

 **INVEST IN CANADA**



[BIOPRODUCTS]
Canada's competitive advantages

CANADA'S BIOPRODUCTS SECTOR

Canada is a recognized global leader in the development of a bio-based economy providing foreign investors with unique competitive advantages over other international destinations. With one of the world's largest available bio-feedstocks and world class research institutions, global companies such as Archer Daniels Midland Company, BioAmber Inc. and LANXESS have established operations in Canada.

Canada is also recognized internationally for the commercial application of its R & D expertise in important bioproducts verticals, including areas such as bio-based materials and composites, cellulosic ethanol commercialization, platform chemicals and intermediates, fermentation technologies, nanocrystalline cellulose research, pyrolysis technologies, and waste to energy technologies.

QUICK FACTS – CANADA'S BIOPRODUCTS SECTOR¹

- 208 firms employing 3,020 people
- \$1.3 billion in revenues
- \$433 million in exports
- \$64.6 million invested in R & D
- 80 percent of firms are small and medium-sized enterprises (SMEs) and are seeking investors
- Active in biofuels, chemicals, plastics and composites, fibreboard, biocontrol agents, and biocatalysts

Canada offers foreign direct investors with some unique advantages in the bioproducts industry. Canada has more biomass resource per capita than any other country in the world. Canada has access to a diverse wealth of feedstock, ranging from crops, trees, marine life, microorganisms and waste material. It is also home to a highly educated workforce that specializes in the commercialization of bio-based technologies and features a highly integrated bioeconomy, with new and innovative bioproducts finding their way into a myriad of industrial applications.

Through its efforts to take advantage of these competitive strengths, the Canadian bioproducts sector is well on its way to consolidate its status as a global player in the growing bioeconomy. Leading bioproducts produced in Canada include: biofuels, biopolymers and chemicals, with ethanol being the leading bioproduct by revenue.

Between 2003 and 2013, 199 foreign companies established greenfield investment projects in the renewable energy, chemicals and plastics sector in Canada.²

CANADA'S KEY STRENGTHS IN BIOPRODUCTS | RECOGNIZED CANADIAN EXPERTISE

- Anaerobic digestion
- Bio-based materials and composites
- Biomass gasification
- Catalytic hydro-treating of biomass oils
- Cellulosic ethanol
- Platform chemicals and intermediates
- Enhanced Fischer-Tropsch technology
- Feedstock supply logistics and monitoring
- Fermentation technologies
- Nanocrystalline cellulose
- Pelletization of Biochar production
- Plant genomics
- Pyrolysis technologies
- Waste to energy technologies

¹ Statistics Canada. *Bioproducts Production and Development Survey*. (2009).

² fDi Markets database. fDi Intelligence, Financial Times Ltd.

BIOPRODUCTS CLUSTERS

Canada is home to 10 percent of the world's forests and has abundant supplies of sustainable, high-quality agricultural feedstocks. As a result, Canada has large bioproducts industry clusters present across the country.



WESTERN PROVINCES

- » Edmonton and Drayton Valley Bio-Mile, Alberta | Saskatoon, Saskatchewan | Winnipeg, Manitoba | British Columbia
- » **Industry leaders:**
Agrisoma Biosciences Inc., Plains Industrial Hemp Processing Ltd., Himark BioGas Inc., Metabolix, Inc., Nexterra Systems Corp., Novozymes, Linnaeus Plant Sciences Inc., Prairie Plant Systems Inc., Schweitzer-Mauduit International, Inc., S2G BioChemicals Inc.

ONTARIO & QUEBEC

- » Port Colbourne's Carbohydrate Valley, Ontario | Sarnia-Lambton Biohybrid Chemistry Cluster, Ontario | Thetford Mines, Quebec | Guelph, Ontario | Thunder Bay, Ontario
- » **Industry leaders:**
Airex Industries Inc., BioAmber Inc., BIOX Corporation, CelluForce Inc., EcoSynthetix Inc., Enerkem, Ensyn Corporation, GreenCore Composites Inc., GreenField Specialty Alcohols Inc., LANXESS, Tembec, The Woodbridge Group®

