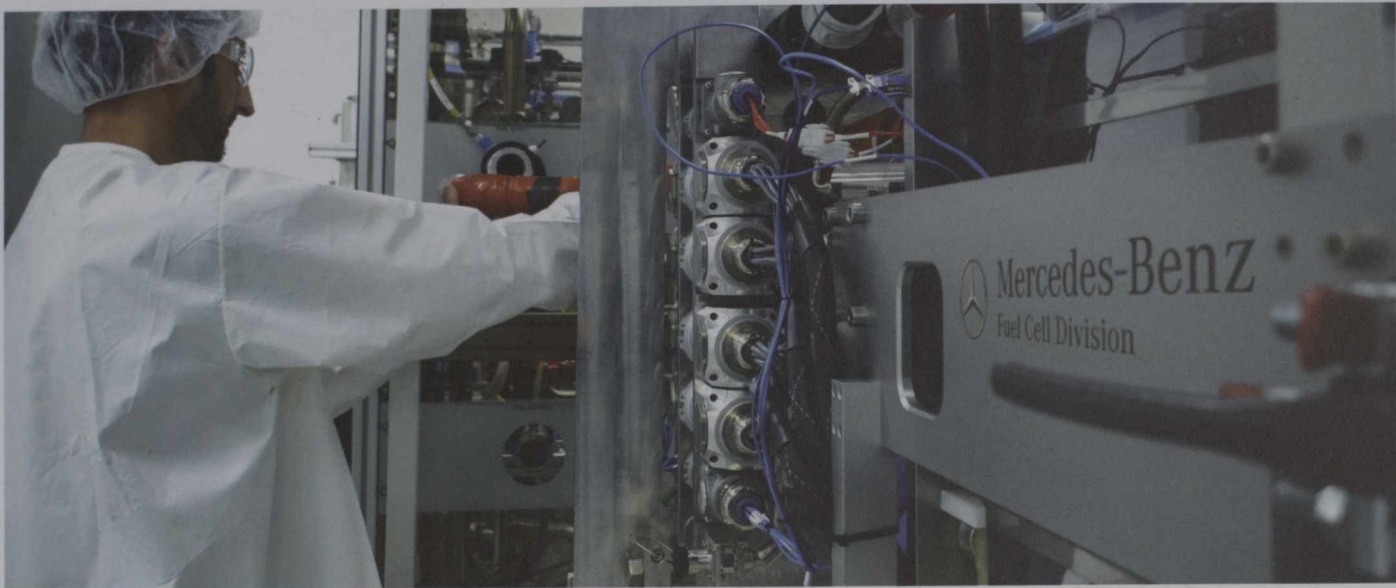
Elyse Allan, President and CEO
GE Canada

Such programs can be found at the **École des métiers de l'aérospatiale** and the **École nationale d'aérotechnique** in the Montréal area, and the **University of Toronto Institute for Aerospace Studies** and the **Ryerson Institute for Aerospace Design and Innovation**, in the Toronto area.

Pratt & Whitney Canada invests some \$400 million annually in the development of new products and processes. The company has collaborated for more than 15 years with Canadian universities and the **National Research Council** to develop next-generation engines that are increasingly fuel-efficient, quieter and cleaner.

New Investment Projects by International Investors (since January 2011)

- US-based **Goodrich** announced a \$98 million expansion of its plant in Oakville, Ontario. The plant will develop and manufacture landing-gear systems made from lighter and stronger materials.
- France-based **Latécoère** has established a subsidiary in Montréal. The firm specializes in fuselage sections and doors, as well as cabling, avionics bays and on-board equipment. The firm has already designed aerostructures for **Bombardier Aerospace**.
- France-based **Safran Electronics** expanded its operations in Peterborough, Ontario. The company will enhance its line of embedded control units currently used in aircraft engines and landing gear.
- Japan-based **Sumitomo Precision Products** announced the construction of a new facility in Toronto that will focus on the final-assembly process for landing-gear products on regional aircraft and business jets.
- France-based **Thales** announced a \$43 million modernization project of its plant in Montréal. The plant will develop flight-control systems for aerospace applications.



Factory acceptance test with operator at Mercedes Benz Fuel Cell Stack Production (Burnaby, British Columbia). Photo courtesy of Mercedes-Benz

Canada's automotive industry continues to attract leading international researchers and investors.

AUTOMOTIVE

Canada has been an automotive manufacturing nation for more than 100 years. With a pool of more than 1,300 companies, Canada now accounts for 16 percent of vehicle production in North America. With annual revenues of \$71 billion and exports valued at more than \$53 billion per year¹⁷, Canada continues to be a major global player. Annual capital investment in Canada's automotive industry averaged \$3 billion from 2002 to 2011¹⁸ as companies such as **Chrysler, Ford, General Motors, Honda** and **Toyota**, along with manufacturers such as **Hino, Motor Coach Industries, PACCAR** and **Volvo Bus**, seek to make the most of the country's many advantages. Annual investments in R&D averaged more than \$460 million over the same period¹⁹. Results are increasingly visible and the car of tomorrow is already taking shape—in Canada.

MERCEDES-BENZ OPENS ITS FIRST FUEL CELL PLANT

In 2010, Mercedes-Benz announced plans to build a \$50 million hydrogen fuel-cell plant in Burnaby, British Columbia. Upon completion in June 2012, the plant will supply fuel-cell stacks for Daimler's fleet of hydrogen-powered vehicles around the world.

"The decision to build the plant was (...) the logical next step of Daimler's successful co-operation with partners in Vancouver."

Gunter Walz, Vice-President of Planning
International Cooperation
Mercedes-Benz

¹⁷ Statistics Canada.

¹⁸ Industry Canada, from various sources.

¹⁹ Ibid.

TOP US E-CAR SCIENTIST CHOOSES CANADA

Hamilton's **McMaster University** made headlines in the automotive press with its 2010 recruitment of Dr. Ali Emadi from the **Illinois Institute of Technology**. One of the world's foremost developers of electric and hybrid powertrain technologies, Emadi now spearheads the effort to take hybrid-vehicle R&D to a new level. In addition to overseeing the construction of a new hybrid-vehicle research facility at the university, he also heads **MacAUTO**, the coordinating body for automotive research and education at McMaster.

"Building a unique program like this from the ground up is a wonderful opportunity. That, coupled with the university's vision and exceptional commitment for leadership in sustainable automotive research, made relocating impossible to resist."

Dr. Ali Emadi

In seven of the last 11 annual J.D. Power and Associates quality surveys including the 2012 edition, Toyota and General Motors plants in Canada have been rated as the best in the western hemisphere or in North America.

Reputation for Manufacturing Excellence

Independent studies consistently rank Canada's auto sector highly in terms of productivity and quality. Canadian assembly plants have earned a global reputation for exceptional quality, winning many awards. In fact, Canadian assembly plants have won one-third of all J.D. Power and Associates awards for plant quality in North America since 1990²⁰.

These top-performing plants are supported by world-class suppliers with operations in Canada

such as **Aisin Seiki, Continental, Denso, Faurecia, Johnson Controls** and **TRW**. In addition, major global suppliers based in Canada include **ABC Group, Linamar, Magna, Martinrea, Valiant, Wescast** and **Woodbridge**.

Deep Talent Pools

Canada is home to a highly-skilled automotive workforce of more than 111,000. Canadian autoworkers are known for their strong work ethic, low turnover, reliability, quality and productivity. Canada's top-quality educational institutions ensure a continuous supply of qualified graduates in engineering, machining, metalwork, welding, robotics, manufacturing systems and service, as well as, tool-and-die making.

Cutting-Edge Innovation

Canada's automotive industry enjoys productive and profitable research-and-innovation partnerships with universities, colleges and public research centres.

²⁰ About J.D. Power and Associates. *Initial Quality Studies*. <http://www.jdpower.com/content/detail.htm?jdpaArticleId=1422>. Consulted on April 30, 2012.



The eVaro car, developed in Canada, is a three-wheeled electric sports car that can achieve speeds of up to 210 km/h and travel 200 km between charges.

Photo courtesy of Future Vehicle Technologies Inc.

AUTO21, for instance, is a national network of 200 top researchers at more than 35 academic institutions, government research facilities and private-sector labs across Canada. The network explores issues that range from consumer education in the use of safety devices, to new and improved processes for design, materials and manufacturing. Another example is the **Automotive Research & Development Centre**, a partnership between the **University of Windsor** and **Chrysler Canada** which has already invested \$600 million in R&D projects and infrastructure such as several road-test simulators²¹.

Key areas of R&D focus include alternative fuels, mechanical engineering, engine and transmission design, advanced materials, emissions, biomechanics and vehicle safety. Intensive R&D related to electric vehicles is also underway in Canada. **Magna International**, for instance, has already invested more than \$400 million in research and development into electric vehicle technologies in Canada.

New Investment Projects by International Investors (since January 2011)

- Japan-based **Canadian Autoparts Toyota** has undertaken a \$1.8 million research project with the **University of British Columbia** to develop an innovative new casting process for aluminum wheels.
- US-based **Dana** invested \$37 million in its Oakville and Cambridge, Ontario, facilities to design and manufacture battery-cooling technology for EVs.
- US-based **Ford Motor Company** has added the production of cylinder blocks for the 5.0-litre V-8 engine to its plant in Windsor, Ontario.
- US-based **General Motors Canada** invested \$185 million in its Oshawa plant, in Ontario, to produce the all-new Cadillac XTS sedan as well as the next-generation Chevrolet Impala. This is in addition to the \$480 million invested in 2010 to produce a new high-feature V-8 and six-speed, rear-wheel drive transmissions in St. Catharines, Ontario.

²¹ University of Windsor. The Automotive Research and Development Centre. <http://athena.uwindsor.ca/units/eng/news.nsf/O/474F9FFD7E425C CA85256CD00049CC0D?openDocument>. Consulted on April 30, 2012.

GLOBAL MINING GIANT VALE PARTNERS WITH CANADIAN INNOVATOR ON NEW DEMONSTRATION PLANT

Brazil-based Vale invested \$49 million in a demonstration project in Sudbury, Ontario, that features Rail-Veyor[®], an innovative material-haulage system. The remotely operated light-rail system replaces diesel trucks with a series of interconnected two-wheeled cars propelled by stationary drive motors. The system also features variable frequency drives, fibre-optic networks and programmable logic controllers.

“With Vale’s support and commitment, we look forward to advancing the commercialization of the technology in underground mines on a global basis.”

Ronald G. Russ,
Interim CEO Rail - Veyor Technologies Global Inc.

- Japan-based **Honda** added production of the popular CR-V to its assembly plant in Alliston, Ontario.
- Japan-based **Toyota** will invest \$545 million to upgrade and expand its assembly plants in Ontario. Toyota also recently announced that \$80 million of this investment will be used to boost annual capacity at its Woodstock plant from 150,000 to 200,000 units, thus creating 400 new jobs. This investment project also includes production of the Tesla-powered RAV4 EV (electric vehicle).

