

THE CANADIAN BIOMASS INNOVATION NETWORK (CBIN)



RÉSEAU CANADIEN D'INNOVATION DANS LA BIOMASSE (RCIB)

2006-2007 CBIN List of Funded Projects

This document lists the current and completed CBIN applied Research and Development (R&D) projects funded under the *Technology and Innovation (T&I)* Biotechnology program and the *Program of Energy Research and Development (PERD) Bio-based Energy Systems and Technologies (BEST)* POL for the period 2003-2004 to present.

The projects are arranged by research theme and contact names are given with each project title.

Table of Contents

LIST OF RESEARCH THEMES AND LEADERS	2
TECHNOLOGY AND INNOVATION (T&I) BIOTECHNOLOGY PROJECTS	3
CONTINUING & NEW 06/07 T&I PROJECTS	3
COMPLETED 05/06 T&I PROJECTS	5
COMPLETED 04/05 T&I PROJECTS	6
COMPLETED 03/04 T&I PROJECTS	7
PERD BEST POL 4.4.1 PROJECTS	7
CONTINUING AND NEW 06/07 PERD BEST PROJECTS	7
COMPLETED 05/06 PERD BEST PROJECTS	10
COMPLETED 04/05 PERD BEST PROJECTS	10

List of Research Themes and Leaders

CBIN Themes	Theme Leader	Dept.
Activity 1 - Existing and New Biomass Supply		
1.1 Detailed Agriculture and Forestry Biomass Inventory	Mark Stumborg	AAFC
1.2 Purpose-Grown Woody Biomass Production (forestry & agro-forestry)	Jeff Karau Mark Stumborg	NRCan-CFS AAFC
1.3 Technologies for Harvesting, Preparation, Storage and Transportation <ul style="list-style-type: none"> • Agriculture • Forestry 	Mark Stumborg Jeff Karau	AAFC NRCan-CFS
1.4 New and Improved Biomass Feedstocks <ul style="list-style-type: none"> • Annual Plants 	Dr. Wilf Keller	NRC-PBI
Activity 2 – Biomass Conversion and Utilization Technologies		
2.1 Direct Conversion of Biomass to Heat and Power (forest products industry)	John Burnett	NRCan-CETC
2.2 Conversion of Waste to Bio-based Gases (biogas, syngas)	Jody Barclay	NRCan-CETC
2.3 Key Separation and Conversion Processes for Bio-based Products	Dr. G. (Joe) Mazza Dr. Ashwani Kumar	AAFC NRC
2.4 Biocatalysis for Industrial Applications	Dr. Peter Lau	NRC-BRI
2.5 Advanced Biomass Conversion & Utilization Technologies	Ed Hogan	NRCan-CETC
2.6 Biofuels (Renewable diesel fuels) for Transportation Applications	Dr. Jacques Monnier	NRCan-CETC
Activity 3 - Integrated Bio Applications		
3.1 Integrated Biorefining <ul style="list-style-type: none"> • Oilseeds • Cereals, starch • Forest fibre • Agricultural fibre • Mixed biomass feedstock 	TBD	
3.2 Regional Bioclusters	Dr. John Jaworski	IC
Activity 4 - Cross-Cutting		
4.1 Strategic Work, Communication & Dissemination	Maria Wellisch	NRCan-CETC
4.2 Policy Support & Assessment Frameworks	Dr. Terry McIntyre	EC

Technology and Innovation (T&I) Biotechnology Projects

Continuing & New 06/07 T&I Projects

Activity 1

Theme 1.1: Detailed Agriculture and Forestry Biomass Inventory

TID8.25.A - GIS-Based Inventory and Analysis of Agricultural Biomass
[Lawrence Townley-Smith](#) (306) 780-8095

TID8.25.B - GIS-Based Inventory and Analysis of Forestry Biomass
[Derek Sidders](#) (780) 435-7355

