



USING SCIENTIFIC ASSETS for BUILDING BIOECONOMY BUSINESSES

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Advisor to BIC

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Bioindustrial Innovation Canada

Accelerating commercialization of clean technologies

Vision:

Creating jobs and economical value sustainably for Canada

Mission:

Bioindustrial Innovation Canada provides critical strategic investment, advice and services to business developers of clean, green and sustainable technologies. Our expertise in commercialization builds a stronger Canada.

Bioindustrial Innovation Canada

Strategic Pillars

Cluster Builder:

- *Build a strong hybrid cluster in Sarnia-Lambton*
- *Create strong partnerships with Colleges and Universities*
- *Integrate cluster model into additional Canadian communities*

Critical Strategic Investment Fund:

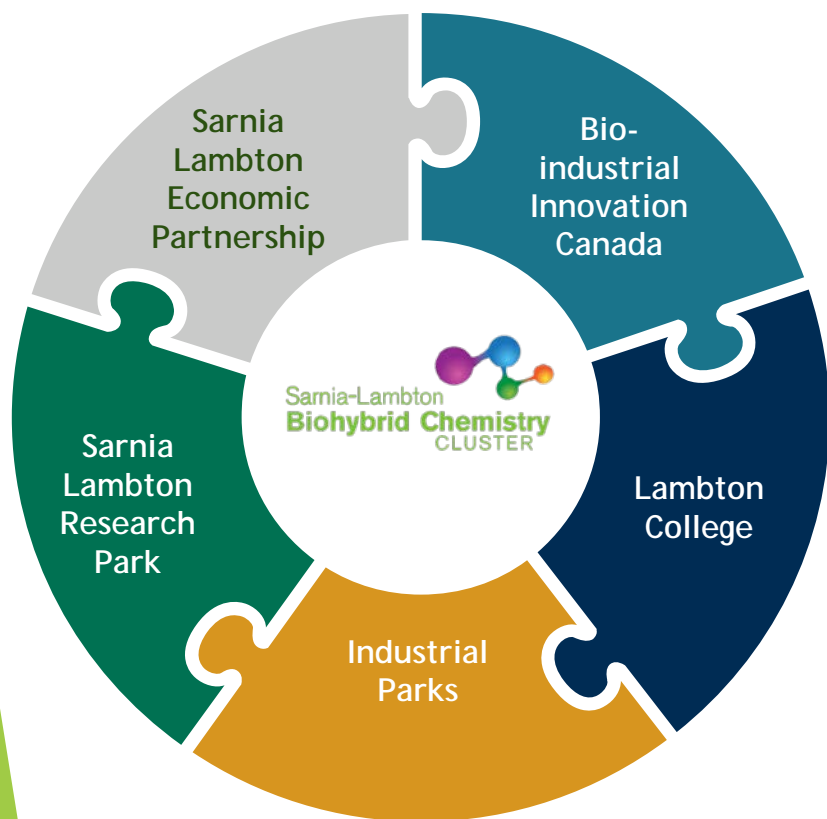
- *Raise risk capital for clean, green and sustainable startups*
- *Invest in start up companies with high potential for success*
- *Use BIC talent and connectivity to accelerate success and profitability*

Strong Leader for Commercialization:

- *Provide commercialization advise and services*
- *Increase awareness and understanding of successes*
- *Provide leadership for sustainability (LCA, GHG reduction, water reduction and quality)*

Sarnia-Lambton Hybrid Chemistry Cluster

Supported through a collaborative ecosystem



► Sarnia-Lambton Economic Partnership:

Community and municipality economic driver providing local contact

► Sarnia-Lambton Research Park:

Providing assets (laboratory and pilot plant space) for business incubation

► Lambton College:

Providing access to applied research capability and highly qualified people

► Bioindustrial Innovation Canada:

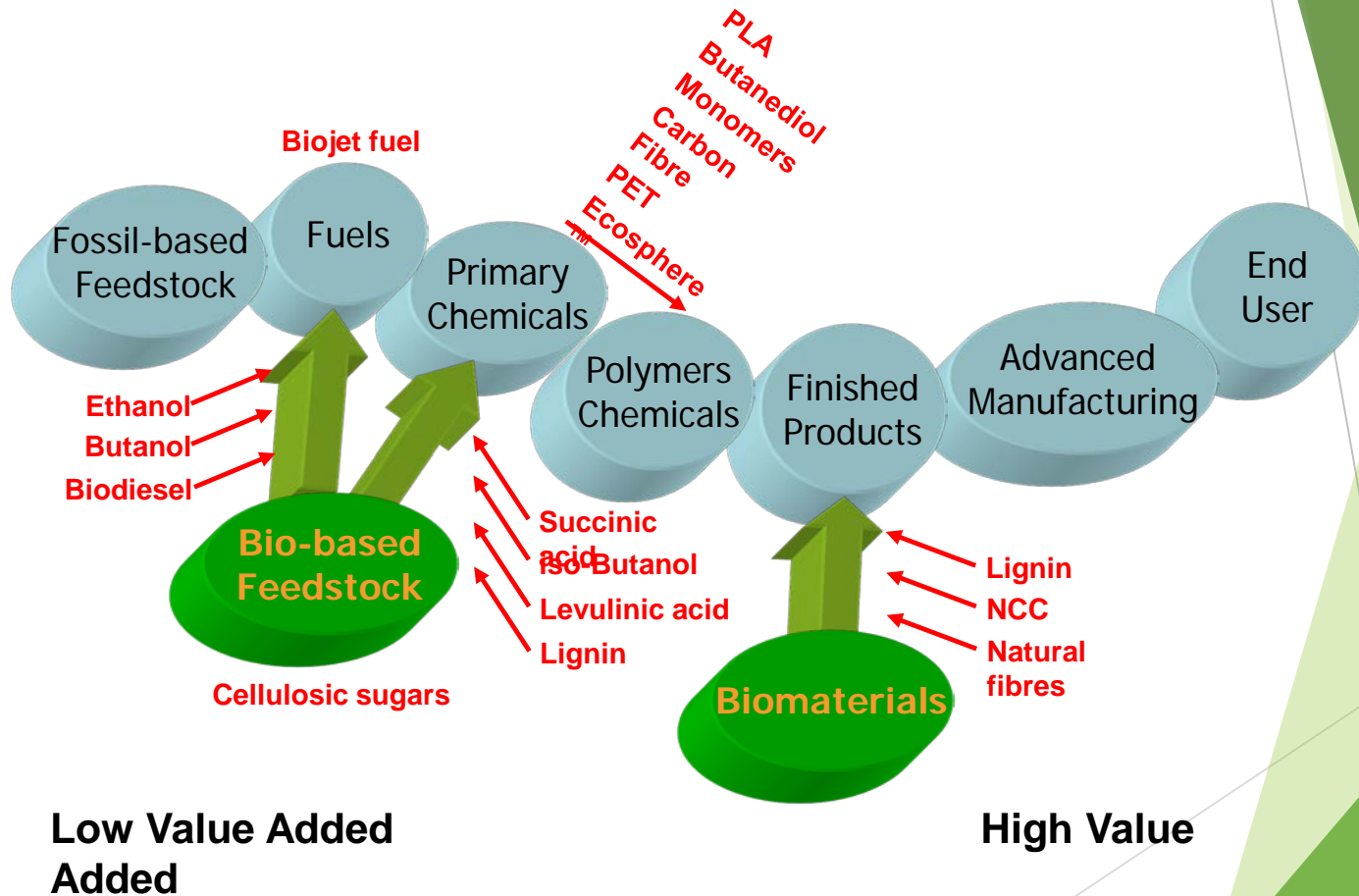
Business accelerator providing critical investment, advice and services

► Industrial Parks:

Access to cost effective infrastructure and services for commercialization

Integrating into the Hybrid Chemistry Value Chain

The key to growing a sustainable bioeconomy



Bioindustrial Innovation Canada

How BIC supports commercialization

Bioproduct AgSci Cluster Initiative (\$10 million, 4 years):

- Funded through Agriculture and Agri-Food Canada (AAFC)
- Support R&D of bioproducts with a benefit to agriculture
- Strong focus on achieving milestones leading to commercialization

Centre for Commercialization of Sustainable Chemistry Innovation (COMM SCI) (\$27 million, 4 years):