MACHINERY AND EQUIPMENT

Canada ranks among the world’s top machinery-manufacturing countries. With nearly 8,700 companies and a direct production labour force of more than 113,000, Canada’s machinery and equipment industry recorded sales of \$44.8 billion in 2011²²; exports accounted for 68 percent²³ of all sales. After a lull during the 2008–2009 global slowdown, export sales have resumed their growth—a reflection of Canada’s growing reputation for excellence in international markets.

Canada’s expertise in the sector is fuelled by strong education and R&D infrastructure, and complemented by ready access to major markets. The industry also benefits from Canada’s wealth of major capital investment projects in oil and gas, mining, power generation and transportation.

²² Statistics Canada. Includes Machinery industry (NAICS 333) and Electrical Equipment, Appliance and Component Manufacturing (NAICS 335).

²³ Statistics Canada. Trade Data Online. 2010.



Vale's New Demonstration Plant Featuring Canadian Innovative Hauling System Technology.
Photo courtesy of Rail-Veyor Technologies Global Inc.

Major domestic machinery manufacturers have emerged over the years. Many are now active on international markets and have expanded their production capacity in Canada such as **ATS Automation Tooling Systems, Charl-Pol, Premier Tech, Valiant and Weldco-Beales Manufacturing**. International investors are also becoming increasingly active. In 2011, US-based **Jenmar** opened its new plant in Nipissing, Ontario to develop and produce reinforcement equipment and materials for underground mines. Belgium-based **Magotteaux** announced that it would upgrade its plant in Magog, Québec, to produce grinding balls and castings, used in mining concentrators, that are resistant to abrasion, wear and high temperatures.

Recent Investment Projects by International Investors

Canada's machinery and equipment manufacturing sector attracted \$5.8 billion worth of international investment in 2010, an increase of 75 percent since 2005²⁴.

Foreign investors are attracted to Canada's skilled workforce and specialization in advanced materials, hybrid technologies, and intelligent systems, machinery and plant design.

Global leaders with Canadian production facilities include France's **Alstom** and **Areva**, Japan's **Hitachi**, Germany's **Siemens** and **Dieffenbacher**, Sweden's **Atlas Copco**, US-based **Johnson Controls** and **John Deere**, Italy's **Valvitalia** and **Biesse**. Most of these companies have made significant investments in Canada in recent years.

²⁴ Statistics Canada. *Foreign Direct Investment Stocks in Canada*.

A photograph of a man with grey hair, wearing a plaid shirt, standing in a field of golden-brown grain. He is looking down at a small amount of grain he is holding in his hands. The background is a clear blue sky. A large green bracket-like graphic is superimposed on the sky, framing the text.

AGRI-FOOD

AGRI-FOOD Canada is a global agri-food powerhouse offering a wealth of opportunities to global investors. Its many advantages include abundant, high-quality and competitively priced agricultural raw materials, a large pool of skilled labour and ready access to global markets. From grains and oilseed production and processing, to functional foods and fine niche products, Canada's agri-food sector is one of the world's most innovative and globally integrated.

The largest manufacturing industry in Canada, in shipment value, worth \$90 billion (2010). It employs 270,000 people.

such as wheat flour, semolina, and other milled-grain products, are of a very high quality, as Canada is considered as having a world-class food safety program, particularly for grain and oilseed exports.

FOOD PROCESSING

The food and beverage processing industry is the largest manufacturing industry in Canada; it accounts for 17 percent of the total value of manufacturing shipments and two percent of national GDP²⁵. Canada exported \$21 billion worth of processed food and beverage to a total of 180 countries. Significant proportions went to the United States, China, Japan, and Mexico.

Grain and Oilseed Processing

Canada is a world-leading producer of grain products. Indeed, according to the FAO, Canada ranks in the top three countries in the world for production for lentils, peas, linseed, mustard seed, oats and rapeseed²⁶. Canadian export commodities

The grain sector attracts regular investments from international investors such as Archer Daniels Midland, Bunge, Cargill and Louis Dreyfus.

Functional Foods and Natural Health Products: At the Forefront of the Health Food Revolution

Canadian researchers are making breakthroughs in developing and manufacturing healthy ingredients for natural health products and dietary supplements. These include omega-3 fatty acids from marine sources, unsaturated fatty acids from canola oil, soy protein, plant sterols and stanols from vegetable oils, as well as probiotics and fermented beverages.

²⁵ Agriculture and Agri-Food Canada. Food Industry Division. 2010.

²⁶ Food and Agriculture Organization of the United Nations, 2010.

A GRAIN PROCESSING AND EXPORT POWERHOUSE

Canada's considerable competitive advantages in grain processing and transport inspired two global leaders to join forces in December 2011. Bunge and Malaysia-based **TRT-ETGO** (a subsidiary of **Felda Global**) announced a joint venture that combines the crushing and refining operations of Bunge's Hamilton, Ontario plant with TRT-ETGO's \$15 million plant in Bécancour, Quebec which opened in 2010.

"Expanding and upgrading our capacity in Canada is a natural way to grow Bunge's North American business as domestic and export demand for both canola oil and meal continues to increase."

Soren Schroder, President and CEO
Bunge North America

Canada has also introduced new, innovative products to the world such as flax bio-actives, fibre-based prebiotics and berry-based polyphenolic antioxidants²⁷.

With close to 700 firms actively producing these health products, this sector yields annual revenues of over \$3.5 billion²⁸. Its success stems from Canada's stringent quality and safety standards, innovative research infrastructure, abundant natural resources and an environment of collaborative teamwork between public and private partners. Recent examples:

- **Danone** invested \$8 million in 2010 with Montréal-based **Micropharma** to develop new technologies in cholesterol reduction for dairy products. Micropharma focuses on commercial probiotic and enzymatic solutions for metabolic diseases.
- **Technology Crops International**, a leader in specialty crops, opened a state-of-the-art oilseed processing facility in Prince Edward Island in July 2011. The new facility uses innovative and sustainable refining technologies to manufacture custom refined oils.

What's in a Name? Canola: The 'Canadian Oil'

The crop we know today as canola is a made-in-Canada innovation. Indeed, the word 'canola' is an abbreviation of '**Canadian oil, low acid**'. In the 1970s, Canadian plant breeders developed canola from rapeseed for industrial uses. Researchers continued to develop new and improved forms of canola with fatty-acid profiles to make it safe and healthy for human consumption (with low levels of saturated fat), and livestock animal diets. Canola is now one of Canada's most valuable crops, contributing more than \$15 billion to the country's economy each year. It continues to attract foreign investment, notably in research, by companies such as **Bayer CropScience** and **BASF**.

²⁷ Agriculture and Agri-Food Canada. Canada. 2009.

²⁸ Statistics Canada. *Results from the Functional Foods and Natural Health Products Survey*. Retrieved on May 1, 2012 from <http://www.statcan.gc.ca/pub/88f0006x/88f0006x2009001-eng.htm>.



Exploring the genetic blueprint of canola
Photo courtesy of National Research Council Canada

Fine Foods and Other Specialty Products

- Snack foods continue to gain in popularity both at home and abroad, and exports have more than tripled in the past 15 years. The industry has responded to evolving tastes in international markets by introducing new flavours and products, including organic snack foods made from hemp seeds and root vegetables such as parsnips, beets, sweet potatoes and carrots.
- International demand for confectionary products is also thriving. Global giants such as **Ferrero** (Italy), **Barry-Callebaut** (Switzerland) and **ChocMod** (France) have invested more than \$270 million in chocolate-manufacturing facilities in Canada since 2004. Despite the recent economic slowdown, Canada's exports of confectionary products have grown by an average of three percent annually during the past five years²⁹.
- Canadian exports of specialty foods, such as foie gras, kimchi, prosciutto and Harovinton soybeans (used in tofu) also continue to expand. In many cases, new immigrant entrepreneurs in Canada have invested in the necessary facilities.

New Investment Projects by International Investors (since January 2011)

- US-based **Archer Daniels Midland** announced the construction of a new canola-processing plant in Lloydminster, Alberta.
- Iceland-based **Bakkavor** announced the construction of a new plant in Cobourg, Ontario, for the production of fresh prepared meals for grocery markets.
- US-based **Bunge** announced plans to double capacity at its canola-processing plant in Fort Saskatchewan, Alberta.
- US-based **Cargill** has announced plans to build a new facility in McLennan, Alberta, that will supply farmers with crop inputs.
- Germany-based **Dr. Oetker** is building its first North American frozen-pizza production facility in London, Ontario.
- Germany-based **Karlsberg** announced the construction of a new brewery in Saint-Hyacinthe, Quebec.
- US-based **Kellogg's** expands cereal production at its plant in Belleville, Ontario.
- US-based **MonaVie** opened a new distribution centre in Burnaby, British Columbia, for its acai-based nutritional products.

²⁹ Statistics Canada.



**CHEMICAL AND
PLASTICS**

CHEMICALS AND PLASTICS *Canada's multi-billion dollar chemicals and plastics industry continues to thrive thanks to world-class petrochemical facilities, competitively priced feedstocks, favourable corporate-tax rates, abundant skilled labour including scientists and engineers, generous R&D incentives and ready access to major North American industrial and consumer markets.*

In 2010, the industry employed nearly 155,000 Canadians and generated revenues of \$60 billion. Exports accounted for 57 percent—or \$35 billion—of revenues³⁰.

CHEMICALS

Substantial reserves of natural gas provide a readily available source of competitively priced feedstock and enable low-cost production of ethylene and its derivatives. Large and efficient extracting plants, modern ethylene crackers and derivative plants among the largest in the world enable Canada to achieve important economies of scale. With 77,670 workers, 2,700 companies³¹ and leading domestic establishments such as **ERCO Worldwide, Methanex, NOVA Chemicals** and **Raymor Industries**, Canada's chemical industry is one of the country's largest manufacturing sectors with shipments valued at \$44 billion in 2010, including exports worth \$28 billion³².

From sustainable chemistry to bioplastics, Canada demonstrates how to build a profitable bio-economy.

The chemicals sector continued its strong recovery in 2011, particularly industrial chemicals with total sales of \$25 billion, an 18 percent increase over 2010. Export sales, for their part, increased by 20 percent to reach \$19 billion. Operating profits for 2011 amounted to \$3.9 billion, up 61 percent from 2010³³. Canada's competitive operating costs, along with increases in commodity prices, contributed directly to profitability. Indeed, according to KPMG's 2012 survey of 100 cities in 14 countries, Canada recorded the third-lowest cost of business in the chemicals sector among established industrialized countries (behind the UK and the Netherlands). Canada ranked No. 2 in the G-7 and held cost advantages of 3.4 percent over the United States and 3.7 percent over Germany³⁴. The development of additional gas reserves and oil-sands bitumen will drive further growth in Canada's chemical industry.

³⁰ Industry Canada.

³¹ Ibid.

³² Statistics Canada.

³³ Chemical Industry Association of Canada. *Year-End Survey of Business Conditions*. 2011.

³⁴ KPMG. *Competitive Alternatives*, 2012.



Photo courtesy of National Research Council Canada

Major Global Investors in Canada	
COMPANY	
Archer Daniel Midland Company	
BASF	
BioAmber	
Cargill	
Dow Chemical Company	
DuPont	
Ensyn	
Harvest Power	
Koch Industries	
LANXESS	
Metabolix	
Naturally Advanced Technologies	
Royal Dutch Shell	
Suncor Energy	

Inorganic and Organic Chemicals

With its abundant natural resources and access to large quantities of reliable, low-cost electricity, Canada offers foreign investors access to all the key ingredients essential to the production of many inorganic chemicals.

