

How Supply Chain Risk Ratings Drive Bio-Industry Growth: *The Institute for Biomass Supply Chain Risk*



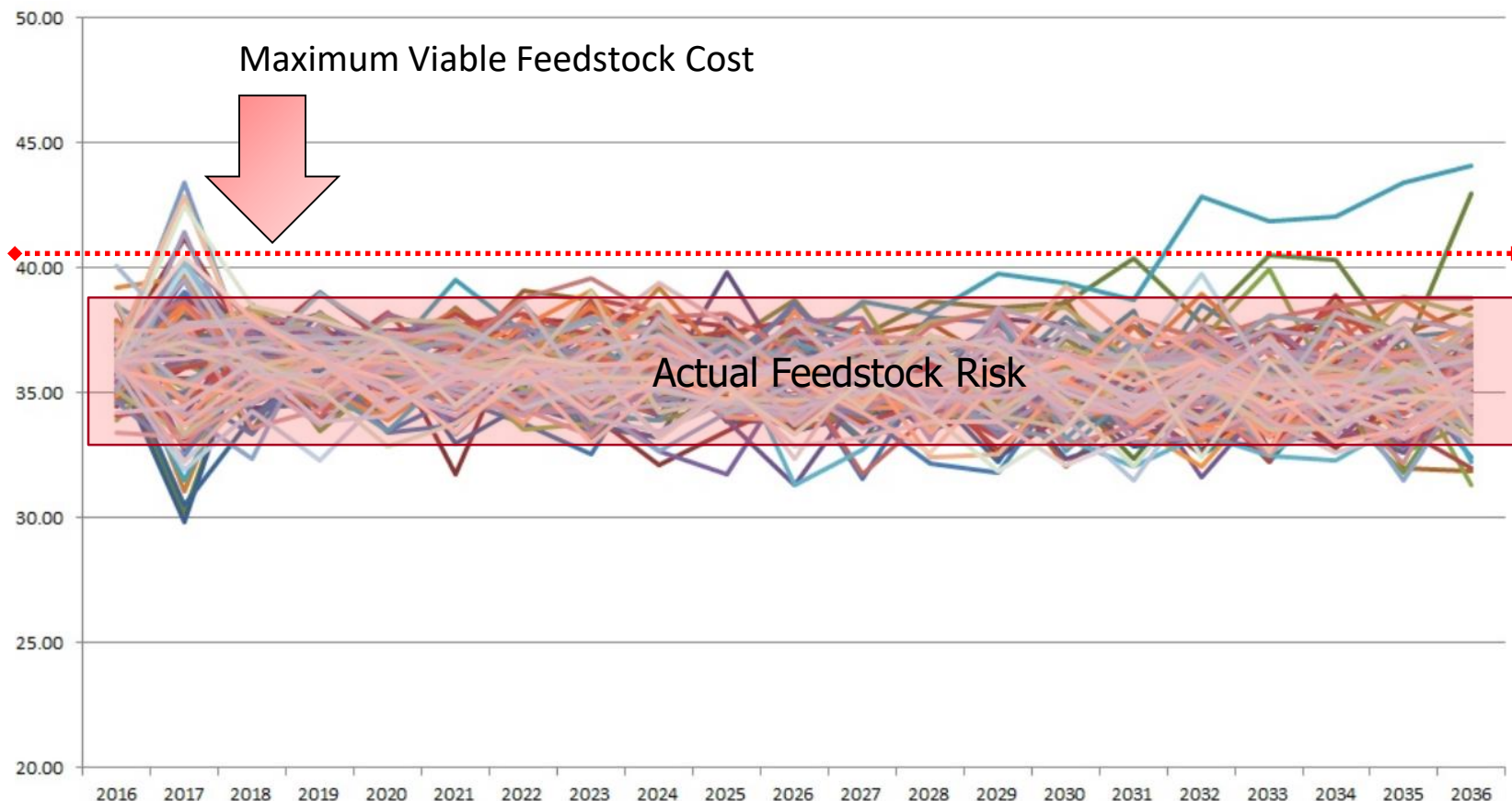
**Scaling Up Conference – Ottawa
November 2018**