- Funded through FedDev IRD (\$12 million) and MRIS (\$3 million)
- BIC, partners and participants provide \$12 million matching funds
- \$11 million investment fund for startup companies
- \$16 million for commercialization support activities (LINKS to Canadian Scientific Assets)
 - ▶ Applied research for eliminating technology barriers
 - ▶ Access to plug and play facilities for pilot and demonstration plants
 - ▶ Access to technical services to resolve supply chain and market barriers
 - ▶ Access to networks and engineering resources to support commercialization
 - ▶ Financial support through access to project funding

Raw Material Sourcing Anchors Growth of Clusters

Converting corn stover & wheat straw into sugars



► Vision Created and Project Launched:

A profitable and sustainable agricultural biomass to end-products supply chain by 2020

Target:

Construction of a cellulosic sugar conversion plant in Sarnia by 2018 processing 75,000 tonnes of agricultural residue

► Process and Outcomes:

19 technology providers screened vs. decision criteria and recommendations given to Cellulosic Sugar Producers Co-op

CSPC partnering with Comet Biorefining to create agricultural biomass supply chain and commercialize first cellulosic sugar facility

A project linked to a variety of Partners

Raw Material Sourcing Anchors Growth of Clusters

Producing cost competitive sucrose from sugarbeets



► **Vision Created and Project Launched:**

A profitable and sustainable sugarbeet processing cooperative in Lambton for a sugars to bioproducts feedstock and by-products supply chain by 2021

► **Target:**

Construction of a sugarbeet processing plant in Lambton processing 30,000 acres of Ontario grown sugarbeets

► **Process and Outcomes:**

Assessing sugar quality versus production plant cost requirements for bioproducts feedstock production

BIC with support from Lambton College and Western Sarnia-Lambton Research Park developing design, engineering scope and preliminary cost estimate for 120,000 tonnes/year processing plant

Also Reaching out Internationally to European Sugar Beet Companies with expertise in R&D and Innovation

Investment Decisions Support Sarnia-Lambton

Creating an economic impact of over \$4.5 million

 **ORIGIN**

NEWS LOCAL

California company expected to build demonstration plant in Sarnia



By Paul Morden, Sarnia Observer
Wednesday, June 14, 2017 2:17:27 EDT PM



SARNIA, Ontario – Bioindustrial Innovation Canada (BIC) is pleased to announce that it has commenced a COMM SCI project with Advanced Chemical Technologies Inc. (AChT), Waterloo, Ontario, that will see AChT complete technical and economic feasibility studies to address commercial barriers to construct a green methanol commercial scale demonstration facility in Sarnia by late 2020.

ORIGIN's View of Canada

"Our experience has been that Canada has a variety of advantages that encouraged us to locate our first manufacturing plant there. Specifically, we've found that the labor force is extraordinarily skilled across a broad array of disciplines and the history of manufacturing has been retained in the societal memory of Canada. We've also found the policy environment and goals to be remarkably clearly articulated, and that policy is implemented in a consistent way throughout Canada. This has made for a very efficient, predictable engagement with both the local and national governments."

John Bissell

CEO, Origin Materials

Clusters and their attributes

Key Clusters

- ▶ Drayton Valley, Alberta
- ▶ Saskatoon, Saskatchewan
- ▶ Winnipeg, Manitoba
- ▶ Thunder Bay, Ontario
- ▶ Sarnia, Ontario

Others Developing

- ▶ Edmonton area, Alberta
- ▶ Eastern Ontario
- ▶ La Tuque, Quebec
- ▶ Maritimes



Clusters that are leading the way have:

- ▶ Strong Leadership
- ▶ Focused
- ▶ Patience - long term strategy
- ▶ Infrastructure
- ▶ Supportive
- ▶ Just get it done
- ▶ Think Internationally
- ▶ Constant CHANGE
- ▶ Recognize the Importance of supporting development of all clusters



Ecosynthetix's rational for Coming to Canada

At EcoSynthetix, a globally expanding company, we made a strategic decision to establish our headquarters and our Centre of Innovation in Canada because of the ability for our scientists to work with university researchers to develop new technologies, Canada's "open for business" policies and tax benefits. This decision has paid off for us as we've seen strong relationships develop 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 and meaningful career opportunities for a number of skilled Canadians."

