

STANDARDS AND RATINGS FOR EVALUATING BIOMASS SUPPLY CHAIN RISK: **The value of integrating BSCR Standards and Risk Ratings into investor decision-making**



**Benefits for Capital Markets, Project Developers,
and Government**

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Overview of Discussion

- 1. Latest developments** for *Canadian Standards for Biomass Supply Chain Risk*. What are the BSCR Standards? Why are they needed by the capital markets? Why you should know about them.
- 2. The path forward** *Phase 2*: Integrating the BSCR Standards with ratings systems and scoring protocols. Why biomass risk ratings are so important for driving capital into bio-economy projects.
- 3. How this supports developers, the capital markets and government priorities.**
The Forest Bioeconomy, the Pan-Canadian Framework, and the CFS.

Risk Rating Systems Move over \$9.5 Trillion

STANDARD
& POOR'S

MOODY'S

FitchRatings

	S&P	Moody's	Fitch	Others NRSROs	Total
Financial institutions	54,000	61,581	61,550	32,207	209,338
Insurance companies	8,200	4,540	1,657	5,391	19,788
Corporate issuers	44,500	30,285	13,385	11,116	99,286
Asset backed securities	117,900	101,546	64,535	18,480	302,461
Government issuers	965,900	841,235	363,897	14,694	2,185,726
Total	1,190,500	505,024	505,024	81,888	2,816,599

- Application of a **rules-based, standardized approach** to quantifying risk is a proven way of reducing capital market perceptions of risk.
- **Transparent evaluation protocol ("Rating")** allows capital markets to compare 'apples to apples'.
- Ratings enable massive efficiencies in the capital markets.

BSCR Standards are the framework for a risk rating system for biomass projects that require capital.

It is designed to do for the bio-economy exactly what the credit rating agencies do for the global economy.

Development supported by NRCan, and Standards Council of Canada (SCC).

Will become a *National Standard of Canada* in ~12 months.



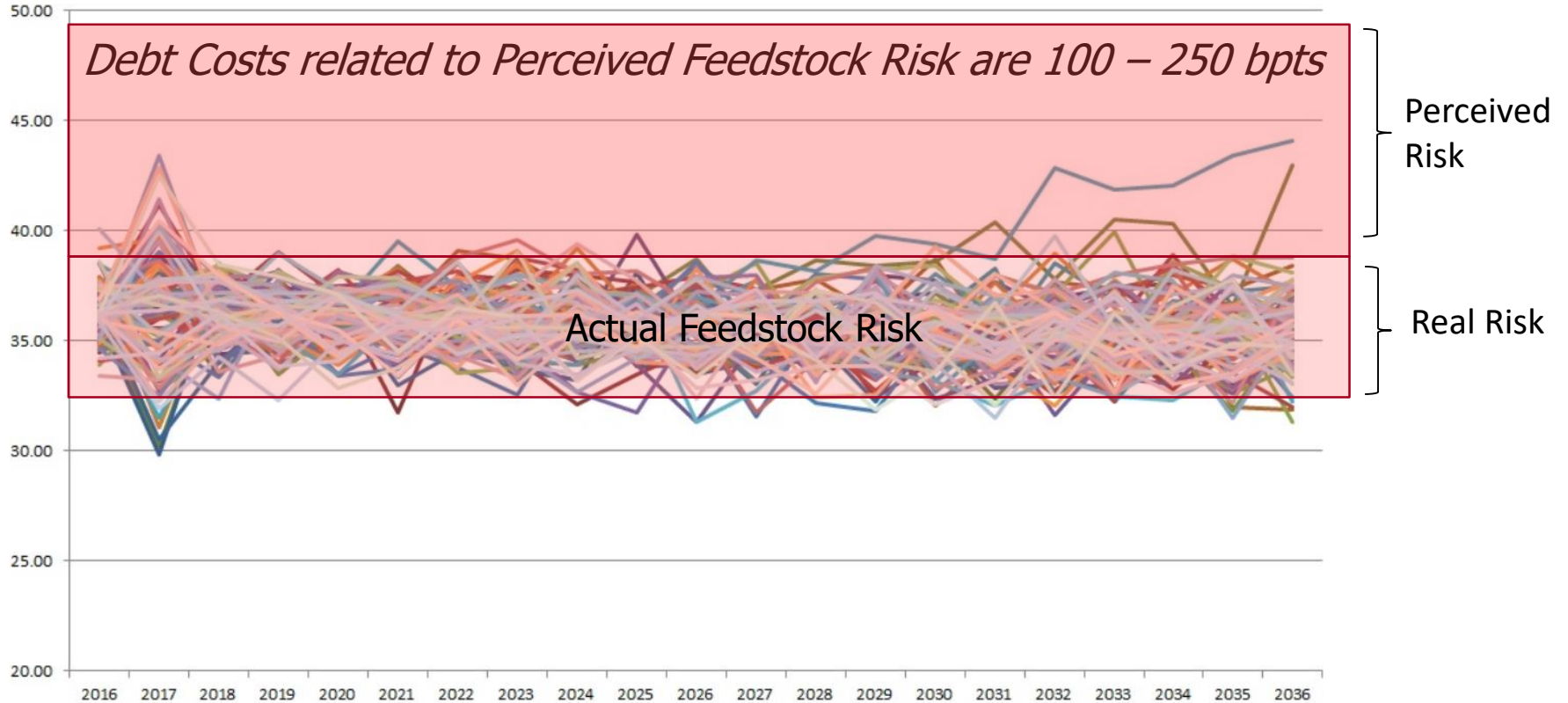
Financing Barrier: Biomass Supply Chain Risk is Complex-- No Standard Tools for Capital Markets to Measure Risk