Activity 2

Theme 2.1: Biomass Conversion to Heat and Power

TID8.29 - Analysis of Biomass-Derived Fuels for Use in (pulp and paper) Lime Kilns and Cement Kilns
[Fernando Preto](#) (613) 996-5589

Theme 2.2: Conversion of Waste to Bio-based Gases (biogas, syngas)

TID8.21 - Residual Organic Wastes to Bio-energy
[Jody Barclay](#) (613) 996-9760

Theme 2.3: Key Separation and Conversion Processes for Bio-based Products

TID8.13.A - Extraction, Separation and Purification Processes for Value-Added Products (Subcritical water extraction and foam-based separation)
[Giuseppe \(Joe\) Mazza](#) (250) 494-6376

TID8.14 - Novel Fractionation Process & Co-Products Related to Ethanol Production
[Peter Chang](#) (306) 956-7637

Theme 2.4: Biocatalysis for Industrial Applications

TID8.15 - Superior Pectinase for Processing Industrial Hemp and Other Agro-Fibres
[Peter Lau](#) (514) 496-6325

TIIA.06 - Petroleum Bioupgrading for Refinery Corrosion Mitigation (integrated application project with T&I Bitumen and Heavy Oil)
[Heather Dettman](#) (780) 987-8629

TID8.22 - From Manures to Novel Bioproducts using Micro- and Nano-Technologies
[Carlos M. Monreal](#) (613) 759-1053

Theme 2.5: Advanced Biomass Conversion & Utilization Technologies

TIIA.01 - Canadian Steel Breakthrough Program - Biofuels for Canadian Steelmakers (integrated application project with T&I Industry)
[René-Pierre Allard](#) (613) 947-2116

TID8.28 - Biodiesel for Heat and Power
[René-Pierre Allard](#) (613) 947-2116

TID8.27 - Conversion of Chicken Litter and Straw to Energy
[Ed Hogan](#) (613) 996-6226

TID8.35 - Portable Oilseed Extraction and Biodiesel Processing Units
[Ed Hogan](#) (613) 996-6226

Activity 3

Theme 3.1: Integrated Biorefining (oilseeds)

TID8.33 - Oilseed Integrated (Biodiesel) Biorefinery
[Neil Westcott](#) (306) 956-7266

TID8.32 - New and Improved Fatty Acid Biomass Feedstocks
[Wilf Keller](#) (306) 975-5569

Theme 3.1: Integrated Biorefining (cereals, starch)

TID8.34 - Wheat Ethanol Research & Development
[Mark Stumborg](#) (306) 778-7261

TID8.24 - Development and Promotion of Starch-based Biopolymers
[Michel Huneault](#) (450) 641-5184

Theme 3.1: Integrated Biorefining (forest fibre)

TID8.31 - Developing Short Rotation Plantation / Agroforestry Systems for Bioenergy Generation
[Sylvain Masse](#) (418) 648-7152

TIIA.04 - Optimizing the Carbon Value Chain in the Pulp and Paper Process Bio refinery (integrated application project with T&I Industry)
[Philippe Navarri](#) (450) 652-2789

TID8.40 - Forest Products Bio-Refinery / Pre-hydrolysis of Hemi-Cellulose in Wood Chips (New 2006-07 project)
[Joseph Cunningham](#) (613) 954-3060

Theme 3.1: Integrated Bio refining (agricultural fibre)

TID8.26 - Agricultural Crop Residues for Bioenergy and Bioproducts
[Mark Stumborg](#) (306) 778-7261

TID8.23 - Natural Fibers Initiative for Biochemicals and Biomaterials
[Adrien Pilon](#) (514) 496-6180

Theme 3.1: Integrated Bio refining (mixed biomass feedstock)

TID8.30 - Renewable Energy for Greenhouses: Biomass Residues and Advanced Conversion Technologies
[Fernando Preto](#) (613) 996-5589