Moreover, biotechnology is increasingly being used to create organic chemicals, some of which are commercially produced from biomass feedstocks such as corn and wheat. As technologies based on the use of bio-waste become more viable, Canada is well positioned to become a global player, given the resources currently produced from its large agricultural and forestry industries.

OPEN INNOVATION AND SUSTAINABLE CHEMISTRY: CANADA ATTRACTS US-BASED BIOAMBER FOR ITS FIRST BIOBASED SUCCINIC ACID PLANT

BioAmber, through its subsidiary **Bluewater Biochemicals**, selected Sarnia, Ontario for its first North American bio-succinic acid plant in August, 2011. Part of the C4 group of chemicals, bio-succinic acid has a wide variety of applications. The new US\$80 million plant features revolutionary technology designed by BioAmber, a prize-winning firm with extensive partnerships with market leaders including **Cargill**, **DuPont**, **Mitsubishi Chemical** and **Mitsui**. The cost-effective process involving the fermentation of agricultural feedstocks captures significant amounts of CO₂.

"Ontario's support of bioindustries and renewable energy motivated our decision to set up our bio-succinic acid production plant in Sarnia, not to mention the fact that Sarnia is a hub for the chemical industry in Ontario."

Jean-François Huc, President
BioAmber

PLASTICS

With 2010 shipments valued at approximately \$17.6 billion (including exports worth \$6.7 billion), a workforce of 76,000 and more than 2,400 establishments³⁵, Canada's plastics sector is a sophisticated, multi-faceted producer of plastics products, machinery and moulds as well as synthetic resins. Canada's large pool of highly skilled machinists and technicians represents an important asset. Canadian firms have internationally recognized expertise in high-quality injection moulding, thermoforming machinery, blown-film extrusion systems as well as extrusion capability for corrugated pipe, and other specialized plastic profiles. Customer- and market-specific projects, along with relatively short delivery times, help drive innovation at Canadian plastics companies.

Canadian companies accounted for six of the top 10 North American mould makers in 2010.

The industry is closely integrated with other advanced-manufacturing and demanding sectors such as aerospace, automotive, medical devices and telecommunications. It is also well supported by a large cluster of mould-making specialists including major companies such as **StackTeck**, **Omega Tool**, **Active Burgess**, **Reko** and **Valiant**. Of the top ten North American mould makers in 2010, six were Canadian companies and two of these, **Husky Injection Molding Systems** and **Wentworth Technologies**, ranked first and second, respectively³⁶.

Joining the Rise of Bioplastics and Biorubbers

Canada is a leading global centre for the research and development of processes to produce plastic resins from biomass. Companies capable of using Canada's abundant supply of low-cost alternative feedstocks are gaining new ground in this fast-growing market worldwide—annual growth rates are estimated by Ceresana Research at 17.8 percent to 2018³⁷.

³⁵ Industry Canada.

³⁶ Ibid.

³⁷ Ceresana Research. Retrieved on May 1, 2012 from www.ceresana.com/en/market-studies/plastics/bioplastics/.

GERMANY-BASED LANXESS INAUGURATES CANADA'S LARGEST BUTYL-RUBBER RESEARCH AND DEVELOPMENT CENTRE IN THE UNIVERSITY OF WESTERN ONTARIO'S RESEARCH PARK

LANXESS is working on bio-based rubber in partnership with Gevo, a US-based renewable-chemicals company. Gevo is currently developing a fermentation process to produce isobutanol from the fermentable sugars in biomass. The new R&D Centre serves as a pipeline of product applications for a variety of high-growth markets. In the medical-device market, for instance, butyl rubber is the material of choice for products such as closures in injection vials and blood-collection tubes. In the automotive industry, new grades of butyl rubber improve traction in tire treads.

"One of the most promising areas of research for our new R&D Centre is rubber made from biomass instead of petroleum-based raw materials. Here in this R&D Centre, we have produced the first quantities of bio-butyl. This bio-based rubber will enable us to decouple our resources from petroleum dependency."

Axel C. Heitmann, Chairman of the Board of Management
LANXESS

Synthetic Resins and Rubbers

Canada's large energy reserves, along with a skilled workforce, helps drive growth in the synthetic-resin industry. With total shipments worth \$6.2 billion in 2010 (including exports of \$5.5 billion³⁸), the industry continues to thrive. Plants based in Western Canada produce commodity-grade thermoplastic resins from raw materials derived mainly from natural gas, while those in Central Canada produce both thermoplastic and thermoset resins using raw materials derived from both crude oil and natural gas.

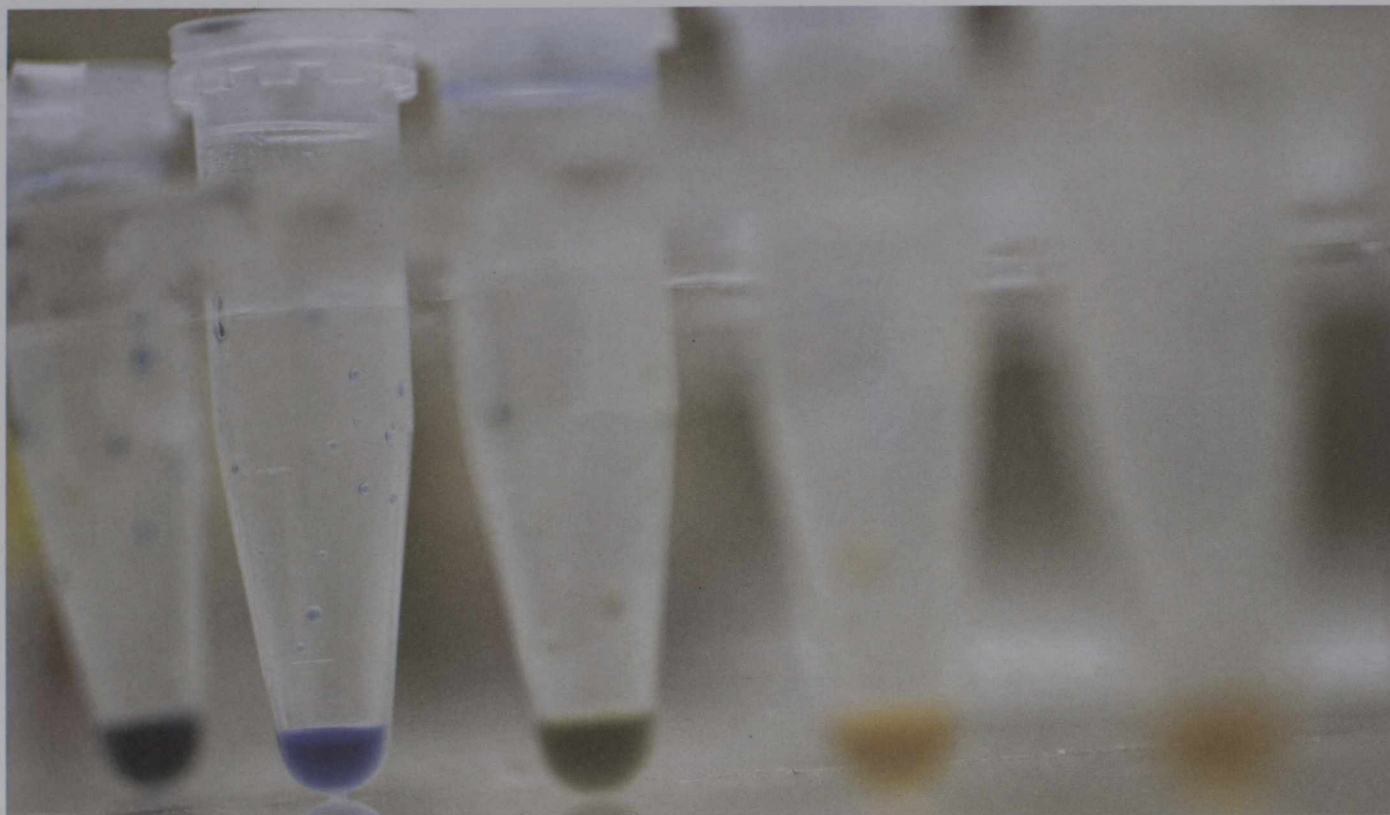
Much of the new capacity that has been built in recent years features world-scale technology: **Dow Chemical's** plant in Fort Saskatchewan, Alberta uses proprietary metallocene technology, for instance, while **NOVA Chemical's** plant in Joffre, Alberta, is the first to commercialize the company's made-in-Canada Advanced Sclairtech technology³⁹.

A Selection of Major Plastic Products Firms in Canada

COMPANY	HEAD OFFICE
ABC Group	Canada
Atlantic Packaging Products	Canada
Camoplast	Canada
Canadian General-Tower	Canada
Decoma International	Canada
Domco	Belgium
IPEX	Belgium
Intertape Polymer Group	Canada
IPL	Canada
Jim Pattison Group	Canada
Kautex Textron	Germany
Royal Group Technologies	United States
Winpak	Finland
Woodbridge Foam	Canada

³⁸ Industry Canada.

³⁹ Industry Canada.



Micropipettes

Photo courtesy of National Research Council Canada

New Investment Projects by International Investors (since January 2011)

- US-based **Archer Daniels Midland**, an agricultural-commodities company, announced a new biodiesel plant in Lloydminster, Alberta.
- US-based **Celanese** expanded its specialty-polymer plant in Edmonton. Demand for the ethylene vinyl acetates (EVA) produced by the plant is strong due to market growth for various specialty, high-margin products such as photovoltaic cells, controlled-release excipients and medical packaging.
- US-based **Dow Chemical Canada** has announced a \$41 million expansion of its polyethylene plant in Red Deer, Alberta.
- US-based **Metabolix**, a manufacturer of biodegradable plastic products, will establish a facility in Saskatoon, Saskatchewan, to develop bioplastics from camelina oilseeds.
- Germany-based **Plastique JW**, a subsidiary of **Joseph Weiss Plastic**, has invested \$2.3 million in a new plant in Trois-Rivières, Quebec, that will manufacture transparent thermoplastic products such as windshields and windows.
- US-based **Safety-Kleen** announced a \$26 million expansion of its used-motor-oil refining plant in Breslau, Ontario.
- Netherlands-based **Shell** announced additional investments in Canada's **logen Energy** to accelerate the commercialization of cellulosic ethanol. logen Energy is currently operating its demonstration plant in Ottawa.



**CLEAN
TECHNOLOGIES**

CLEAN TECHNOLOGIES *The development of clean technologies is a priority for all levels of government in Canada, at the federal, provincial, territorial and regional levels. Indeed, many support the emergence of a bio-economy with targeted policies and incentives that range from tax credits and education programs to market-stimulating regulations. As a result, projects to harness natural sources of power are underway across the country, and international investors are increasingly attracted to Canada.*

WIND, SOLAR AND OTHER RENEWABLE-ENERGY CLUSTERS

Canada's enviable status among industrialized countries as a net exporter of energy will continue to rise during the 21st century, as alternative-energy projects proceed at a record pace from coast to coast. Major long-term commitments for clean-power purchases in several provinces spur domestic development in this rapidly-growing sector.