- Suppliers are often small and almost never investment grade. Traditional balance sheet financing is difficult.
- Biomass feedstock risk can be complex and investors are often confused.
- Efficient, low-cost capital requires that investors make sense of a multitude of risks and their interconnectivity.

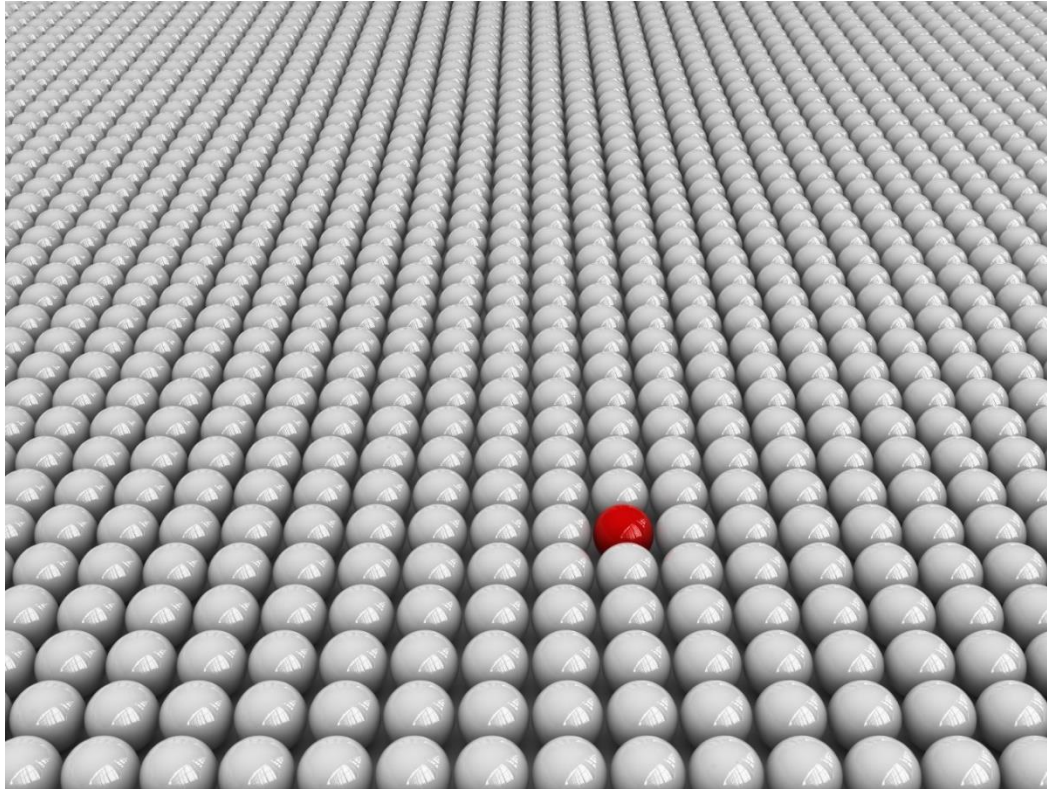


BSCR Standards enable capital to properly structure around feedstock risk

BSCR Standards lower financing costs and accelerate deployment of capital



BSCR Standards Prevent Biomass Project Failure



- Project failure due to improper or inadequate assessment of feedstock risk is a significant threat to development of the bio-economy.
- The “knock-on” effects of project failure on future investment are well documented.
- Project failure makes future investment less likely and more expensive.

Case Study: Wood to electricity plant in Florida

- Facility was converted from coal-fired to a 71 MW (net) biomass-fired power plant. Due Diligence was undertaken for sale of project 2018. Feedstock risk was key.
- Capital market perception of feedstock risk was assessed ***before*** and ***after*** application of the BSCR Standards
- Based on three feedstock reports in 2010, 2011, and 2017 commissioned by the developer and on established industry methodology common prior to the development of the BSCR Standards.

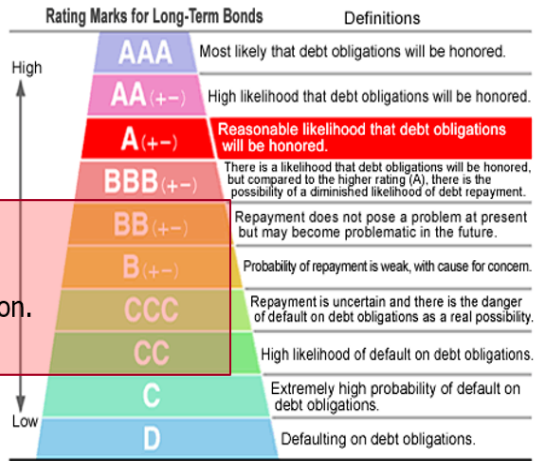


KEY RESULTS:

1. **Over 41% of Risk Factors and 34% of the Risk Indicators in the BSCR Standards were not addressed by previous reports.**
2. **Overall project risk as perceived by capital markets was shown to decrease by 29% after application of the BSCR Standards.**

Risk Ratings Impact on Bio-project Financing

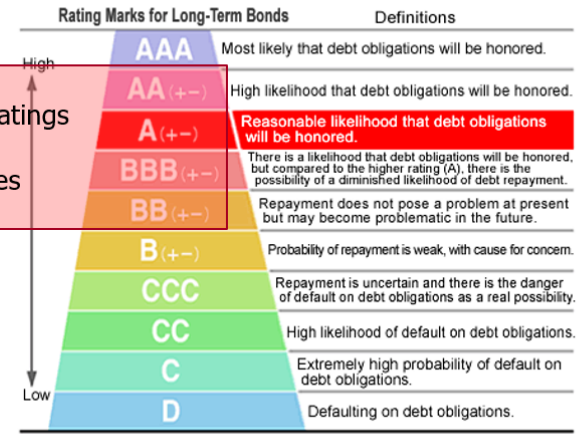
Without Rating



Typical bioenergy project ratings are in the junk region.

Note: Credit ratings range from AAA to D, and are further subdivided into a total of 20 ratings (see chart) by the use of plus and minus signs for ratings AA to B.

With Rating (1-3 notch increase)



Biomass Supply Chain Risk Ratings can result in a ratings bump For bio-projects of 1-3 notches

Note: Credit ratings range from AAA to D, and are further subdivided into a total of 20 ratings (see chart) by the use of plus and minus signs for ratings AA to B.

WHAT'S NEXT? Integrating BSCR Standards with a Risk Rating System

- ✓ **Obtain SCC Accreditation** for the Canadian BSCR Standards as a National Standard of Canada (*Completion: Q4 2020*).
- ✓ **Develop Ratings Systems and Scoring Protocols.** Develop risk ratings systems and scoring (AA, A-, BB, etc.). Calibrate using case studies and real projects. Integrate the BSCR Risk Ratings with BSCR Standards to create a usable risk assessment tool.
- ✓ **Make Biomass Supply Chain Risk Ratings Available** for use by biomass project developers, investors and government.