Activity 4

Theme 4.1: Strategic Work, Communication & Dissemination

TID8.18 - Program Development
[Nicole Richer](#) (613) 996-6195

TID8.19 - Program Communication & Dissemination
[Nathalie Beaupré](#) (613) 947-2120

TID8.20 A - Strategic Planning
[Maria Wellisch](#) (613) 996-6195

TID8.20 B - Application of Sustainability Assessment Framework Tool (SAFT V2)
[Maria Wellisch](#) (613) 996-6195

TID8.20 C - Feasibility Study to Test Application of US RBAEF Model for Canadian Scenarios
[Maria Wellisch](#) (613) 996-6195

Theme 4.2: Policy Support & Assessment Frameworks

TID8.41 - Determination and Validation of Environmental Criteria for Reducing Ecological Footprint from Large Scale Oil Seeds / Animal Products Conversion to Biodiesel Production Facilities in Canada (New 2006-07 project)
[Terry McIntyre](#) (819) 994-1105

TID8.42 - Determination and Validation of Environmental Criteria for Reducing the Ecological Footprint from Large Scale Corn / Wheat to Conversion to Ethanol Production Facilities in Canada (New 2006-07 project)
[Terry McIntyre](#) (819) 994-1105

TID8.43 - Inventory Development and Analysis of Potential Environmental Impacts of Selected GHG Reducing Crops Prior to Introduction and Commercial Development in Canada (New 2006-07 project)
[Terry McIntyre](#) (819) 994-1105

TID8.44 - Identification and Evaluation of Issues Associated with the Development of a Large Scale Bioethanol Blending, Transportation, Storage, and Distribution Infrastructure in Canada (New 2006-07 project)
[Terry McIntyre](#) (819) 994-1105

Completed 05/06 T&I Projects

Activity 2

Theme 2.2: Conversion of Waste to Bio-based Gases (biogas, syngas)

TID8.09 - FCM Waste Guide (Phase: Dissemination)
[Jody Barclay](#) (613) 996-9760
Internet link to the FCM waste guide: http://kn.fcm.ca/ev.php?URL_ID=5920&URL_DO=DO_TOPIC&URL

TID8.10 - City of Toronto Waste to Energy
[Jody Barclay](#) (613) 996-9760

TID8.11 - LFG Catalyst Test (part 2)
[Jody Barclay](#) (613) 996-9760

TID8.12 - Manure Digestion
[Jody Barclay](#) (613) 996-9760

Theme 2.3: Key Separation and Conversion Processes for Bio-based Products

TID8.13 B - Extraction, Separation and Purification Processes for Value-Added Products (Membrane-based separation)
[Ashwani Kumar](#) (613) 998-0498

Activity 4

Theme 4.1: Strategic Work, Communication & Dissemination

TID8.20 D - Beta Testing of Industrial Bio Applications; part of EC project “Development of Sustainability Assessment Framework & Toolkit (SAFT) Methodology”

[Maria Wellisch](#) (613) 996-6195

Report is available.

Completed 04/05 T&I Projects

Activity 2

Theme 2.1: Biomass Conversion to Heat and Power (forest products ind)

TID8.08 - P&P Mill Sludge and Hog fuel Drying Strategy

[John Burnett](#) (613) 947-4111

Theme 2.2: Conversion of Waste to Bio-based Gases (biogas, syngas)

TID8.02 - Market Potential of Power Production from Anaerobic Digestion of Animal Manure in Canada

[Jody Barclay](#) (613) 996-9760

Report is available.

Theme 2.5: Advanced Biomass Conversion & Utilization Technologies

TID8.16 - BioOil in Lumber Kiln Application – Lab Scale Testing Program

[Ed Hogan](#) (613) 996-6226

TID8.17 - Pyrolysis Network

[Ed Hogan](#) (613) 996-6226

Activity 4

Theme 4.1: Strategic Work, Communication & Dissemination

TID8.20 E - Review of Bioproducts Lifecycle Study (ADEME, France) – Implications for CBIN

[Maria Wellisch](#) (613) 996-6195

Report is available.

