

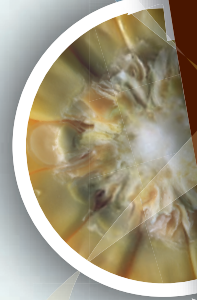


Government of Canada

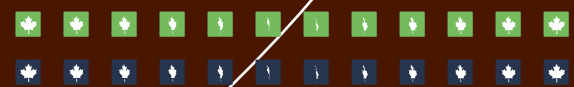
Gouvernement du Canada

Canada

Canadian Applied Research and Development Projects



in the
*Industrial Biomass Supply,
Bioenergy, Biofuels,
Bioproducts and Industrial
Biotechnology* areas



The Canadian Biomass Innovation Network (CBIN)

The Canadian Biomass Innovation Network (CBIN) is an applied R&D program designed to harness the potential for bioresources, bioenergy, bioproducts and bioprocesses to help Canadian industry meet efficiency, sustainability and climate change challenges. The Program coordinates its activities with the Canadian provinces, universities, non-government and government research organizations to maintain a nationally focused effort on the development of biomass conversion technologies. The bioenergy component of the Program, in partnership with industry, provides cost-shared support for the development of new, or improvement of existing, technologies for conversion of biomass to energy. Technologies for biomass combustion and for biochemical and thermochemical conversion of biomass to fuels and chemicals are all under development in Canada.

For more details, see www.cbin.gc.ca

THE CANADIAN BIOMASS INNOVATION NETWORK (CBIN)



RÉSEAU CANADIEN D'INNOVATION DANS LA BIOMASSE (RCIB)

EXISTING & NEW BIOMASS SUPPLY

Detailed Agriculture and Forestry Biomass Inventory

- GIS-Based Inventory and Analysis of Agricultural and Forestry Biomass

Purpose-Grown Woody Biomass Production

- Innovative Fast-Growing Energy Plantation Development

Technologies for Harvesting, Preparation, Storage and Transportation

- Agricultural Residue Harvesting Systems
- Cost of Transporting and Handling Forest Biomass
- Agroforestry Production Systems (Completed!)

BIOMASS CONVERSION INTO ENERGY, BIOFUELS AND INDUSTRIAL PRODUCTS

Biomass Conversion to Heat and Power

- Analysis of Biomass-Derived Fuels for Use in (pulp and paper) Lime Kilns
- Improved Hog fuel Combustion (Validation of Assessment Methodology)
- Biological Drying of Pulp Mill Sludge
- Co-combustion of Lignin with Coal for Utility Power Generation
- Black Liquor Gasification (Testing and Process Verification)
- Small Scale Biomass Power (Solid Wood Industry, Municipality)

Conversion of Waste to Bio-based Gases

(biogas, syngas, hydrogen)

- Federation of Canadian Municipalities (FCM) Waste Guide – a Guide and Workbook to help communities plan and implement sustainable solutions to waste management, including energy recovery (Completed!)
- City of Toronto Waste to Energy - anaerobic digestion of municipal solid waste. (Completed!)
- Manure Digestion – modification of an existing on-farm anaerobic digestion system to test mixed feedstocks (Completed!)
- Environmental Impact (GHG and Air Emissions) of Various Municipal Solid Waste (MSW) Management Options
- Biological Production of Hydrogen from Biomass
- Residual Organic Wastes to Bio-energy - including: MSW residuals workshops; advanced thermal conversion of MSW; municipal wastewater direct drive biogas utilization; agricultural AD test facility; industrial AD test facility



EXISTING & NEW BIOMASS SUPPLY *cont'd*

Key Separation and Conversion Processes for Bio-based Products

- Extraction, Separation and Purification Processes for Value-Added Products
- Sub critical Water Extraction of Antioxidant Compounds from Canola Hulls and Defatted Meal
- Novel Fractionation Process & Extraction Technology Related to Ethanol Production
- Pretreatment Technologies for Cellulosic Ethanol Conversion from Softwood Residues
- Hollow-Fibre Membrane System for the Separation of Ethanol/Water Mixtures (Completed!)
- Production of Cellulose from Bacteria

Biocatalysis for Industrial Applications

- Superior Pectinase for Processing Industrial Hemp and Other Agro-Fibres
- Petroleum Bio-upgrading for Refinery Corrosion
- From Manures to Novel Bioproducts using Micro- and Nano-Technologies
- Improving Cellulase Enzymes for Enhanced Conversion of Cellulose to Fermentable Sugars & Reduced Finished Ethanol Costs

Advanced Biomass Conversion & Utilization Technologies

- Canadian Steel Breakthrough Programme - Biofuels for Canadian Steelmakers
- Biodiesel for Heat and Power Applications
- Conversion of Chicken Litter and Straw to Energy using Pyrolysis
- Field Testing and Verification of Pyrolysis Oil in Lumber Kiln Applications
- Gasification of Wood Residue in a Plywood Mill Application
- Combustion Testing of Fish Oil-Derived Bio Diesel Fuel (Completed!)

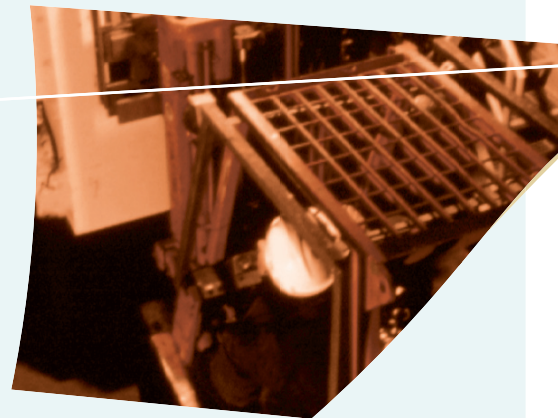
INTEGRATION: BIOREFINING & ECO-INDUSTRIAL CLUSTERS

Integrated Biorefining

- Oilseed Integrated (Biodiesel) Biorefinery - oilseeds
- New and Improved Fatty Acid Biomass Feedstocks - oilseeds
- Wheat Ethanol Research & Development - cereals
- Development and Promotion of Starch-based Biopolymers - cereals
- Developing Short Rotation Plantation / Agroforestry Systems for Bioenergy Generation – forest and agricultural biomass
- Optimizing the Carbon Value Chain in the Pulp and Paper Process Biorefinery – forest biomass
- Agricultural Residues for Bioenergy and Bioproducts – agricultural biomass
- Natural Fibers Initiative for Biochemicals and Biomaterials - agricultural biomass
- Renewable Energy for Greenhouses: Biomass Residues and Advanced Conversion Technologies - mixed biomass

Regional Bioclusters

- Economic and Environmental Benefits of Regionally Clustered Enterprises (Completed!)



STRATEGIC STUDIES (Environment, Sustainable Development) & NETWORKS

- Development of Sustainability Assessment Framework & Toolkit (SAFT) Methodology (Completed!)
- Review of Bioproducts Lifecycle Study (ADEME, France) – Implications for CBIN (Completed!)
- Potential GHG Impacts Resulting from the Adoption of Successful Industrial Bio R&D (Completed!)
- Environmental Criteria for Siting of Biomass (oil from canola / soybean and animal by-products) to Biodiesel (Completed!)
- Environmental Criteria for Siting of Cellulosic (agroforestry) Wastes to Bioethanol (Completed!)
- Regulatory Oversight for Biomass (Municipal Sludges and Biosolids) to Energy (Completed!)
- Support of Canadian Green Crop Network: Biomass for Greenhouse Gas Reduction and Industrial Energy Efficiency

Visit CBIN's website for a complete list of projects and contact names:
www.cbinc.gc.ca