Jeff MacDonald

CEO of Ecosynthetix

Global Trends Position Canada for the Bioeconomy

Trends

- ▶ Shift to circular economy
- ▶ Need for Biomass as a renewable feedstock
- ▶ Expertise to manage the biomass
- ▶ Focus on Climate Change and GHG management
- ▶ Public Private Partnerships
- ▶ Sustainability at the right costs



Focused on protecting the future

Bioindustrial Innovation Canada

Creating Jobs and Economic Value Sustainably

Business Accelerator

- National mandate with a strong focus on regional cluster development

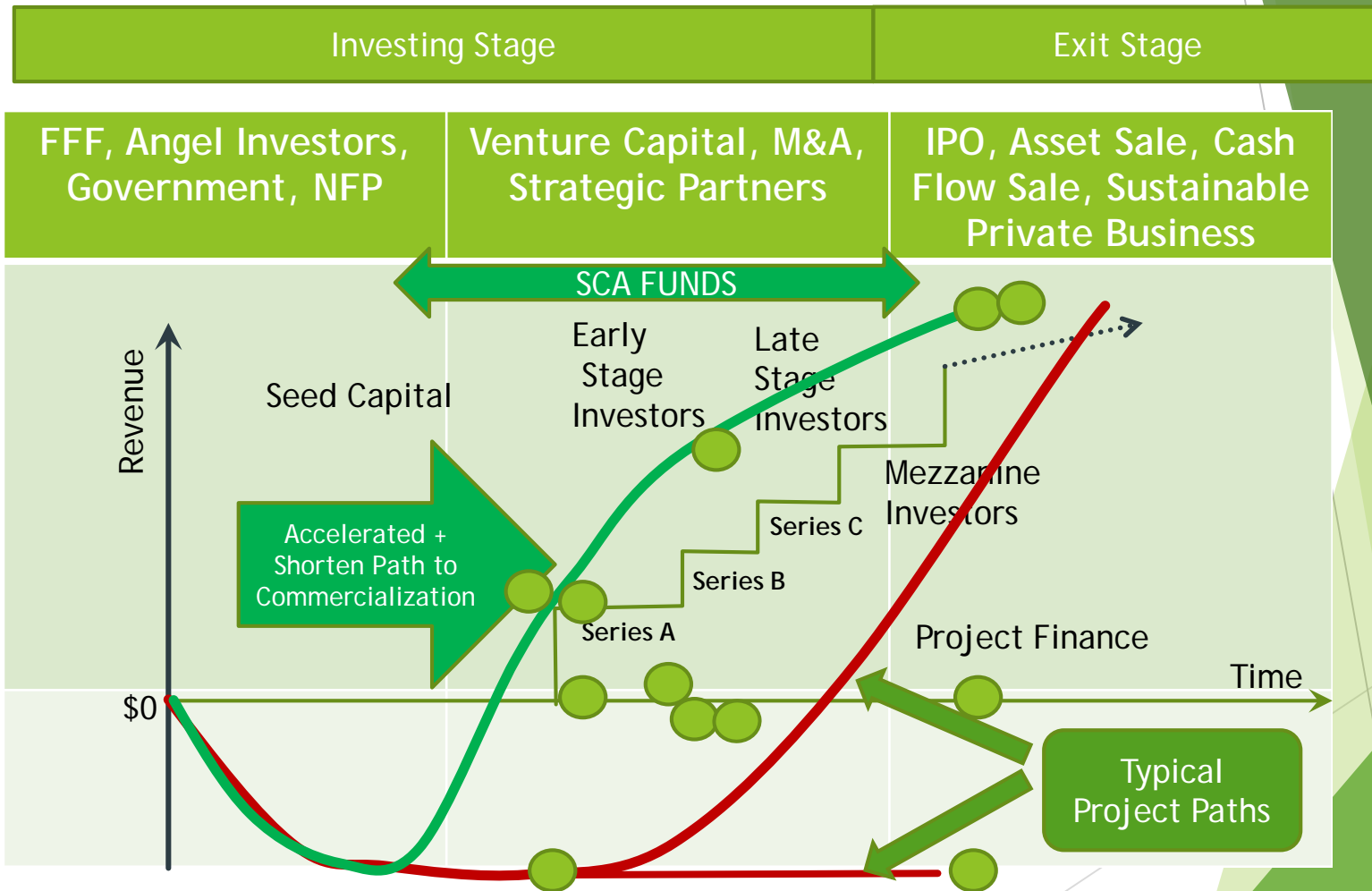
Business Enabler

- Supporting early stage companies with clean, green and sustainable technologies
 - Early stage investment
 - COMM SCI projects eliminating barriers to commercialization
 - Accelerating commercialization by providing advice and services