Biomass Risk Ratings Protocols — The Review Committee

- Over 40 Review Committee members.
- **>\$50 billion** in deployable “bio-targeted” capital from investors deploying capital in sector.
- Clear call for Biomass Risk Ratings by capital market players

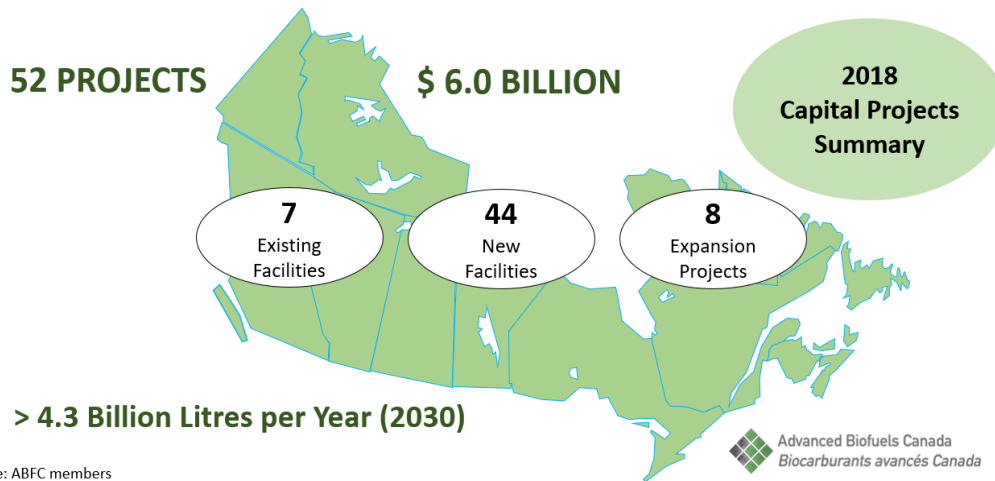


Biomass Risk Ratings: Benefits

- ✓ BSCR Ratings **remove a significant chunk of the perceived uncertainty** out of investor lending decisions, and reduce time and transaction costs.
- ✓ Provide greater confidence to lenders, and consequently **broaden the range and lower the cost of financial resources available to biomass projects**. As is the case for credit ratings, BSCR rating can be expected to be an effective negotiating tool for biomass project developers to access cheaper credit facilities. In the current banking scenario, where banks are grappling with feedstock risk and, bio-project **developers can expect competition among banks to acquire bio-projects with BSCR ratings of investment grade and above**, esp. given previous project failures
- ✓ **Enable capital to properly structure around feedstock risk; help avoid investment in projects that can fail**; create projects that are more resilient.
- ✓ **Enable government to accurately calibrate suitable levels of support** given project risk.

Standards and Ratings Support Canada's Advanced Biofuels Potential

52 New Advanced Biofuels Projects / 4.3 BLY / \$6B Capex



Source: ABFC members

Delivering these new projects is essential to delivering the CFS... but it means addressing financing barriers.

Estimated Capital Cost (CAPEX)

\$0-10 M \$10-50 M \$50-100 M > \$100 M



Production Capacity

Million Litres	2020	2025	2030
Renewable Gasoline Products ¹	50	250	620
Renewable Diesel Products ²	560	2,270	2,580
Biocrude ³	60	520	1,100

¹ Includes ethanol, methanol, renewable gasoline

² Includes biodiesel, renewable hydrocarbon diesel, biojet, synthetic diesel, renewable fuel oil

³ Processed biomass to biocrude (excludes oilseeds, rendered fats)

Alignment with Government Priorities

THE FOREST BIOECONOMY FRAMEWORK FOR CANADA

Pillar 2 Supply of Forest Resources and Advanced Bioproducts

- **Establishing effective standards** will enable the purchase and trade of forest biomass and advanced bioproducts. Standards and certification are critical components of a thriving industry. They guide and protect market participants and can influence market incentives and pricing to support nascent technologies.
 - ✓ **OBJECTIVE 2A ESTABLISH EFFECTIVE STANDARDS**
 - Advancing Canada's forest bioeconomy requires updated standards that enable the purchase ... of forest biomass resources and advanced bioproducts. **Clear processes for establishing new standards would accelerate the growth of the bioeconomy, as would standards for biomass feedstock** p.22
 - ✓ **OBJECTIVE 2B ENHANCE DATA COLLECTION AND MANAGEMENT**
 - Many start-up companies lack in-house expertise and financial resources to provide the necessary data required by granting agencies, financial institutions, and venture capitalists. Example policy measure: "Explore innovative mechanisms and **improved analytics to de-risk supply chains**" p. 23