ATLANTIC PROVINCES

- » Innovacorp Demonstration Centre, Brooklyn, Nova Scotia | Perennia Innovation Centre, Bible Hill, Nova Scotia
- » **Industry leaders:**
ADI Systems Inc., Atlantec Bioenergy Corporation, Atlantic Council for Bioenergy Co-operative Limited, AV Cell Inc., Canadian BioEnergy Centre, Cavendish Farms, Chatham Biotec Ltd., Ocean Nutrition Canada Limited, Solarvest BioEnergy Inc., Tekmash® Group

RECENT INVESTMENTS

COMPANY	BUSINESS ACTIVITY
Archer Daniels Midland Company (USA)	Oilseed processing, biofuels
BioAmber Inc. (USA)	Bio-based succinic acid
Blue Sphere Corporation (United Kingdom)	Biogas
Harvest Power (USA)	Bio-based products and energy
LANXESS (Germany)	Bio-based butyl rubber R & D
Mascoma Corporation (USA)	Biorefinery (<i>project under development</i>)
Metabolix, Inc. (USA)	Bio-based plastics
Schweitzer-Mauduit International, Inc. (USA)	Bio-based fibre

CANADA'S ADVANTAGES

WORLD CLASS BIOECONOMY

Canada is building a strong bioproducts industry and is welcoming foreign direct investment in this high-growth sector. Governments across the country are investing in research and development (R & D) for feedstock improvement, purpose-grown crops and technologies to produce new bio-based materials, chemicals and energy—all with a view to positioning Canada as an important player in the global bioeconomy. Foreign direct investors can leverage this R & D effort to their benefit.

FEEDSTOCK AVAILABILITY

Canada has vast forest and agriculture resources and a well-established forest products and agri-processing sector. In addition to traditional resources such as softwoods and hardwoods, grains and oilseeds, Canada produces dedicated crops such as industrial oilseeds, switchgrass, miscanthus and algae. With the combination of purpose-grown crops and trees, forest residues, crop residues, fisheries processing waste and municipal and industrial waste, Canada has an abundant diversity of biomass feedstock to offer to foreign direct investors that want to establish bioprocessing facilities in Canada.

DUTY-FREE MANUFACTURING

Canada is the first country in the G-20 to make itself a tariff-free zone for manufacturers. Since 2010, Canada has unilaterally decreased its tariffs on machinery, equipment and industrial inputs and tariff rates on these products are scheduled to reach zero by 2015. This is an important consideration for investors in the bioproducts space where input costs continuously impact profitability.

HIGHLY QUALIFIED WORKFORCE

Canada has a highly skilled and educated workforce in the bioproducts industry. In fact, colleges and universities are actively working with industry to ensure courses are designed to meet the needs of this high-growth industry in Canada.

LOGISTICS AND MARKET ACCESS

Canada has a highly developed transport infrastructure that is critical to the cost-effective transportation of high-volume bioproducts. According to the World Bank, Canada has the twelfth best logistics infrastructure in the world out of 160 countries.³

Foreign direct investors in Canada's bioproducts sector currently have duty-free access to the large North American market under the North American Free Trade Agreement (NAFTA). Further, once the Comprehensive and Economic Trade Agreement (CETA) with the European Union (EU) comes into force, foreign direct investors in Canada will have guaranteed preferential access to the EU market. This represents access to approximately 980 million consumers with a combined Gross Domestic Product (GDP) of US\$35 trillion, or nearly one-half of the world's output of goods and services.

In addition, Canada recently concluded negotiations on a free trade agreement with South Korea, its first in Asia, providing a strategic gateway to this dynamic and fast-growing region. Canada is also engaged in negotiations with India, Japan and the Trans-Pacific Partnership, to strengthen its position as a global export base. These trade agreements allow investors in Canada to benefit from integrated global supply chains and seize new export market opportunities.

“At EcoSynthetix, a globally expanding company, we made a strategic decision to establish our headquarters and our Centre for Innovation in Canada because of the ability for our scientists to work with university researchers for developing new technologies and benefiting from Canada's “Open for Business” policies and tax benefits.”

John van Leeuwen, Chairman & CEO,
EcoSynthetix Inc.