Hydroelectricity

Canada is the world's second-largest producer of hydroelectric energy, with generation of about 348 terawatt-hours of electricity in 2010; it added another 500 MW (megawatt) of capacity to end the year with 75.6 GW (gigawatt)⁴⁰. Canada's status as a leader in hydropower stems from longstanding, home-grown technical expertise. **SNC-Lavalin**, for instance, established its international reputation for excellence through a string of successful projects ever since its creation in the 1900s. Along with harnessing Canada's extensive hydro resources, the company has also participated in projects in more than 120 countries with a total installed capacity of more than 250 GW, and some 90,000 kilometres of power lines⁴¹.

To support the development of Canada's renewable-energy capacity and related industrial fabric, many international firms have set up new facilities in Canada to develop and manufacture related components and technologies.

Wind Energy

Canada's installed wind-energy capacity now exceeds 5.2 GW and supplies more than two percent of domestic electricity demand. In 2011, new projects added more than 1.2 GW to the country's wind-energy capacity; projects in British Columbia, Alberta, Ontario, Quebec, Nova Scotia and Prince Edward Island will soon increase capacity by a further 1.5 GW. Well-known international investors in the sector include France's **EDF**, Spain's **Acciona**, US's **Invenergy**, South Korea's **CS Wind Corporation** and Germany's **WPD**. International leaders such as **Daewoo**, **Samsung**, **Enercon** and **Siemens** continue to invest in Canadian plants to develop and manufacture towers, turbine blades and other essential components.

⁴⁰ Renewable Energy Policy Network for the 21st Century. *Global Status Report*. 2011.

⁴¹ SNC-Lavalin. Retrieved on May 1, 2012 from www.snc-lavalin.com/expertise.php?lang=en&sub=1&id=4.

OCEAN ENERGY: INTERNATIONAL INVESTORS ARE JOINING THE FLOW

- In October 2011, Singapore-based **Atlantis Resource** in partnership with Canada-based **Irving Shipbuilding** and US-based **Lockheed Martin** announced the construction of a new marine turbine in Parrsboro, Nova Scotia. The electricity generated will feed Nova Scotia's power grid, as planned by the **Fundy Ocean Research Centre for Energy (FORCE)**. Once in operation, the turbine will give the Centre the largest transmission capacity for tidal power in the world—a total of 64 MW during peak tidal flows and enough to power 20,000 homes.
- **Pacific Coastal Wave Energy**, a subsidiary of Australia-based **Carnegie Wave Energy**, announced a \$20 million wave-energy demonstration project in Ucluelet, British Columbia. The project will use ocean waves to drive turbines and generate 5MW of electricity.

Solar Energy

A solar-energy cluster is emerging in Canada. The industry now covers the entire supply chain from raw materials (e.g. high-purity polysilicon) to finished products; it includes system integration as well as specialized parts and components such as solar cells, mounts, inverters and control panels. The cluster is based largely in Ontario, Canada's manufacturing heartland. Ontario is also the first jurisdiction in North America to establish a comprehensive feed-in tariff program for electricity generated from renewable sources. Ontario's research community is involved in the whole range of technologies: thin films, spectroscopy, power distribution and generation, radiation modeling, photovoltaics (PV) energy conversion and silicon refinement, along with system design. This research strength, combined with government support and advanced-manufacturing capacity, positions Ontario as a prime location for project developers and for manufacturers of sustainable, alternative-energy technologies and related components.

Ocean Energy

Bordered by three oceans, Canada is exceptionally rich in tidal-current and wave-energy resources. Although most ocean-energy technologies are still under development, several demonstration projects provide a glimpse of their potential benefits for communities and for investors.

Top international investors such as China-based Suntech and US-based Sunpower have recently invested in new facilities in Ontario.

Canada became active in ocean energy in 1984 with the construction of the 20 MW tidal energy plant on the Bay of Fundy at Annapolis Royal, Nova Scotia. Canada has since developed a strong reputation for:

- tidal generating stations including horizontal- and vertical-axis turbines that harness currents and tides;
- manned and unmanned specialized remote-tooling systems for subsea work;
- modular and scalable remote off-grid, utility-scale, offshore and near-shore wave generators;
- wave technology test and simulation facilities;
- wave-energy-driven desalinization technology; and,
- numerical modeling, wave measurement and analysis as well as flow measurement.



The Power of Ocean Energy

BIOENERGY AND BIOPRODUCTS

Large reserves of agricultural and forestry biomass resources, coupled with new made-in-Canada conversion technologies, provide a sound basis for the country's emerging bio-economy.

Biofuels

Whether for ground vehicles or aircraft, biofuel production continues to increase in Canada, thanks to new technologies, an abundance of suitable resources such as corn, wheat, canola and cellulose (wood fibre), as well as supportive government policies.

In accordance with the **Federal Renewable Fuel Regulations**, Canada now blends an average of five percent ethanol into its gasolines. More than 30 ethanol and biodiesel plants already operate in Canada, with another eight at the proposal phase. In Eastern Canada, primary feedstocks are corn for ethanol and animal fats for biodiesel; facilities in Western Canada use wheat for ethanol and canola for biodiesel⁴².

Several municipal and public-transit fleets in Canada already rely on biodiesels. In June 2011, the Government of Canada introduced a two-percent renewable-content requirement for diesel fuel and heating oil. A few months later, US-based **Archer Daniels Midland** announced plans to build a world-class biofuel plant with an annual capacity of 265 million litres (70 million gallons) next to its canola-crushing facility in Lloydminster, Alberta.

"The same agricultural-processing operations we use to transform canola into oil for food and meal for animal feed also provide ADM with the ability and scale to efficiently produce cleaner-burning, renewable biodiesel (...). This new biodiesel facility will help support canola crush margins and capacity utilization at this facility."

Mike Livergood, Vice-President of
Global Oleo Chemicals
Archer Daniels Midland

⁴² Canadian Renewable Fuels Association, *Growing Beyond Oil; Delivering our Energy Future*. 2010.

CELLUFORCE: THE WORLD'S FIRST NANO-CRYSTALLINE CELLULOSE DEMONSTRATION PLANT

In January 2012, CelluForce opened a plant in Windsor, Quebec, to extract nanomaterial from dried wood fibre. Applications for the new material range from cosmetics and textiles to aerospace components and construction materials. The \$36 million plant was partly financed by the Government of Canada and the Government of Quebec.

Biomaterials

The development of biomaterials has increased significantly in recent years in Canada. The recent opening of the country's first nano-crystalline cellulose plant indicates that biomaterials are destined to play a significant role in the Canadian bioproducts industry.

Nano-crystalline cellulose composites produced from wood fibres are used in the aerospace industry to replace heavier, more expensive and non-renewable materials. Other biomaterials are used in the production of automotive parts, tires, insulation, textiles and plastic composites. Canada, the world's second-largest exporter of primary forest products⁴³, has an abundant supply of forestry resources. The country is also a world leader in plant genomics and has a number of centres of excellence for the development of the oils used in bioproducts.

Biochemicals, bioplastics and biorubbers are also under development in Canada; for more information, please refer to the Chemicals and Plastics section.

Biogas and Waste-to-Energy

Canada's numerous opportunities in biogas and waste-to-energy continue to attract foreign investors. In July 2011, for instance, US-based **Cargill's** Beef Division announced the construction of a \$36 million waste-to-energy facility in High River, Alberta.

New Investment Projects by International Investors (since January 2011)

- **Diavik Diamond**, a joint venture between Canadian-based **Harry Winston Diamond** and a subsidiary of Australia-based **Rio Tinto** has announced plans to build a wind park to reduce reliance on diesel fuel at remote mine sites.
- Germany-based **Enercon**, in partnership with **Niagara Region Wind Corporation**, will build a converter and control-panel manufacturing plant in St. Catharines, Ontario, to service the wind and solar industries.
- US-based **Power Alternative** announced two \$300 million biodiesel plants to be built in High Prairie and Smoky Lake, Alberta.

⁴³ Natural Resources Canada. *Canada's Forest Industry: An Overview*. 2012.

LOW-CARBON JET FUEL FROM WOOD WASTE

US-based **Rentech** has announced a major project in White River, Ontario. The state-of-the-art energy facility will use the Rentech-Clear Fuels biomass-gasification system and the Rentech Process to produce the only type of alternative jet fuel certified for use in commercial aviation today.

Starting in 2015, 87 million litres (23 million gallons) of low-carbon fuel and 49 million litres (13 million gallons) of naphtha per year will be produced from a long-term supply of 1.3 million tons per year of forest waste and unmerchantable species. Rentech has forged a significant partnership with the Pic River First Nation for up to an 18 percent equity interest in the project. The renewable RenJet and naphtha to be produced, compared with petroleum-based products, will lead to reductions of an estimated 600,000 metric tonnes per year of CO₂-equivalent gases. Rentech is working closely with **Sustainable Development Technology Canada (SDTC)**, whose \$500 million **NextGen Biofuels Fund (NGBF)** offers a significant potential funding source for eligible project development and construction costs.

"Ontario is a leader in environmental sustainability and we are pleased to be working closely with the Governments of Ontario and Canada, First Nations and the Township of White River (...). Having our project selected in the Provincial Wood Supply Competitive Process for a proposed large, sustainable feedstock supply from the Ontario government is a significant achievement and step forward for our renewable energy project. (...) SDTC's funding opportunity played a key role in Rentech's decision to pursue a large-scale renewable energy facility in Northern Ontario. We're encouraged by the Government of Canada's commitment to commercializing renewable energy projects."

Hunt Ramsbottom, President and CEO
Rentech. May 6, 2011

- US-based **SLK Solar** opened a new plant in Markham, Ontario, to manufacture rooftop and ground-mounted systems for commercial and utility-scale solar installations.
- **Sungrow Canada**, a partnership between China-based **Sungrow Power Supply Company** and Canada-based **HiFi Solar Energy**, opened a facility in Vaughan, Ontario, to develop and manufacture solar inverters.
- US-based **United Solar**, a subsidiary of **Energy Conversion Devices**, opened a new plant in Windsor, Ontario, to produce thin-film solar laminates.
- Brazil-based **Vale** announced a \$1.5 billion modernization of its smelter complex in Copper Cliff, Ontario. The Atmospheric Emissions Reductions project will decrease sulphur-dioxide emissions from the current level of 175,000 metric tonnes to 30,000 metric tonnes per year.
- France-based **Veolia Environnement** will build a \$43 million oil-regeneration plant in Saint-Hyacinthe, Quebec.



**INFORMATION AND
COMMUNICATIONS
TECHNOLOGY**

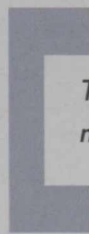


INFORMATION AND COMMUNICATIONS TECHNOLOGY *Backed by Canada's impressive talent pool, relentless creativity and competitive operating costs, international investors are increasingly drawn to Canada's successful ventures in digital media, software, and telecommunications industries.*

"(...) there is critical mass in (...) Canada. Canada is punching far above its weight in the video game category. It's the third-largest video-game developing nation in the world. There are 13,000 video-game development jobs in Canada. In California (...) headquarters for most of these publishers and the entertainment capital of the world, there are only 12,000. (...) A lot of different things have gone into building that ecosystem, not the least of which is ties with educational institutions. (...) there are 20 colleges and universities in Quebec that offer computer science and applicable math sciences and computer graphics programs for our business."