TID8.20 F - Potential GHG Impacts Resulting from the Adoption of Successful Industrial Bio R&D

[Maria Wellisch](#) (613) 996-6195

Report is available. (distribution restricted to CBIN)

Completed 03/04 T&I Projects

Activity 4

Theme 4.1: Strategic Work, Communication & Dissemination

TID8.01 - A Study of the Intellectual Property Related to the Production of Polyurethanes from Soybeans

[John Jaworski](#) (613) 954-1035

Report is available.

TID8.03 - Potential Sources of Non-Traditional Biomass for BioEnergy - Candidate Species, Available Land and Carbon Sequestration Potential: A Case Study from Ontario

[Peter Hall](#) (613) 947-8987

Report is available.

TID8.05 - Identifying Environmentally Preferable Uses for Biomass Resources; Draft Stage 2 Report: Life-Cycle GHG Emission Reduction Benefits of Selected Feedstock-to Product Threads

[John Burnett](#) (613) 947-4111

Report is available.

PERD BEST POL 4.4.1 Projects

Continuing and New 06/07 PERD BEST Projects

Activity 1

Theme 1.1: Detailed Agriculture and Forestry Biomass Inventory

Agricultural Biomass Inventory

[Mark Stumborg](#) (306) 778-7261

Improving Canada's National Forest Biomass Estimates

[Marc Gillis](#) (250) 363-0753

Theme 1.2: Purpose-Grown Woody Biomass Production (forestry & agro-forestry)

Innovative Fast-Growing Energy Plantation Development

[Derek Sidders](#) (780) 435-7355

Quantification and sustainability of willow feedstock produced in short rotation intensive culture in diverse regions of Québec

[Sylvain Masse](#) (418) 648-7152

[Guy Larocque](#) (418) 648-5791

Assessing the potential supply of salvageable forest biomass in support of Canada's bioenergy strategy

[Werner Kurz](#) (250) 363-6031

Theme 1.3: Technologies for Harvesting, Preparation, Storage and Transportation

Agricultural Residue Harvesting Systems

[Mark Stumborg](#) (306) 778-7261

Cost of Transporting and Handling Forest Biomass¹

[John Burnett](#) (613) 947-4111

Theme 1.4: New and Improved Biomass Feed stocks

New and Improved Fatty Acid Biomass Feedstocks – Networks

[Wilf Keller](#) (306) 975-5569

Activity 2

Theme 2.1: Direct Conversion of Biomass to Heat and Power (forest products industry)

Improved Hog fuel Combustion (Validation of Assessment Methodology)

[John Burnett](#) (613) 947-4111

Hog fuel Washing for Dioxin Reduction

[John Burnett](#) (613) 947-4111

Biological Drying of Pulp Mill Sludge

[John Burnett](#) (613) 947-4111

Co-combustion of Lignin with Coal for Utility Power Generation

[John Burnett](#) (613) 947-4111

Black Liquor Gasification (Testing and Process Verification)

[John Burnett](#) (613) 947-4111

Small Scale Biomass Power (Solid wood industry, Municipality)

[John Burnett](#) (613) 947-4111

Wood Waste Dryer Testing at Western Canada Pulp Mill

[John Burnett](#) (613) 947-4111

Biomass in Lime Kiln, Testing, Evaluation and Modelling

[John Burnett](#) (613) 947-4111

Black Liquor Delignification Testing and Analysis

[John Burnett](#) (613) 947-4111

Theme 2.2: Conversion of Waste to Bio-based Gases (biogas, syngas, hydrogen)