Pillar 4 Support for Innovation

- Innovators need access to investment funding and markets while investors expect financial returns commensurate with perceived risks. A range of mechanisms are required to promote the development of new products and level the innovation playing field p.26
- ✓ **OBJECTIVE 4A FACILITATE AN INNOVATION ECOSYSTEM**
 - **... increase the appetite for investment and provide guidance on leading practices that will enable funding agencies and financial institutions to close on projects faster and more cost effectively** . P 26
 - ✓ **OBJECTIVE 4C DEVELOP INNOVATIVE FINANCIAL MECHANISMS**
 - Financing the forest bioeconomy requires significant capital investments and knowledgeable strategic partners... **Securing capital requires astute investors and a suite of products available to de-risk projects** p.27.
- Example policy measures: **Catalyze both debt and equity financing** to help commercialize new technologies p.27

Alignment with Government Priorities

THE PAN-CANADIAN FRAMEWORK ON CLEAN GROWTH AND CLIMATE CHANGE

SECTION 5: CLEAN TECHNOLOGY, INNOVATION, AND JOBS

Fostering and encouraging investment in clean technology solutions can facilitate economic growth, long-term job creation, and environmental responsibility and sustainability.

Canada needs a step change in clean technology development, commercialization, and adoption across all industrial sectors. Clarity of purpose and investment [is] essential to seizing the economic growth and job-creation opportunities of clean technology

Pan-Canadian Framework, p.37

5.1 Building early-stage innovation

- ✓ Sustainable Development Technology Canada (SDTC) provides funding support to companies across Canada to develop, demonstrate, and deploy innovative new clean technologies

5.2 Accelerating commercialization and growth

- ✓ Biomass market and product diversification strengthens the long-term competitiveness of the agriculture and forest sectors by encouraging new technologies to support industry transformation.
- ✓ While federal and provincial governments already have a range of supports in place, **key needs exist in terms of accessing venture capital** as well as working capital and support for first, large-scale commercial projects or deployments p.39.
- ✓ New Action 2. Increasing support to advance and commercialize innovative technologies Governments will collaborate to enable access to capital for clean technology businesses to bring their products and services to market, including at the commercial-scale demonstration and deployment stages p.40
- ✓ New Action 6. Standards-setting Governments will work together to exert a strong **leadership role in international standards-setting processes** for new clean technologies and to ensure that Canada's clean-technology capacity shapes future international standards. P.40

Alignment with Government Priorities

THE CLEAN FUEL STANDARD

“Our research shows that a strong Clean Fuel Standard would drive \$5.6 billion a year in economic activity and create up to 31,000 jobs for workers building, supplying, and operating new clean fuel facilities.”