³ The World Bank. *The Logistics Performance Index*. (2014)

SUPPORT PROGRAMS AND INNOVATION

Canada fosters a vibrant R & D environment that promotes public-private-university collaborative research in the bioproducts sector. Funded by governments at the federal and provincial levels, researchers in Canada's network of universities and specialized research institutions are conducting leading-edge research in this sector that foreign direct investors can leverage to meet their business needs.

SUPPORT PROGRAMS AND INNOVATION

Sustainable Development Technology Canada (SDTC) is a fund that supports late-stage development and pre-commercial demonstration of clean-tech solutions. **SDTC's NextGen Biofuels Fund** supports first-of-kind commercial scale demonstration facilities for next-generation renewable fuels and co-products.

Agriculture and Agri-Food Canada's Agri Innovation Program is an industry-led R & D program enabling commercialization and adoption of bioproducts.

Natural Resources Canada's Investments in Forest Industry Transformation Program supports Canada's forest sector through targeted investments in innovative technologies, including bioproducts.

National Research Council Canada's National Research Industrial Biomaterials Flagship Program provides technology commercialization support on industrial biomaterials.

National Research Council Canada's Industrial Research Assistance Program (IRAP) provides innovation assistance to SMEs, including foreign direct investors. Funding is provided for advisory services, R & D, networking and youth employment.

Export Development Canada (EDC) and **Business Development Bank of Canada (BDC)** provide flexible financing programs and solutions tailored to support foreign direct investment in Canada.

For more information about these and other programs, please visit: investincanada.com.

NOTEWORTHY RESEARCH INSTITUTIONS, INNOVATION CENTRES, ORGANIZATIONS AND R & D NETWORKS

Alberta Biomaterials Development Centre | ArboraNano | BioAtlantech | BioFuelNet | Bioindustrial Innovation Canada | Biomass Innovation Centre | Bioproducts Discovery and Development Centre | Biorefining Conversions Network | Centre for Biocomposites and Biomaterials Processing | Centre québécois de valorisation des biotechnologies (CQVB) | Composites Innovation Centre | Consortium de recherche et innovations en bioprocédés industriels au Québec (CRIBIQ) | Forest Innovation By Research and Education (FIBRE Network) | FPIInnovations | GreenCentre Canada | NSERC Green Fibre Network | Innovation Place Research Park - Bio Processing Centre | Institute for Chemicals and Fuels from Alternative Resources | Lignoworks | NSERC Bioconversion Network | POS Bio-Sciences | Sustainable Bioeconomy Centre | NSERC Value Chain Optimization Network | Perennia's Innovation Centre | Innovacorp Demonstration Centre

INVEST IN CANADA TO ACHIEVE GLOBAL EXCELLENCE

A WELCOMING BUSINESS ENVIRONMENT

Canada is ranked as the best country for business in the G-20.

Source: Forbes and Bloomberg

A HIGHLY EDUCATED WORKFORCE

Canada's workforce is the most highly educated among members of the OECD, with half of its working-age population having a tertiary-level education.

Source: Organisation for Economic Co-operation and Development (OECD)

LOW TAX RATES

Canada's overall marginal effective tax rate on business investment is by far the lowest in the G-7 — about 17 percentage points lower than that of the United States.

Source: Department of Finance Canada

COMPETITIVE R & D ENVIRONMENT

Canada offers the lowest business costs in the G-7 for R & D-intensive sectors, with a 15.8 percent cost advantage over the United States.

Source: KPMG

FINANCIAL STABILITY

For six consecutive years, the World Economic Forum has declared Canada's banking system to be the soundest in the world.

Source: World Economic Forum (WEF)

UNPARALLELED MARKET ACCESS

Canada's NAFTA advantage gives investors access to 470 million consumers. Many Canadian production hubs are actually closer to U.S. markets than American production sites — of Canada's 20 largest cities, 17 are within an hour-and-a-half drive of the U.S.

Source: The World Bank

A GREAT PLACE TO INVEST, WORK, AND LIVE

Canada is one of the globally most multicultural countries with world-class universities, a universal health care system and clean and friendly cities in addition to having the second highest standard of living in the G-20, as measured by GDP per capita.

Source: The World Bank

Unless otherwise noted, all values in this publication are in Canadian dollars. Content is based on the latest available information at time of publication.



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