



INVEST IN **CANADA**

CANADA'S COMPETITIVE ADVANTAGES

BIOPRODUCTS



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. Because it has one of the world's largest available bio-feedstocks¹ and world-class research institutions, many global companies such as Archer Daniels Midland, BioAmber and ARLANXEO have established operations in Canada.

Canada is known 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, platform chemicals and intermediates, fermentation technologies, nanocrystalline cellulose, pyrolysis technologies, and waste-to-energy technologies.

Canada offers foreign investors several unique advantages in the bioproducts industry. Canada has more biomass resources per capita than any other country in the world,³ with a diverse wealth of feedstock, ranging from crops, trees, and marine life to 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, where new and innovative bioproducts are used in many industrial applications.

Through its efforts to take advantage of these competitive strengths, the Canadian bioproducts sector is consolidating its status as a global player in the growing bioeconomy. Significant bioproducts produced in Canada include biofuels (the leading bioproduct by revenue), biopolymers, and biochemicals².

CANADA'S KEY STRENGTHS IN BIOPRODUCTS

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 processing, Pelletization of biochar production, Plant genomics, Pyrolysis technologies, Waste-to-energy technologies

- 1 World Bank, World Development Indicators, 2017.
- 2 Statistics Canada, Bioproducts Production and Development Survey, 2015.
- 3 CCEMC, Biomass Innovation: Canada's Leading Cleantech Opportunity for Greenhouse Gas Reduction and Economic Prosperity, 2016.

QUICK FACTS – CANADA'S BIOPRODUCTS SECTOR²

190 firms employing
4,118 people

\$4.3 billion in revenues

\$1.4 billion of exports

\$112.1 million invested in R&D

88 percent of firms are
small and medium-sized
enterprises (SMEs)

Active in biofuels, chemicals,
plastics and composites,
fibreboard, biocontrol
agents, and biocatalysts



BIOPRODUCTS CLUSTERS



CANADA IS HOME TO 3.47 million km² of forested land, 9 percent of the world's forests, and has abundant supplies of sustainable, high-quality agricultural feedstocks.⁴ As a result, Canada has competitive bioproducts industry clusters across the country.

» Leading companies include:

BRITISH COLUMBIA: Consolidated Biofuels, Fibria, G4 Insights, Linnaeus Plant Sciences, Nexterra, Pinnacle Renewable Energy, S2G BioChem, Solegear Bioplastics

ALBERTA: Alberta-Pacific Forest Industries, Archer Daniels Midland, BioComposites Group, Botaneco, Ceapro, Enerkem, Permolex

SASKATCHEWAN: Bayer CropScience, Blue Goose Biorefineries, Canadian Carnation BioProducts, Dupont Pioneer, Husky Energy, Milligan Biofuels, Novozymes, Prairie Plant Systems, Terra Grain Fuels, Yield10 Bioscience

MANITOBA: Biovalco, Husky Energy, Plains Hemp, Schweitzer-Mauduit International

ONTARIO: Atlantic Biodiesel, ARLANXEO, BioAmber, BIOX, Comet Biorefining, EcoSynthetix, Ensyn, GreenField Global, IGPC Ethanol, Iogen, Kawartha Ethanol, Noroxel Energy, Novozymes, Suncor Energy, The Woodbridge Group, Woodland Biofuels

QUEBEC: Agrisoma, Airex Energy, CelluForce, Enerkem, Evoleum, Innoltek, Greenfield Global, Kruger Biomaterials, Premier Tech, Rothsay Biodiesel, Tembec

NEW BRUNSWICK: ADI Systems, AV Group, BioPolynet, Mycodev Group, Sylvar Technologies

NOVA SCOTIA: Cellufuel, Mara Renewables, SabrTech

PRINCE EDWARD ISLAND: Atlantic Bioenergy Corporation, DME International, Nature's Crops International, Solarvest BioEnergy

NEWFOUNDLAND AND LABRADOR: Cottles Island Lumber, Hi-Point Industries, Kruger Energy

RECENT INVESTMENTS



In 2017, US-based Origin Materials announced plans to construct its first commercial-scale demonstration facility in Sarnia, Ontario by late 2018. The facility will transform multiple bio-based feedstocks into a broad range of chemical intermediates.



In 2017, Finland-based Neste Corporation and Bioénergie La Tuque (BELT), located in Quebec, announced a R&D partnership agreement to study the feasibility of producing renewable diesel from forest harvest residues in La Tuque, Quebec.



In 2016, Envergent Technologies, a joint venture of US-based Honeywell and Canada-based Ensyn, began construction of a new biocrude facility in Port-Cartier, Quebec.

CANADA'S ADVANTAGES



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 soft- 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, fish processing waste, and municipal and industrial waste, there is abundant biomass feedstock to offer investors wishing to establish bioprocessing facilities in Canada.

WORLD-CLASS BIOECONOMY

Canada is building a strong bioproducts industry and welcomes foreign direct investment in this high-growth sector. Governments at all levels are investing in R&D for feedstock improvement, purpose-grown crops, technologies to produce new bio-based materials, chemicals, and energy—all to position Canada as an important player in the global bioeconomy. Canada fosters a vibrant R&D environment that promotes public-private-university collaborative research in the bioproducts sector, and foreign firms can leverage this effort to their benefit.