Clean Energy Canada

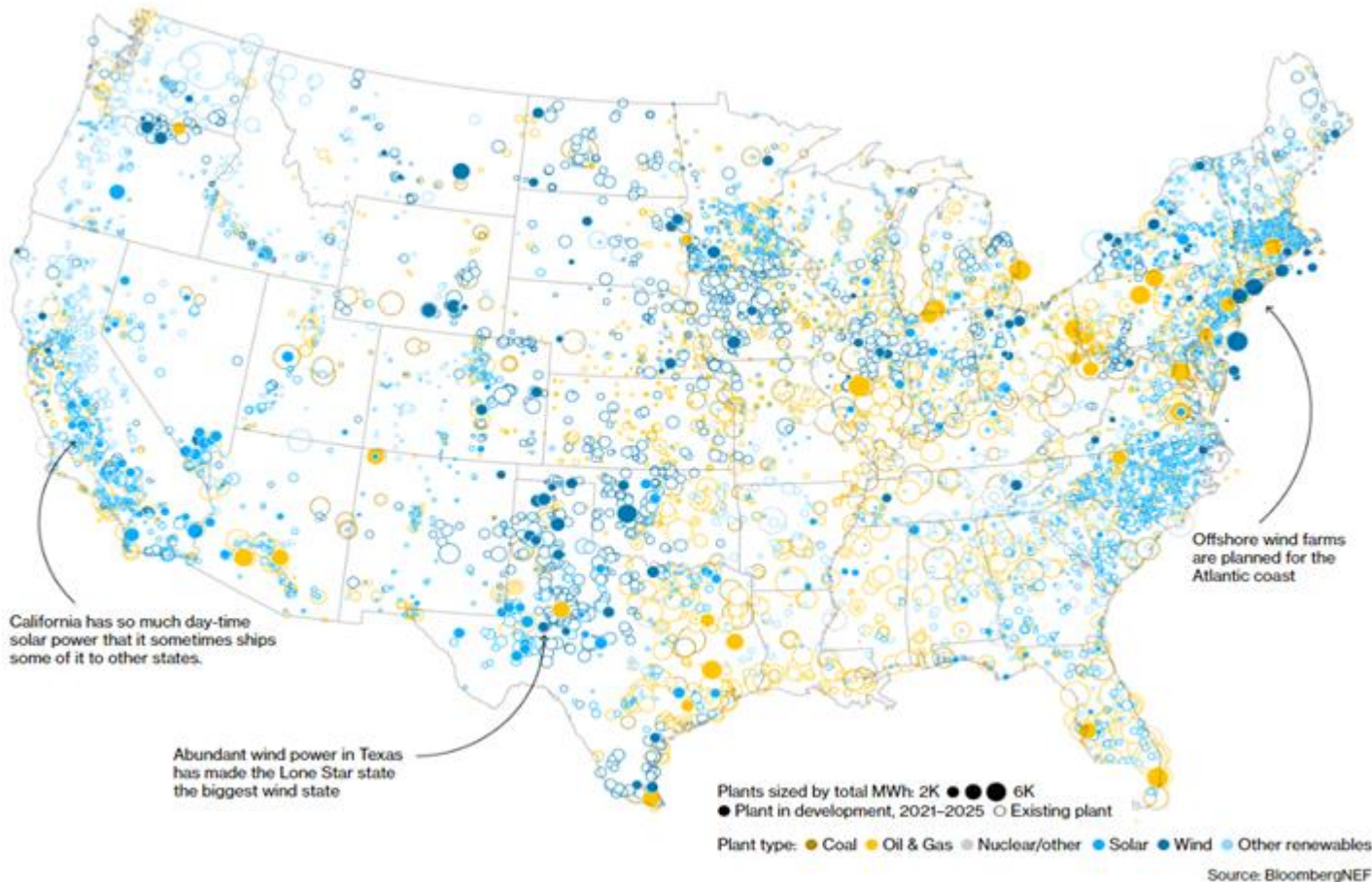
CLEAN FUEL STANDARD Cost-Benefit Analysis Framework

February 2019

- ✓ “The advanced low-carbon fuel sector is still an emerging industry and as such, there is more uncertainty on the variability of business models, technical abilities, and market demand, in comparison to traditional low-carbon fuels and fossil fuels”.
- ✓ **“Upfront capital cost barriers could act as a limiting factor towards quick development and adoption** of new low-carbon fuel facilities or expansions of existing facilities.”

ECCC / Cost-Benefit Analysis Framework February 2019, P.10

But Where Does This Leave Biomass?