Strong Collaborator

- Work closely with our partners in Sarnia-Lambton
 - Sarnia-Lambton Economic Partnership
 - Western Sarnia-Lambton Research Park
 - Lambton College

Accelerating Commercialization and Connection to Industry



Global Relationships with Accelerators and Cluster Builders - the Hubs



- ▶ Bio-based Delta (Netherlands)



- ▶ CLIB (Germany)



- ▶ Malaysian Biotechnology Corp. (Malaysia)



Life Sciences Queensland

- ▶ Life Sciences Queensland (Queensland, Australia)



- ▶ eGoliBIO Lifesciences Incubator (South Africa)

- ▶ Foro Argentino de biotecnología (FAB) (Argentina)



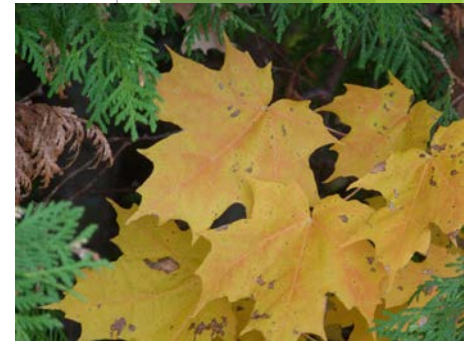
- ▶ MBI (Lansing, Michigan)
- ▶ VITO, Antwerp, Belgium



Summary

Building a Sustainable Future with Bioeconomy Hubs

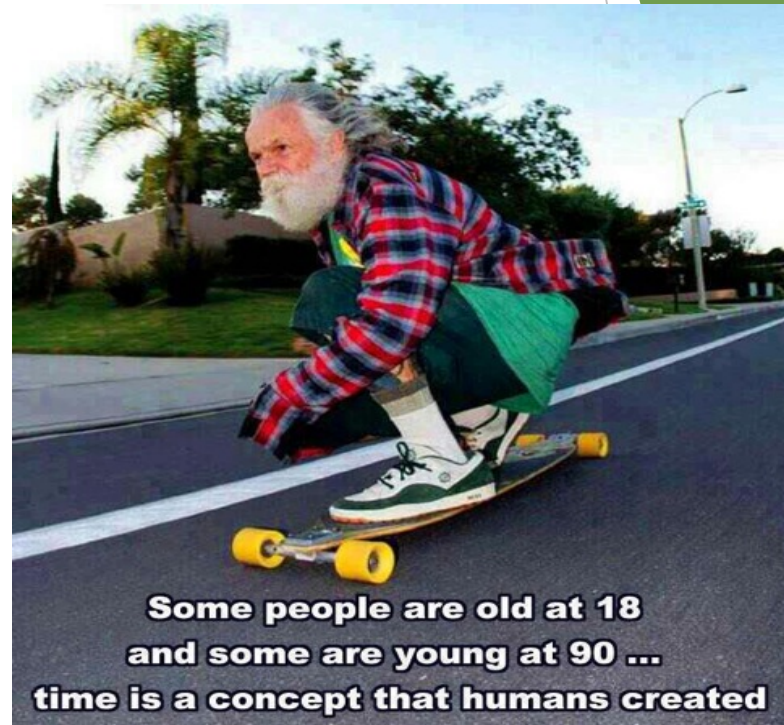
- CANADA can take a global leadership position in the Bioeconomy
- Biobased chemicals and biomaterial are the opportunities
- Agriculture, Forestry and Waste are the sources for conversion materials
- Biomass to Sugars is a real short term Opportunity
- Home grown technologies and international attraction will establish the bioeconomy companies
- The outcome will be rural development and jobs for the 21st century through cluster development - PARTNERSHIPS
- But to make this all work you need leaders with VISION



Bioindustrial
Innovation Canada
A Sustainable Chemistry Alliance

Always feel like you are 18

- ▶ Keep the mind focused
- ▶ Keep learning
- ▶ Realize you never know everything
- ▶ Look beyond your boundaries to find answers



Thanks for Listening - Questions

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