Brian Ward, Senior Vice-President
Worldwide Studios Activision Publishing

Canada's global leadership in the ICT sector results directly from a commitment to innovation. In 2009, this growing sector employed a workforce of nearly 545,000, and boasted revenues of more than \$154 billion and exports worth more than \$26 billion⁴⁴. The sector's success has, in turn, become a key driver of Canadian innovation.



The Canadian ICT industry generates more than \$154 billion in annual revenues.

DIGITAL MEDIA

Canada has quickly evolved into a hotbed of digital media innovation. A strong base of highly creative independent firms has developed, fuelled by the growth of mobile applications, digital marketing and social-media industries. This talent base, combined with generous tax credits and sophisticated, flexible education and training infrastructure, attracts a continuous stream of international firms.

⁴⁴ Industry Canada and Statistics Canada.



Canadian animation and special effects technologies are featured in *The Pirates of the Caribbean: At World's End*

This mix of domestic and international players is particularly visible in the video-game industry and related activities, such as animation and special effects:

- Leading developers: **Activision, A2M, Capcom Entertainment, Electronic Arts, Facebook, Google, Microsoft Game Studios, Ubisoft,** and **Warner Bros. Interactive Entertainment;**
- Mobile games: **Airborne Entertainment (Cybird), Disney, Gameloft, EA-Mobile Games, Eidos, Humagade, Fugitive Interactive, Koei, Microsoft Games, Morro Canada, THQ, BioWare, Relic, Silicon Knights** and **Digital Extremes;**
- Online games: **Sarbakan, Frima Studio, Games Mania** (games portal of Canada's largest telecommunications company), **Zictor.com** (the top PC games-on-demand website).

The Canadian videogame industry includes more than 350 firms with a workforce of approximately 16,000 (compared to approximately 32,000 in the United States)⁴⁵.

A Selection of Category-leading Games Developed in Canada

- Console games: *X-Men: Destiny* by **Silicon Knights**, *Bioshock 2* by **Digital Extremes**, *Prototype 2* by **Radical Entertainment (Activision Blizzard)**, *Mass Effect 3* by **Bioware (EA)**, *Captain America: Super Soldier* by **Next Level Games** and *The Amazing Spiderman* by **Beenox (Activision)**, *Human Revolution* by **Eidos-Montréal (Square Enix)**;
- Mobile games: Canadian developers produced titles such as *Splatalot* by **Marblemedia**, *Fishworld* by **Big Viking Games**, and *Superspace Bunny* by **Vast Studios**;
- Online games: Popular online games created in Canada include *Warhammer* by **Relic (THQ)**, *Club Penguin* by **New Horizon Interactive (Disney Interactive)**, *Need for Speed* by **EA Mobile**, *Need for Speed* by **EA Mobile** and *Assassin's Creed* by **Ubisoft** and *The Secret World* by **Funcom**.

⁴⁵ Entertainment Software Association. Retrieved on May 1, 2012 from www.theesa.ca/wp-content/uploads/2011/10/Essential-Facts-2011.pdf.

Side Effects Software, a Toronto-based company and creator of the Houdini technology—a 3D-animation program—won the 2012 Technical Achievement Award from the US Academy of Motion Picture Arts and Sciences. This marks the third time the company has won an Academy Award.

“Toronto is a hub for digital media and our universities and colleges turn out exceptional talent. Houdini 3D software has been used in over 400 feature films to date, including the Spiderman and Harry Potter series, as well The Matrix and Lord of the Rings trilogies. Nine of the last 11 films to win the Academy Award for best visual effects have used Houdini to do it.”

Kim Davidson, CEO
Side Effects Software

Canada has the third largest video-game-development workforce in the world. Its leadership is expected to continue with a remarkable growth rate of 17 percent through 2013.

Canada-based developers such as **Autodesk** (3ds Max, MotionBuilder), **Avid** (Softimage XS1) and **Quazal** (Multiplayer Connectivity) regularly provide their expertise in animation and special effects to the film industry. Indeed, many of Hollywood’s top feature films rely on made-in-Canada multimedia technologies, such as *Maya*® and Houdini. Films featuring Canadian technology that have been nominated for Academy Awards® in the special-effects category include: *Avatar*, *Iron Man 2*, *Superman Returns*, *The Matrix*, *The Pirates of the Caribbean: At World’s End*, *Titanic* and the *Harry Potter*, *Spider-Man* and the *Lord of the Rings* series.

Other recent blockbusters, such as *The Dark Knight*, *Transformers*, and *Tron: Legacy*, used IMAX cameras (developed by Toronto’s **IMAX Corporation**) to create the immersive big-screen experience for moviegoers.

From Gaming to Simtech

Canada also has significant expertise in Simtech (simulation technologies), an industry that uses game-like technologies for training purposes.

CMLabs and **Canadian Force Base Gagetown** regularly undertake defense simulations, for instance, while **Coole Immersive**, **Artifact Software**, and **Xpan Interactive** specialize in industrial training.

Spongelab Interactive and **Project Whitecard** develop math and science games. Another well-known example of Simtech expertise in Canada is **CAE**, an international leader in aviation applications (especially flight simulators) and other industries including defence, health care and mining. This international leadership has helped increase CAE’s workforce beyond the 7,500 mark⁴⁶.

With its long experience in simulation and training technologies, Canada’s ICT industry is well placed to benefit from gamification, a technique that engages audiences in problem-solving processes.

⁴⁶ CAE. Retrieved on May 1, 2012 from www.cae.com/en/investors/pdf/2011/CAE_Annual_Report_2011.pdf.



Another Canadian innovation to earn a 2012 Academy Award is Pictorvision's **Eclipse**. Developed in Ontario, the invention features a stabilized camera mount for shooting scenes from helicopters. It has been used in several recent feature films, including *A Very Harold & Kumar 3D Christmas*, *Extremely Loud and Incredibly Close*, *The Hangover* and *The Twilight Saga: Breaking Dawn*.

Photo courtesy of Pictorvision

Sources of Talent

Canada's technical colleges and universities offer a vast array of media-study programs, providing a deep and highly skilled workforce. Several thousands of Canadian students graduate each year from post-secondary programs in mathematics, computer science, and pure and applied sciences. Canada is now home to world-renowned schools such as **Screen Industries Research and Training Centre** and the **George Brown College** in Toronto, and the **National Animation and Design Centre**, the **Institute for Computer Graphics Creation and Research**, and the **National Audio-Visual Institute** in Montréal. Other top schools include **Simon Fraser University's Centre for Digital Media**, and the **University of British Columbia**, both located in Vancouver; **Sheridan**, **Seneca** and **Centennial** Colleges, located in the Toronto area; the **Université de Sherbrooke** located in Quebec, and the **University of New Brunswick**.

SOFTWARE

Canada has a large cadre of highly skilled software-development professionals with a broad range of expertise and experience. Labour costs for high value-added activities in Canada are particularly advantageous when compared with those of the US, Japan and Europe. These advantages, combined with Canada's full and free access to the large US software market, makes the country an ideal nearshore option for value-added software-development activities.

Enterprise Application Software (EAS)

Canada is well positioned to tap into the global EAS market. **Gartner Group**, a leading IT-research firm, estimates the North American EAS market will experience consistent growth through 2014, when its total value will exceed \$143.6 billion⁴⁷. Canada has ready access to the US IT market, the largest in the world.

Canadian firms are leaders in EAS applications for customer-relationship management, digital-content creation, data, project and portfolio management, supply-chain management and web conferencing. Canada's home-grown industry leader **Open Text Corporation** is joined by numerous EAS international investors in Canada, including **Autodesk Canada**, **Adobe Systems**, **IBM**, **Microsoft**, **Oracle**, **Sage Group** and **SAP**.

⁴⁷ Gartner Group.



The largest multimedia outdoor architectural projection in the world: the grain silo operated by Bunge North America (see page 28) in the Port of Québec becomes a 600 m x 30 m screen for the summer production of *Le Moulin à images* (The Image Mill).

© Nicola-Frank Vachon

Health IT

Canada's public-funding initiatives help bolster the country's health IT industry. The country has committed up to \$12 billion in capital investment over the next ten years as part of the country's plan to advance its health infostructure.

Researchers and entrepreneurs possess an ever-broader range of expertise: development of applications for health IT records; creation and deployment of picture-archiving and communications systems; creation of state-of-the-art drug-information technology that links physicians and pharmacists; and enhancements to in-home, remote monitoring, and assessment-support systems for alternative-care facilities. A recent breakthrough in of mobile e-health is the **University of Calgary's** development of **ResolutionMD Mobile**: a smartphone application that provides remote, accurate, real-time stroke diagnosis.

Health Canada has approved the application.

Many leading international investors have set up Canadian operations to tap into the vast potential of Canada's health IT market. These include **Agfa HealthCare, Canon Canada, Cerner, GE Healthcare, Hitachi Systems, Honeywell, IBM Canada Healthcare, Kodak Health Imaging, Maximus, McKesson, Microsoft, Palm Canada, Philips Healthcare** and **Siemens**. Newcomers include **RadNet**, an operator of freestanding outpatient diagnostic-imaging

centres in the US, which recently opened a radiological software-development centre in Summerside, Prince Edward Island.

Cyber-security

Canada's cyber-security sector specializes in cryptography and encryption, mobile authentication, biometrics, surveillance, tracking and sensors. Canada also has three of the world's best laboratories authorized to evaluate and certify security products including **CGI Group's IT Security Test and Evaluation Facility, DOMUS IT Security Laboratory, and EWA-Canada's IT Security Evaluation & Test Facility**.

Many of the world's top data-protection firms locate their security operations in Canada. These include **Blue Coat, CA Inc., Cisco Systems, EMC, Entrust, Fortinet, McAfee, Q1 Labs** and **Symantec**.

WIRELESS AND MOBILE COMMUNICATIONS

Canada is ideally positioned to tap into growing international demand for wireless technologies. Canada's 300 wireless firms are considered global leaders in several areas, such as mesh networks, WiMAX, RFID, UWB, SDR as well as broadband, satellite, and fibre-optic applications.

The strong, long-term potential of the Canadian market encourages the country's telecommunications companies to invest more than \$1 billion each year to improve wireless services and efficiency⁴⁸.

Given Canada's performance in wireless technologies and applications, many international investors have established operations here. The companies are attracted by Canada's highly educated and experienced workforce, competitive labour costs, world-class R&D and favourable tax rates and benefits, along with a savvy and fast-growing consumer market. Indeed, Canadian consumers will spend some \$6 billion on mobile devices in 2012 and by the end of that year, the number of smart phones in the country is expected to equal that of portable PCs⁴⁹.

"Canada is one of the world's leaders in mobile-software development. Venture capitalists have started taking note. Google is certainly taking note."