DUTY-FREE MANUFACTURING

Canada is the first country in the G20 to offer a tariff-free zone for industrial manufacturers, having reduced tariffs on all industrial manufacturing inputs to zero in 2015. Along with straight-line depreciation for manufacturing and processing equipment, these duty-free policies mean that businesses can quickly write off capital investment in Canada. This is an important consideration for bioproducts manufacturers, where input costs continuously impact profitability.

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 one of the best logistics infrastructures in the world.⁵

Foreign investors in Canada's bioproducts sector have duty-free access to the large North American market under the North American Free Trade.

With provisional application in force, the Canada- European Union Comprehensive Economic and Trade Agreement (CETA) allows companies operating in Canada to have preferential market access, through 12 trade agreements, to 44 countries with almost 1.2 billion consumers and a combined GDP of over US\$41.2 trillion, representing over half of the world's output of goods and services.⁶ These trade agreements allow investors in Canada to benefit from integrated global supply chains and seize new export market opportunities.

"EcoSynthetix made a strategic decision to establish our global operations in Canada because of the ability for our scientists to develop new technologies with university researchers, Canada's "open for business" policies and strong commitment to the bioeconomy through supporting associations like Bioindustrial Innovation Canada. This decision has paid off, giving us strong relationships with world leading universities and support from government throughout our growth. This has led to success for our innovative, green technology with customers in international markets."

— Jeff MacDonald
CEO, EcoSynthetix

4 Natural Resources Canada, The State of Canada's Forests: Annual Report 2016.

5 World Bank, Logistics Performance Index 2016.

6 IMF, World Economic Outlook: April 2017.

SUPPORT PROGRAMS AND INNOVATION



Sustainable Development Technology Canada (SDTC) finances and supports innovative clean technology projects through development and pre-commercial demonstration.

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

National Research Council Canada's Advanced Manufacturing Program provides technology commercialization support on industrial biomaterials.

National Research Council Canada's Algal Carbon Conversion Flagship Program researches recycling CO₂ through incorporation into algal biomass and evaluates commercialization of algal cultivation technology.

National Research Council Canada's Industrial Research Assistance Program (IRAP) provides innovation assistance to SMEs. 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

A DYNAMIC RESEARCH AND INNOVATION NETWORK

Agri-Food Discovery Place | Alberta Biomaterials Development Centre | Bioénergie La Tuque | Bioindustrial Innovation Canada | BioNB | Bioproducts Discovery and Development Centre | Biorefining Conversions Network | Biorefining Research Institute | Centre for Applied Synthetic Biology | Centre for Biocomposites and Biomaterials Processing | Composites Innovation Centre | Consortium de recherche et innovations en bioprocédés industriels au Québec (CRIBIQ) | Drayton Valley Bio-Mile | FFPInnovations | Green Aviation Research and Development Network | GreenCentre Canada | Natural Products Canada | Innovacorp Demonstration Centre | Institute for Chemicals and Fuels from Alternative Resources | MaRS Discovery District | Perennia Innovation Centre | POS Bio-Sciences | University of Toronto BioZone | Waterloo Institute for Sustainable Energy

AN ENABLING BUSINESS ENVIRONMENT

CANADA HAS A STRONG
AND STABLE business climate
that is open for business,
investment, and trade. Canada
benefits from a sound, efficient
financial system supported by
low taxes and business costs
and a government investing in
the innovative, clean, inclusive
economy of tomorrow.

A WELCOMING BUSINESS ENVIRONMENT

Canada is the second best place
for business in the G20.

Source: Forbes

A HIGHLY EDUCATED AND TALENTED WORKFORCE

Canada has the most educated talent pool in
the OECD with more than half of its population
aged 25-64 having a tertiary level education.

Source: OECD

LOW BUSINESS TAX RATES

Canada is the most tax competitive
country in the G7.

Source: KPMG

WORLD-CLASS CLUSTERS OF INNOVATION, WITH GOVERNMENT AS PARTNER

Canada has strong geographic and sectoral
clusters, as well as R&D-intensive sectors
with the lowest business costs in the G7.

Source: KPMG

FINANCIAL STABILITY

Canada's banking system, ranked 3rd by
the World Economic Forum (WEF), remains
one of the soundest in the world following
eight consecutive first place standings.

Source: World Economic Forum

A GREAT PLACE TO INVEST, WORK AND LIVE

Canada ranked first among 60 countries for
quality of life. Canada is ranked first in the G7
and G20 for overall prosperity of citizens.

Sources: U.S. News and the
Legatum Prosperity Index

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

Images: Shutterstock.
All rights reserved.



Global Affairs Canada
111 Sussex Drive, Ottawa,
Ontario, K1N 1J1, CANADA

Catalogue number:
FR5-38/17-2016E-PDF
ISBN 978-0-660-05215-1

Spring 2017



Follow us on Twitter!
@invest_canada

investincanada.com