to get a copy of the Standards
www.ecostrat.com/getstandards



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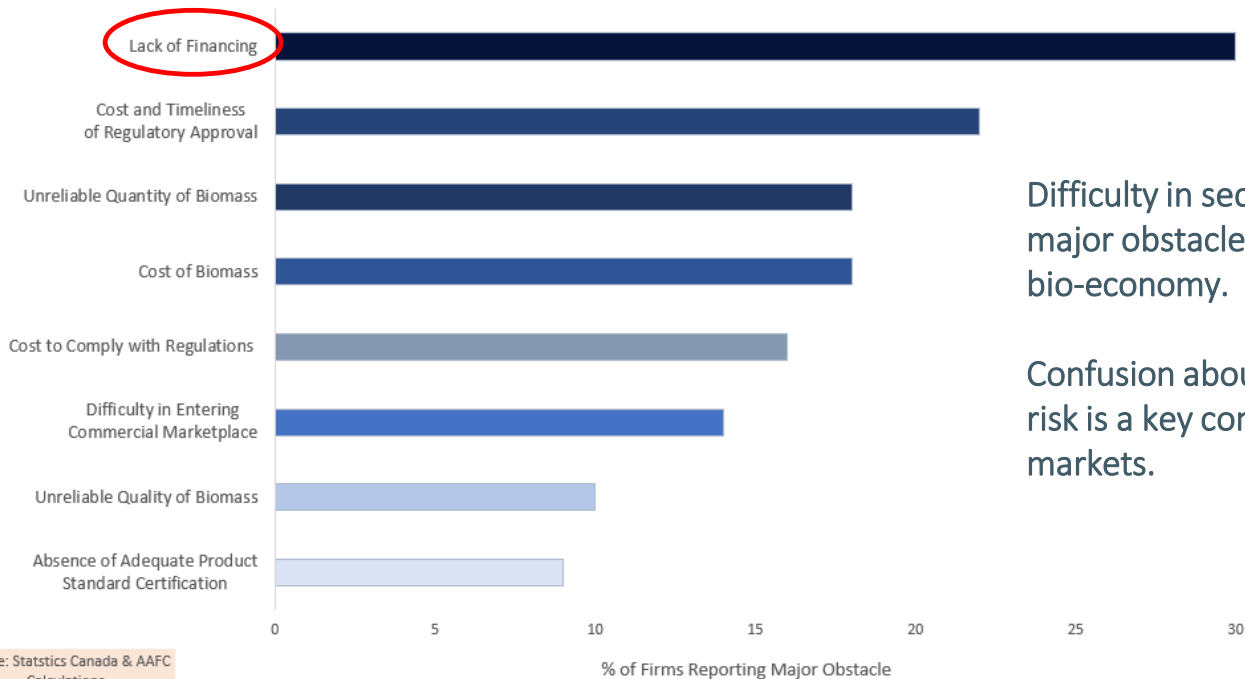
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Additional Slides

BSCR Standards Address the #1 Industry Challenge

Challenges Facing the Bioeconomy Companies

Major Barriers to Production or Development of Bioproducts, 2015



Difficulty in securing capital is the major obstacle in catalyzing Canada's bio-economy.

Confusion about biomass feedstock risk is a key concern for the capital markets.

Source: Statistics Canada & AAFC Calculations

Integrating Biomass Ratings with the BSCR Standards : Benefits

Biomass Ratings will:

- ✓ **Decrease a major barrier to investment** into bio- project development in the forest and ag sectors
- ✓ **Support** delivery of government policy
- ✓ **Drive greater investment** in low-carbon, innovative bio-based economy projects
- ✓ **Accelerate job creation** and economic development, particularly in rural areas.
- ✓ **Consolidate** Canada's position as an innovative leader in the Canadian and global bioeconomy.



50+ Industry Stakeholder Group in Canada

Strong industry support: stakeholder group of over 50 bio-companies, industry associations, and universities in Canada and >100 in US.



Biomass Risk Ratings – Industry Support Letters

We represent key stakeholders in Canada’s advanced biofuels, bioenergy, biochemical and bioproduct sectors. We are Canadian bio-economy industry organizations, financial institutions, capital providers, bio-technology providers, operators, developers, end-markets, forestry and agricultural producers, and academia. We are writing to express our support for the establishment of *Canadian Biomass Ratings*.

We share a collective interest with the federal government in reducing financial barriers to the further build-out of facilities that produce biofuels, biochemicals, bio-energy, and bio-products and in advancing Canada’s Clean Growth Economy and the CFS.

Securing financing is a major barrier to bio-economy development and feedstock risk is an important contributing factor. We believe that by providing the capital markets with a transparent and empirical ratings metric (A+, A, BB, etc.) to more accurately quantify feedstock risks *Ratings* materially mitigates feedstock risk for the capital markets.

As a result, we collectively support the establishment of *Ratings* and its de-risking and credit enhancing ratings mechanisms that allow capital to flow more easily, more quickly, and less expensively to the many existing and prospective bio-economy plants in Canada.

Signatories

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