Chris O'Neill,
Managing Director,
Google Canada

Beyond 3G

Canada is at the forefront of Next Generation Network (NGN) technologies dealing with wireless data transfer. For instance:

- **Bridgewater Systems** offers Long Term Evolution (LTE) solutions capable of managing the increasing performance requirements of mobile broadband;
- **Redline Communications** is recognized as one of the first companies in the world with a complete WiMAX product offering certified by the WiMAX Forum.

LTE technology is already available to mobile users in Canada's major cities and its deployment across the country will accelerate during 2012⁵⁰.

Cloud Computing and Energy Efficiency

Equation is a \$70 million joint project aimed at developing a more energy-efficient technology. Launched in November 2011, Equation involves the Government of Quebec as well as **CGI, Ericsson, Fujitsu Canada, IBM, Miranda Technologies** and **Teledyne DALSA**. The partners are already working on projects related to cloud computing and smart meters.

Activities in the sector continue to draw global enterprises such as **Alcatel-Lucent, Ericsson** and **Huawei** to undertake NGN-related R&D in Canada. In 2010, **Alcatel-Lucent** and **Ericsson** spent a combined total of nearly \$600 million on R&D in Canada. This investment has already delivered results: new mobile-broadband applications made possible by 4G/LTE networks are being developed in Canada by **QNX Software Systems**, for instance, while **Alcatel-Lucent's** LTE-connected-car concept delivers video-on-demand, Internet radio and other wireless-broadband services to moving automobiles. QNX software is already available on more than 200 car models, including those made by **General Motors, BMW** and **Ford**.

Just the Beginning

Global heavyweights such as **Alcatel-Lucent, Cisco, Ericsson** and **Ciena** have invested in Canada's wireless industry by establishing R&D centres in major Canadian cities. Most of these centres continue to expand, either through new projects or through additions to their campuses. **Alcatel-Lucent** added about 200 employees to its 3,000-person workforce at its complex in Kanata, Ontario, and expects further growth in the years to come. The complex conducts more than half the firm's global R&D related to Internet protocol and also works on optical, Wideband-CDMA wireless, security and network-access technologies.

⁴⁸ Research InfoSource. *Top 100 Corporate R&D Spenders*. 2011. Retrieved on May 1, 2012 from www.researchinfosource.com/top100.shtml.

⁴⁹ IT World Canada. Retrieved on May 1, 2012 (May 1, 2012) from www.itworldcanada.com/news/mobile-still-vital-to-canadas-2012-growth-idx/144505.

⁵⁰ Conference Board of Canada. *Canada's Telecommunications Industry*. 2011.

HUAWEI, TELUS AND CARLETON UNIVERSITY OPEN NEW CLOUD-COMPUTING RESEARCH CENTRE IN OTTAWA

Research projects at the Centre will include resource management in cloud computing that gives rise to high level of system performance while conserving power; traffic control for data-centre networks; intrusion detection; virtual machine migration; and cloud optimization through photonic cross-connections.

“With Carleton students driving research in leading-edge technologies, this will have significant benefits in the local information and communications technology community as these students graduate and enter the workforce.”

Sean Yang, President
Huawei Canada

Canada is also home to leading-edge research into nanomaterials and next-generation power amplifiers; advances will lead to reductions in size, weight, and power consumption for wireless equipment along with improvements in next-generation networks. Canada has significant expertise in developing imaging software, multimedia chipsets and RF components for mobile platforms.

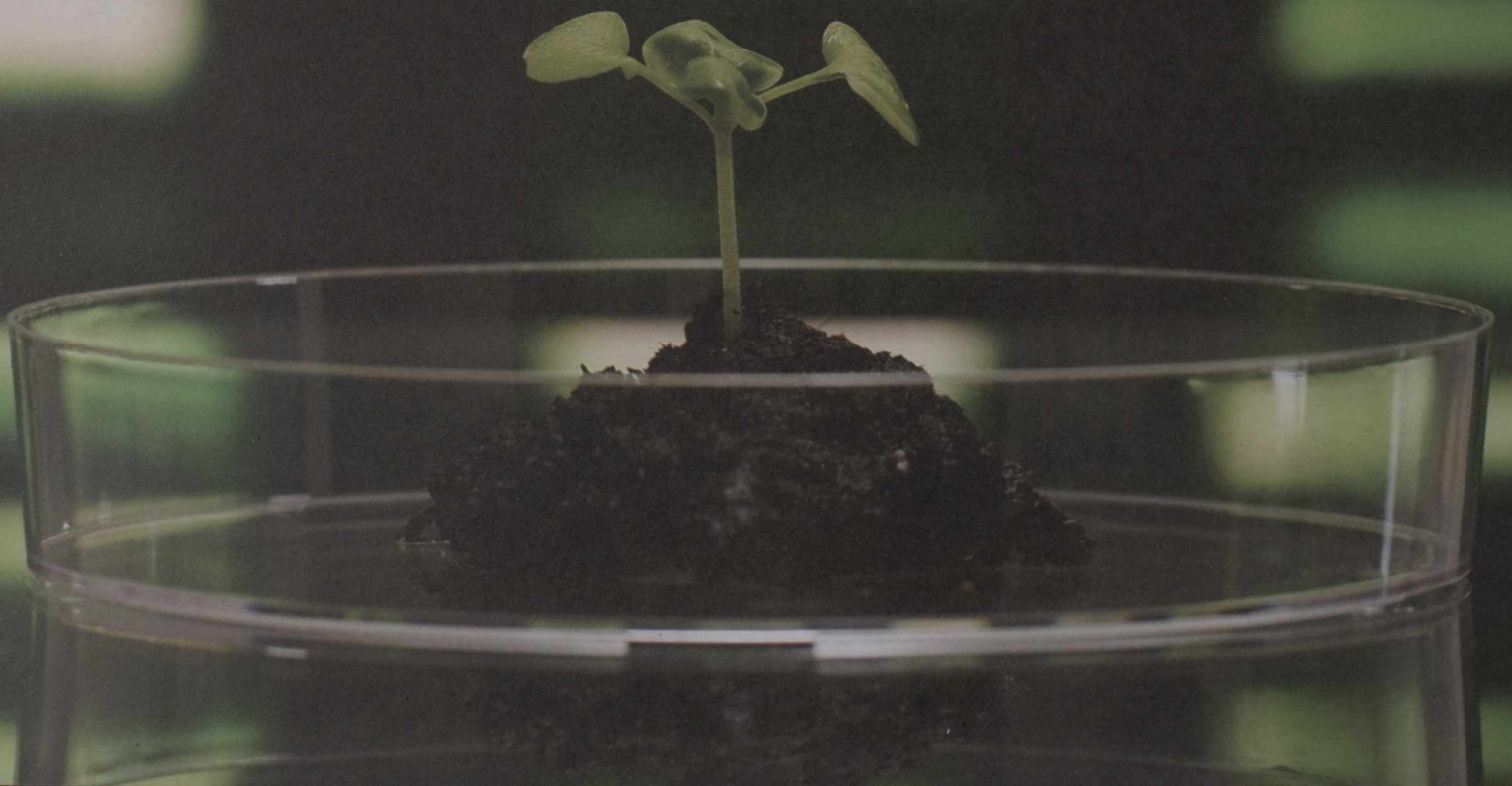
Also under development in Canada is **PaperPhone** technology: paper-thin, flexible tablets and smart phones. **Queen's University's Human Media Lab** in Kingston, Ontario, unveiled the e-paper technology and expects it will eventually feature a high-resolution colour screen capable of playing video and processing touchscreen commands.⁵¹

New Investment Projects by International Investors (since January 2011)

- US-based **Cisco Canada** will double its workforce in Ottawa and Toronto, over the next five years to develop a next-generation router capable of transferring one billion videos at a time with applications in telemedicine, improved virtual workforces and energy management.
- **Eidos**, a subsidiary of Japan-based **Square Enix**, plans to build a second video-game studio in Montréal, and hire 350 additional employees.
- France-based **Gameloft** will open a gaming studio in Toronto to cover a wide variety of platforms such as smartphones, iPhones and iPads, along with social networks.
- China-based **Huawei Technologies** will double the size of its wireless-communications research facility in Kanata, Ontario, and expects to have a workforce of 250 people by 2013.
- Indian consulting and IT services provider **Mahindra Satyam** opened the Smart Grid Research and Innovation Centre at University of Waterloo in Ontario.
- US-based **Microsoft Game Studios** announced a new Vancouver studio to produce games for Kinect and to push the limits of proven and unexplored game development.
- **THQ**, the US-based company that makes the popular “WWE Smackdown vs. Raw” video game, opened a new studio in Montréal, and hired 145 employees. The company plans to hire 100 additional employees in each of the next five years.
- US-based social gaming company **Zynga** announced plans to establish a Canadian headquarters after partnering with Toronto-based mobile developer **Five Mobile**.

⁵¹ Queen's University. Retrieved on May 1, 2012 from www.hml.queensu.ca/paperphone.

LIFE SCIENCES



LIFE SCIENCES *Canada is a world leader in life sciences, from pharmaceutical research and development, to the design and production of medical devices. The sector covers the whole range of diagnostics and therapeutics.*

BIOPHARMACEUTICALS

The world's largest pharmaceutical companies conduct a wide range of operations in Canada, from R&D and manufacturing, to marketing and product development. They are attracted by world-class R&D infrastructure, deep talent pools, top researchers, ready access to key markets and extensive public support that ensures quality output and supports scientific breakthroughs.

Canada: the ideal place to turn pioneering ideas into world-leading innovations

Continuous flow of high-profile R&D and investment projects

Innovation

Strong flows of intellectual and innovation capital drive the development of Canada's life-sciences industry. Incentives and grants from federal, provincial and local governments help ensure well-funded collaborative R&D.

Three of the top foreign R&D investors in Canada spent a combined total of nearly \$300 million in research activities in 2010⁵² and rank among the top R&D firms in Canada. This same group also made additional investments in recent months:

- **Merck** inaugurated a \$33 million expansion of its Montréal facilities.
- **Pfizer** invested \$22 million in its Canadian headquarters, located in the Montréal area, creating 100 jobs.
- **Novartis** announced a \$40 million investment in Hamilton, Ontario, to lead a global clinical study of a treatment for hypertension in cardiovascular disease, as well as an R&D investment of \$2.8 million in Prince Edward Island for animal-health research.

⁵² Research InfoSource. *Top 100 Corporate R&D Spenders*. 2011. Retrieved on May 1, 2012 from www.researchinfosource.com/top100.shtml.

FROM LAB TO MARKET: THE CANADIAN SOLUTION TO ATRIAL FIBRILLATION

Canada's hunger for innovation makes it a great place for Medtronic, Inc to invest. Based in Montréal, Medtronic CryoCath designs, develops and manufactures a new therapy for atrial fibrillation: a rapid, irregular heartbeat that affects seven million people worldwide and is the leading cause of strokes.

"Pioneered in partnership with the Montréal Heart Institute, the Arctic Front Cardiac CryoAblation Catheter System now brings life-changing therapy to patients around the globe. Montréal is the only location in the world manufacturing this innovative technology. Medtronic CryoCath is one of the company's fastest growing divisions, doubling sales each year since 2009. Medtronic remains committed to Canada and looks forward to the evolution of its medical technology strategies and to becoming a trusted partner in delivering innovative health system solutions."