Environmental Impact (GHG and Air Emissions) of Various MSW Management Options

[Jody Barclay](#) (613) 996-9760

Biological Production of Hydrogen from Biomass

[Jody Barclay](#) (613) 996-9760

Hydrogen Production through Fermentation Manure and Organic Wastes

[Xiying Hao](#) (403) 317-2279

Theme 2.3: Key Separation and Conversion Processes for Bio-based Products

Softwood-Residues-to-Ethanol: Scale-up and Bottleneck Reduction

[Jack Saddler](#) (604) 822-9741

¹ Project managed and reported by NRCan-CETC

Evaluation of Promising Pretreatment Technologies for Cellulosic Biomass-to-Ethanol Conversion (Softwood Residues)
[Jack Saddler](#) (604) 822-9741

Ethanol and Co-Products via Biomass Fractionation
[Vincent Chornet](#) (514) 875-0284

Novel Extraction and Fractionation Technologies for Production of Bioproducts
[Giuseppe \(Joe\) Mazza](#) (250) 494-6376

Sub critical Water Extraction of Antioxidant Compounds from Canola Hulls and Defatted Meal
[Peter Chang](#) (306) 956-7637

Production of Cellulose from Bacteria
[Pascal Delaquis](#) (250) 494-6367

Theme 2.4: Biocatalysis for Industrial Applications

Improving Cellulase Enzymes for the Enhanced Conversion of Cellulose to Fermentable Sugars and Reduced Finished Ethanol Costs
[Theresa White](#) (613) 733-9830

Theme 2.5: Advanced Biomass Conversion & Utilization Technologies

Field Testing and Verification of Pyrolysis Oil in Lumber Kiln Applications
[Ed Hogan](#) (613) 996-6226

Gasification of wood residue in a plywood mill application
[Ed Hogan](#) (613) 996-6226

Combustion Testing of Fish Oil-Derived Biodiesel Fuel
[Ed Hogan](#) (613) 996-6226

Activity 3

Theme 3.1: Integrated Bio refining

Integrated Bio refineries – Oilseed/Biodiesel (combined with T&I funded project)
[Neil Westcott](#) (306) 956-7266

Activity 4

Theme 4.1: Strategic Work, Communication & Dissemination

Canada's Bioeconomy - Capturing New Value from Our Bioresources
[John Jaworski](#) (613) 954-1035

Completed 05/06 PERD BEST Projects

Activity 4

Theme 4.2: Policy Support & Assessment Frameworks

Canadian Green Crop Network: Biomass for Greenhouse Gas Reduction and Industrial Energy Efficiency – Cross Cutting Issues

[Terry McIntyre](#) (819) 994-1105

Report is available.

Completed 04/05 PERD BEST Projects

Activity 1

Theme 1.3: Technologies for Harvesting, Preparation, Storage and Transportation

Feasibility study and development of technology to harvest, prepare and transport salvaged wood

[Peter Hall](#) (613) 947-8987

The report “*Equipment and systems for recovering, transporting and processing woody biomass for energy: an annotated bibliography*” is available.

Agroforestry Production Systems (J Kort)

[Peter Hall](#) (613) 947-8987

Activity 2

Theme 2.3: Key Separation and Conversion Processes for Bio-based Products

Development of Hollow-Fibre Membrane System for the Separation of Ethanol / Water Mixtures

[Claude Létourneau](#) (514) 813-4179

Activity 3

Theme 3.2: Regional Bioclusters

Regionally Clustered Enterprises

[John Jaworski](#) (613) 954-1035

Report is available.

Activity 4

Theme 4.2: Policy Support & Assessment Frameworks

Environmental criteria for siting of biomass (oil from canola / soybean and animal by-products) to biodiesel

[Terry McIntyre](#) (819) 994-1105

Report is available.

Environmental criteria for siting of cellulosic (agro forestry) wastes to Bioethanol

[Terry McIntyre](#) (819) 994-1105

Report is available.

Regulatory Oversight for Biomass (Municipal Sludges and Biosolids) to Energy

[Terry McIntyre](#) (819) 994-1105

Report is available.