Neil Fraser, President
Medtronic of Canada Ltd.

Also ranking high among the nation's top R&D spenders are several regionally headquartered companies such as **Apotex**, **Biovail** (which recently merged with **Valeant**). Other large R&D-intensive Canadian companies in the sector include **AEterna Zentaris**, **Aptalis Pharma**, **Bioniche Life Science**, **Cardiome Pharma**, **Pharmascience**, **Tekmira Pharmaceuticals Corporation**, and **Theratechnologies**.

AWARD-WINNING BOEHRINGER INGELHEIM RECOGNIZES UNIVERSITY PARTNERSHIP

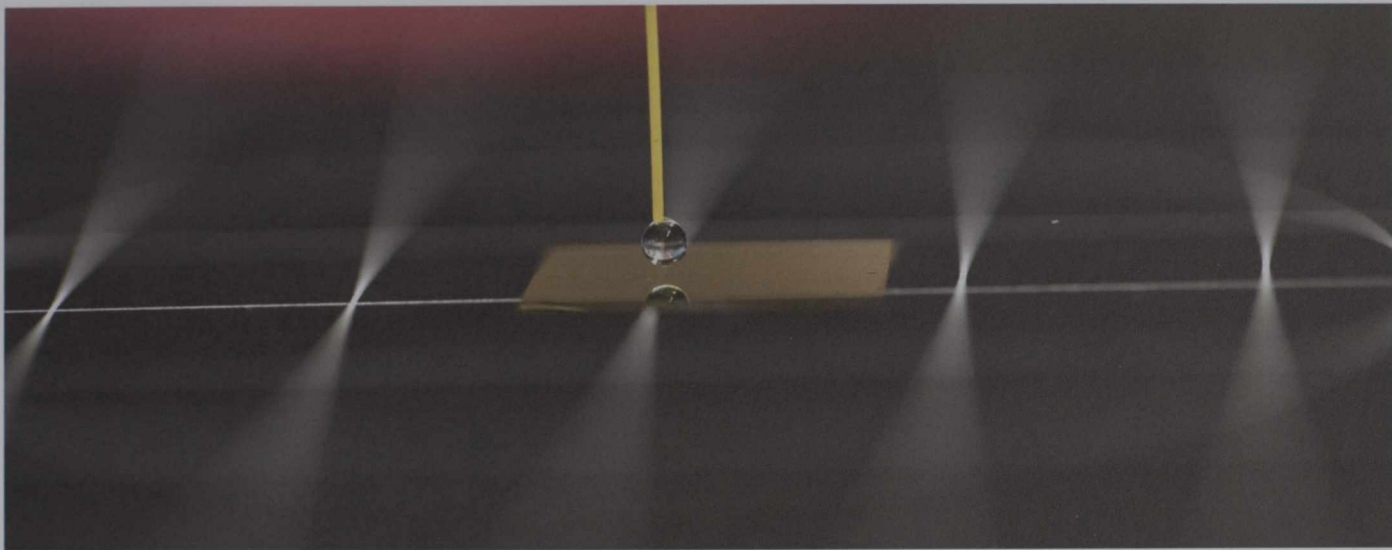
Boehringer Ingelheim (Canada) received the *Prix Galien* Canada 2011, Innovative Product Award for its treatment for stroke prevention.

"The development of PRADAX® represents an important milestone in Canadian pharmaceutical history (...) we are proud to say this global program was coordinated out of McMaster University in Hamilton, Ontario".

Dr. Theodore Witek, President and CEO
Boehringer Ingelheim (Canada) Ltd.

Extensive Public Support

Another example of public support for the industry came in July 2011, when Ontario's Research and Innovation Ministry announced a \$344 million expansion of the **MaRS Discovery District** in downtown Toronto. Located near major teaching hospitals, the District houses international corporations such as **GlaxoSmithKline** and **Merck**, several fast-growth biotech firms as well as public R&D centres such as the **Ontario Brain Institute**, the **Ontario Cancer Biomarker Network** and the **Ontario Genomics Institute**. The expansion, to be completed in 2013, will also house the **Ontario Institute for Cancer Research**, along with **Public Health Ontario's** central lab, which plays a key role in the prevention and control of infectious diseases.



Contact angle goniometer measuring the angle of a liquid on a solid surface at the National Research Council Canada's Institute for Health and Nutrisciences in Charlottetown, Prince Edward Island.
Photo courtesy of National Research Council Canada

Industry Structure

Although life-science activity is spread across the nation, clusters can be found in several major Ontario, Quebec and British Columbia cities, particularly where universities, research parks and incubators are adjacent to one another. Ontario and Quebec account for most of the industry's activity, with 40,000 employees and more than 300 companies⁵³ covering the whole spectrum of biopharmaceutical activities.

THE ONTARIO-QUEBEC CORRIDOR LABOUR POOL

Private Sector Employment by Industry

- Brand-name pharma: 13,100
- Generic pharma: 10,960
- Biotech: 4,700
- Contract manufacturing: 4,040
- Contract research: 7,300

Manufacturing and Pharmaceutical Services

Companies involved in the development of therapeutics and diagnostics can rely on Canada's high-quality contract pharmaceutical services.

Canada's expertise in small-molecule and biologics production is well established, from pilot-stage to full-scale applications, executed according to strict Good Manufacturing Practice (GMP) standards.

Canada's contract service and technology providers have vast expertise in: drug, target and biomarker discovery and design; product formulation and manufacturing; and clinical testing.

⁵³ PricewaterhouseCoopers. *The Quebec-Ontario Life Sciences Corridor*. 2011.



Nutriceutical Health.
Photo courtesy of National Research Council Canada

MEDICAL DEVICES

With exports totalling more than \$2.3 billion⁵⁴ (2011), Canada's medical-devices industry remains very healthy. From start-ups to large, established firms, Canadian and foreign medical-devices firms active in the country develop and manufacture high-demand products that incorporate the latest discoveries from other industries—including biotechnology, advanced materials, microelectronics, telecommunications, software and informatics.

In Canada, homegrown global leaders **IMRIS**, **Nordion**, **Novadaq Technologies**, and **Titan Medical**, are joined by numerous multinational firms. They include **Abbott Point-of-Care**, **Agfa Healthcare**, **Baxter**, **Elekta**, **GE Healthcare**, **Hologic**, **Johnson & Johnson**, **Medtronic**, **Roche**, **Siemens**, **Smith & Nephew**, **Alere**, **Sorin Group** and **Zimmer**.

The medical-devices industry is comprised of more than 1,000 firms with a total workforce of 25,500.

Canada's medical-devices industry produces a wide range of diagnostic and therapeutic products. Some key specialties include medical imaging, dental implants and materials, prosthetics, analytical instruments and advanced materials, as well as assistive devices and home healthcare-products. Here are a few examples of recent breakthroughs on HIV:

- Halifax-based **MedMira** developed a three-minute flow-through diagnostic HIV test, the only such product to earn regulatory approval in Canada, the United States, China and the European Union.

⁵⁴ Industry Canada.

⁵⁵ University of Toronto. Retrieved on May 1, 2012 from www.engineering.utoronto.ca/About/Engineering_in_the_News/Lab-on-a-Chip_Revolutionizes_HIV_Monitoring_in_Developing_Countries.htm?PageMode=Print.

A SELECTION OF INVENTED-IN-CANADA MEDICAL DEVICES

- The Neovasc Reducer™ for refractory angina and PeriPatch™ surgical tissue (developed and manufactured in Vancouver by **Neovasc**, subsequently acquired by **Medtronic**).
- Catheter-based products for the cryotherapeutic treatment of cardiovascular disease, now used in more than 500 medical centres around the world (developed by Montréal-based Medtronic **CryoCath Technologies**).
- The world's only movable, high-resolution, intra-operative MRI system (developed by Winnipeg-based **IMRIS**, a world-renowned image-guided therapy-systems company).
- A digital-radiography-imaging system used in nearly 40 countries (developed by **Imaging Dynamics** in Calgary).
- The SPY imaging system, which provides clinically relevant, anatomic and physiologic images during open and minimally invasive surgical procedures (developed by **Novadaq Technologies** in Toronto).
- A team at the **Ottawa Hospital Research Institute** developed the world's first bio-engineered cornea: an artificial device implanted in the eye and injected with stem cells that grow into a new cornea.
- The **C-Leg**, a microprocessor-controlled knee prosthesis, developed by a Canadian engineer at the University of Alberta.

- **University of Toronto** researchers announced the invention of a portable cell-analyzer that makes it easier, faster and cheaper to monitor HIV patients in remote areas by testing their blood in real time and receiving results within minutes⁵⁵.

New Investment Projects by International Investors (since January 2011)

- UK-based **GE Healthcare** announced its first global Pathology Imaging Centre of Excellence in Toronto. **GE Healthcare** and its digital pathology partner **Omnyx** will invest \$7 million in the new centre.
- France-based **Medtech** announced the construction of new plant in Montréal to develop and manufacture medical-assistance systems for surgery.
- Switzerland-based **Novartis Pharmaceuticals Canada** announced a \$40 million global clinical-trials study of cardiovascular disease to be based in Hamilton, Ontario.
- Switzerland-based **Roche** announced a \$200 million research centre to be added to its facility in Mississauga, Ontario. The centre, with a staff of 200, will manage the company's clinical drug trials in cooperation with its other research centres abroad.
- France-based **Sanofi Pasteur** announced a \$101 million vaccine R&D facility at its Connaught Campus in Toronto.
- France-based **Septodont** announced a \$35 million expansion of its plant in Cambridge, Ontario. The plant manufactures sterile, injectable anaesthetics for dental professionals.
- Israel-based **Teva** invested \$56 million in its plant in Stouffville, Ontario. The investment will upgrade and expand the company's high-potency manufacturing centre, which produces generic prescription medication.
- US-based **Xenopus**, a subsidiary of **Tri Hawk**, will expand its plant in Morrisburg, Ontario, for the production of a new line of dental burrs.

A woman with dark hair pulled back, wearing a black headset with a microphone, is smiling and looking down at a white keyboard. She is wearing a dark, long-sleeved collared shirt. The background is a blurred office environment with a glass partition and some papers. A large, dark red, stylized bracket-like graphic is superimposed over the center of the image, framing the word 'SERVICES'.

SERVICES

BUSINESS SERVICES *Canada's business-services sector is a critical node in today's multinational, multi-value chain model. With a real GDP⁵⁶ of more than \$60 billion in 2011, the professional, scientific, and technical services sector (or business services sector) employed nearly 1.3 million people—more than seven percent of the country's total labour force. In fact, Canada is a preferred destination for complex and high-value-added information-technology and business-process outsourcing.*

Canada's business-process outsourcing (BPO) industry is sophisticated and mature, and includes a host of global leaders.

Canada has significant expertise in business-process outsourcing (BPO), human-resources management, customer-relationship management, knowledge-process outsourcing (KPO), finance and accounting, data mining, application-development labs, business continuity and disaster-planning support.

Engineering Services

Engineering is an area of exceptional strength for Canada, which is home to many major international firms such as **SNC-Lavalin**, **Trow Global**, **MMM Group**, **Golder**, **Hatch** and **Dessau**. The sector's specialized

expertise includes resource extraction, energy, telecommunications, transportation, infrastructure engineering and public-private partnerships. Many Canadian firms are international leaders in specific fields such as hydro projects and the construction of aluminum smelters.

Engineering services employed more than 100,000 Canadians in 2010, and generated revenues in excess of \$22.5 billion⁵⁷. That same year, Canadian companies were the fifth-largest exporter of engineering-design solutions among the world's⁵⁸ top engineering-design companies. Canadian companies in the sector serve clients in more than 125 countries⁵⁹; their enviable international reputation for top-quality engineering services has contributed to the healthy growth rates experienced by the industry in 2010 and in 2011.

Nearshoring and Offshoring

Canada is a leading provider of business-process outsourcing and information-technology outsourcing to US firms.

⁵⁶ In 2002 chained dollars

⁵⁷ Statistics Canada

⁵⁸ "How the Top International Design Firms Shared The 2010 Market", *Engineering News Record*, July 25, 2011, p. 38.

⁵⁹ Prism Economics and Analysis. *Canada's Consulting Engineering Sector in the International Economy*, 2009.



Canada has been the world's largest provider of BPO services since the mid-2000s.
Photo courtesy of National Research Council Canada

Thanks to its proximity to—and cultural similarities with—the United States, Canada is a major player⁶⁰ on the world stage as a provider of BPO services. Canada's outsourcing industry recorded a second consecutive year of strong growth in 2011. Hosting services experienced particularly robust growth, as sales increased close to nine percent above the 2010 level⁶¹.

Since the mid-2000's, Canada has been the world's largest supplier of BPO services, significantly ahead of other destinations such as the Philippines, Mexico, Ireland and China. And as US-based multinationals continue to move outsourced and captive services closer to home, Canada is an increasingly attractive destination for foreign direct investment in this sector.

In its 2011 ranking of international suppliers of offshoring services, the global management-consulting firm **A.T. Kearney** rated Canada:

- Third in quality of business environment;
- Sixth in workforce availability and skills.

Canada is also home to several international leaders, such as CGI, the world's 12th-largest offshore service provider in 2012, with sales exceeding \$4 billion.

Canada is an essential and fully integrated component of North America's IT supply chain.

⁶⁰ Everest Research Institute, *Global Trends in BPO*, December 2008

⁶¹ Merit Outsourcing Advisors. Retrieved on May 1, 2012 from www.meritoutsourcing.com/canadianoutsourcingtrends/june2011update.html.



Photo courtesy of National Research Council Canada

Management Services

Management services are another fast-growing industry segment in Canada. Multinational firms established in Canada have accounted for much of this growth in recent years and now represent nearly 35 percent of Canadian head-office and management operations. Their employees include well-established professionals, such as accountants and financial managers, recognized globally for their high standards and professional ethics. These firms also provide a host of other fast-growth services related to on-line applications.

The exceptional quality of available staff, coupled with the attractive quality of life offered in Canadian cities, makes Canada a global magnet for head-office and management operations.

New Investment Projects by International Investors (since January 2011)

- India-based **Aditya Birla** has opened its nearshoring operations in Bathurst and Moncton, New Brunswick, and Port Hawkesbury, Nova Scotia. Through an investment of \$80 million in its Canadian subsidiary, the firm's offerings now include finance, accounting and insurance services.
- US-based **Arise Virtual Solutions** plans to hire 2,000 Canadians as the trend toward outsourcing services to home-based employees booms. The company's clients include roadside-assistance providers, telecommunications firms and retailers.
- US-based **Convergys** has expanded its operations in Welland, Ontario, as well as in Dartmouth and New Glasgow, Nova Scotia. Convergys ranks among the world's top five outsourcing firms and operates outsourcing facilities in three Canadian provinces.
- US-based **Credit Alliance Group** has opened a location in Toronto.
- US-based **inthinc** Technology Solutions, a telematics company focused on fleet management and driving safety, opened a new operations centre in Calgary, Alberta.
- US-based **Onebox**, the hosted-PBX and phone service owned by **j2 Global Communications**, expanded into Canada. The move enables Canadian and American firms to establish and operate virtual phone systems (complete with voicemail, facsimile and support services) using phone numbers based in Canada.
- UK-based **RM Group**, a provider of business information and registrations, opened a new division in Toronto. RM's main product, the e-Incorp, enables clients based anywhere in the world to form a UK Limited, LLP or UK Public Limited company.

FINANCIAL SERVICES *Canada's financial industry enhanced its global reputation for strength, stability and robustness during the global financial crisis of 2007-2008. Since then, all Canadian financial centres have improved their international rankings because of factors such as business environment, infrastructure, market access and competitiveness⁶².*

Canada offers a combination of irresistible locational advantages, such as:

- A boom in industrial development: more than \$300 billion worth of mega-capital (in excess of \$1 billion each), private-sector industrial projects have already been announced in Canada for the current decade. These projects require extensive international financing.
- Expertise in mining, energy, asset management, wealth management, insurance and banking, as well as financial IT.
- Low costs relative to other international financial centres; regional financial incentives help further reduce costs.

The financial-services sector employed over 1 million Canadians directly (including real estate and leasing) and represented a GDP of \$264 billion in 2011.

- The remarkably large number of recent immigrants creates a natural market for international financial institutions.
- Deep financial markets with a wide variety of sources of funds, including government-managed (Business Development Bank of Canada, Export Development Canada), private equity and venture capital.

⁶² Z/Yen. The Global Financial Centres Index. Retrieved on May 1, 2012 from <http://www.zyen.com/PDF/GFCI%2010.pdf>.



Downtown Calgary, viewed from Prince's Island

CANADIAN GLOBAL FINANCIAL CENTRES—A RISING WAVE

As rated in the Global Financial Centres 2011 Index

- **Toronto**, ranked fourth in North America and tenth worldwide, is likely to become a more significant centre worldwide. In fact, Toronto already ranks along other global leaders, such as Chicago, Frankfurt, Hong Kong, London, New York, Singapore, Tokyo and Zurich. Home-base for the TSX Group, Toronto houses the third-largest stock exchange in North America and seventh-largest in the world, based on market capitalization, is the world leader in mining-sector listings and a strong performer in the energy and life-sciences sectors.
- **Vancouver** ranked seventh in North America and 17th worldwide along with other established transnational centres such as Boston, Edinburgh, Kuala Lumpur, Melbourne, San Francisco, Seoul, Sydney and Washington, DC. Vancouver's international ranking is improving regularly and now exceeds that of Beijing. It is active and renowned in international financial transactions, venture capital (VC) investment finance, insurance and wealth management.
- **Montréal**, ranked eighth in North America and 20th worldwide. The city's worldwide rankings have also greatly improved during the past five years and now exceed those of cities such as Paris. Its strengths include banks and intermediaries, insurance, securities and financial IT.
- **Calgary**, ranked ninth in North America and 28th worldwide, is a globally recognized hub for energy and resource financing.

CHINA'S SOVEREIGN FUND SETS UP SHOP IN CANADA

By choosing Toronto over other financial centres such as London and New York for its first corporate location outside of China, the US\$300 billion **China Investment Corporation** signals its plan to increase its Canadian holdings.

"There are countries with comparable economic characteristics to Canada, but with a lot less friendly environment. In our dealings with the Canadian government, various parts of the government, with the business people, we feel that it's a lot more congenial to our investments."

Gao Xiqing, President
China Investment Corporation

In addition to chartered banks, Canada has a large and financially successful credit-union system, along with major fund managers such as **Ontario Municipal Employees Retirement System (OMERS), Ontario Teachers' Pension Plan, the Caisse de Dépôt et Placement du Québec and CPP Investment Board**. With a combined total value of managed assets exceeding \$469 billion⁶³, these organizations are significant players on the international financial markets.

Canada's safe and regulated environment, sophisticated financial markets and world-class financial services help attract top firms from around the world, a trend well underway before the global 2008 financial crisis. Foreign financial institutions that have set up or expanded operations in Canada since 2008 include **Barclays, BNP Paribas, BNY Mellon, Citigroup, Citco, Deutsche Bank, Mitsubishi UFJ, Morgan Stanley, Rabobank, Société Générale, State Bank of India, UBS, Bank of China, Korea Exchange Bank, ING Group, Kaufmann-Rothstein International, Talanx, Industrial and Commercial Bank of China, Caixa General de Depositos, RJ O'Brien & Associates, Macquarie Group** and **Edmond de Rothschild Group**.

BANK OF CHINA EXPANDS OPERATIONS IN CANADA

In December 2011 the **Bank of China** (BOC) officially opened its Calgary branch in addition to its other Canadian offices located in Toronto and Vancouver.

"Calgary's ability to attract foreign investment will be key to our continued economic diversification and strength. This announcement confirms that China views Calgary as an attractive and smart place to operate a business and will position our city very well for further investment from one of the world's most influential markets."

Bruce Graham, President and CEO
Calgary Economic Development

⁶³ E&B DATA, 2012.

SOCIÉTÉ GÉNÉRALE EXPANDS IN CANADA

In February 2011, French bank Société Générale opened an information-technology centre in its Canadian head office in Montréal. The centre, launched in partnership with CGI, integrates, supports and develops more than 100 financial applications for the company's New York office.

"Since the beginning of 2011, Société Générale has created more than 85 highly-specialized jobs in Montréal.

Why select Montréal when having to choose between the Eastern US seaboard, Brazil or Bangalore?

First, there is the well-deserved worldwide reputation of Montréal as a centre of expertise in financial technology. Furthermore, the multilingualism level of this city makes it a winning formula. Next, is the proximity to New York, same local time zone and short travel time. Finally, tax incentives facilitated this decision and enhanced an already solid choice."

Pierre Matuszewski, President
Société Générale (Canada)

New Investment Projects by International Investors (since January 2011)

- US-based **Citico Group**, the world's leading hedge-fund administrator, announced it will create up to 200 new jobs in Halifax.
- **Industrial and Commercial Bank of China (ICBC)** has announced it will establish a branch office in Calgary, Alberta, to service clients in the oil-and-gas sector.
- US-based **Jones Lang Lasalle**, a global professional and financial-services firm specializing in commercial real estate, continued its Canadian expansion by opening offices in Vancouver and Calgary.
- US-based **Numerix**, a leading provider of cross-asset analytics for derivatives valuations and risk management, opened a new office in Vancouver.
- The international financial-advisory firm **Rothschild** opened an office in Calgary, Alberta.
- US-based **TSYS** has announced the opening of a financial-services support centre in Sudbury, Ontario. The new centre will employ up to 450 people and will provide multilingual customer care, in addition to risk and fraud support, dispute and chargeback servicing and collections.
- US-based **Vanguard Group**, the world's largest mutual-fund company, opened an office in Toronto.

III

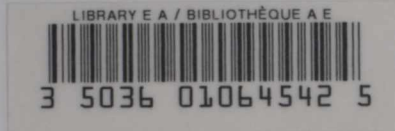
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CANADA TAKES CARE OF BUSINESS Whether a company plans to establish its own operation in Canada, seeks a Canadian partner or wants to gain a Canadian base for access to North American markets, Canada wants to do business...and we take care of business.

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