**Jordan Solomon
Managing Director & CEO
Ecostrat Inc.**

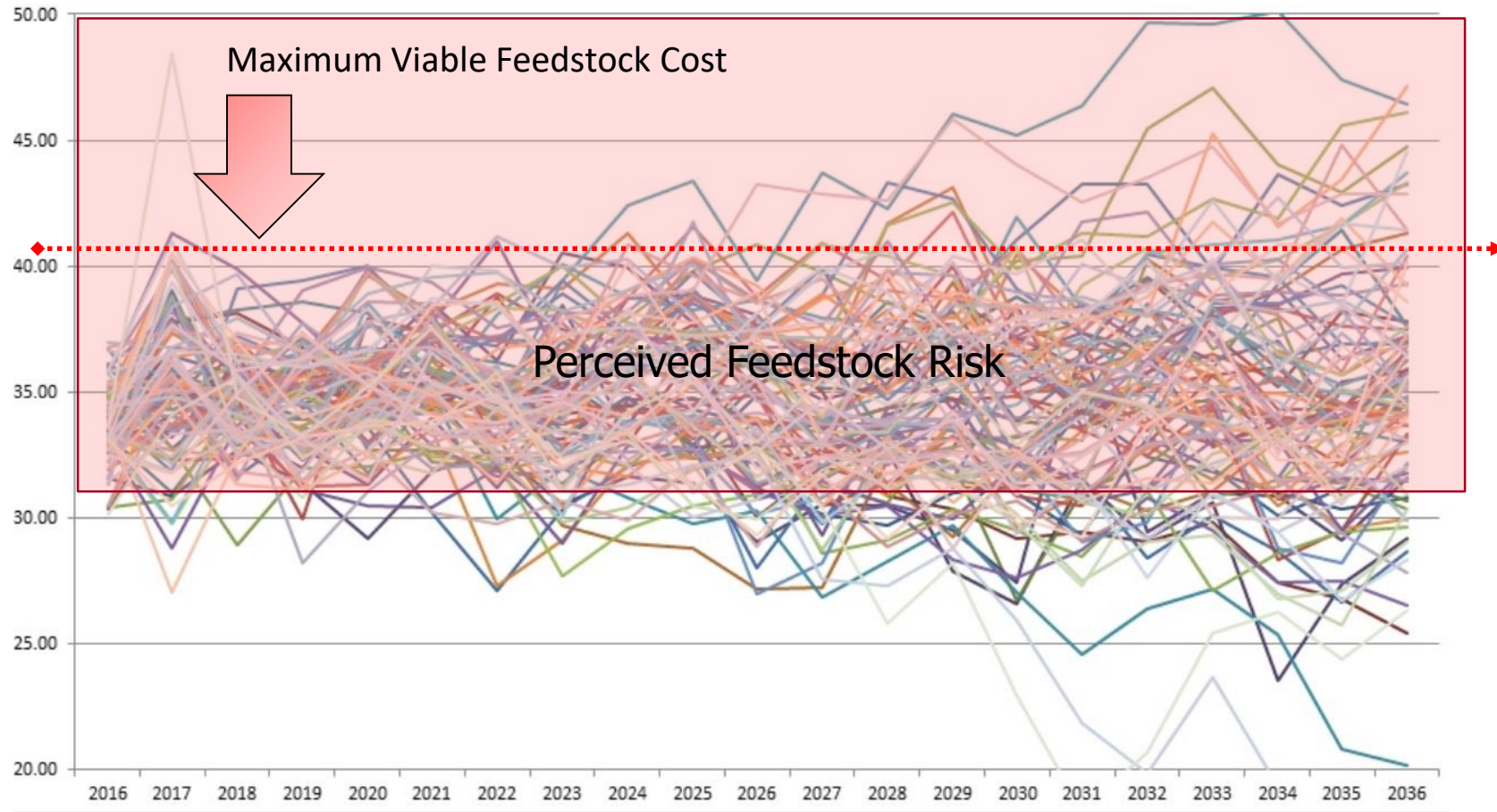
“Better understanding and pricing of risk will lead to easier capital flow to bioenergy projects and accelerate growth of the bio industry”

FitchRatings

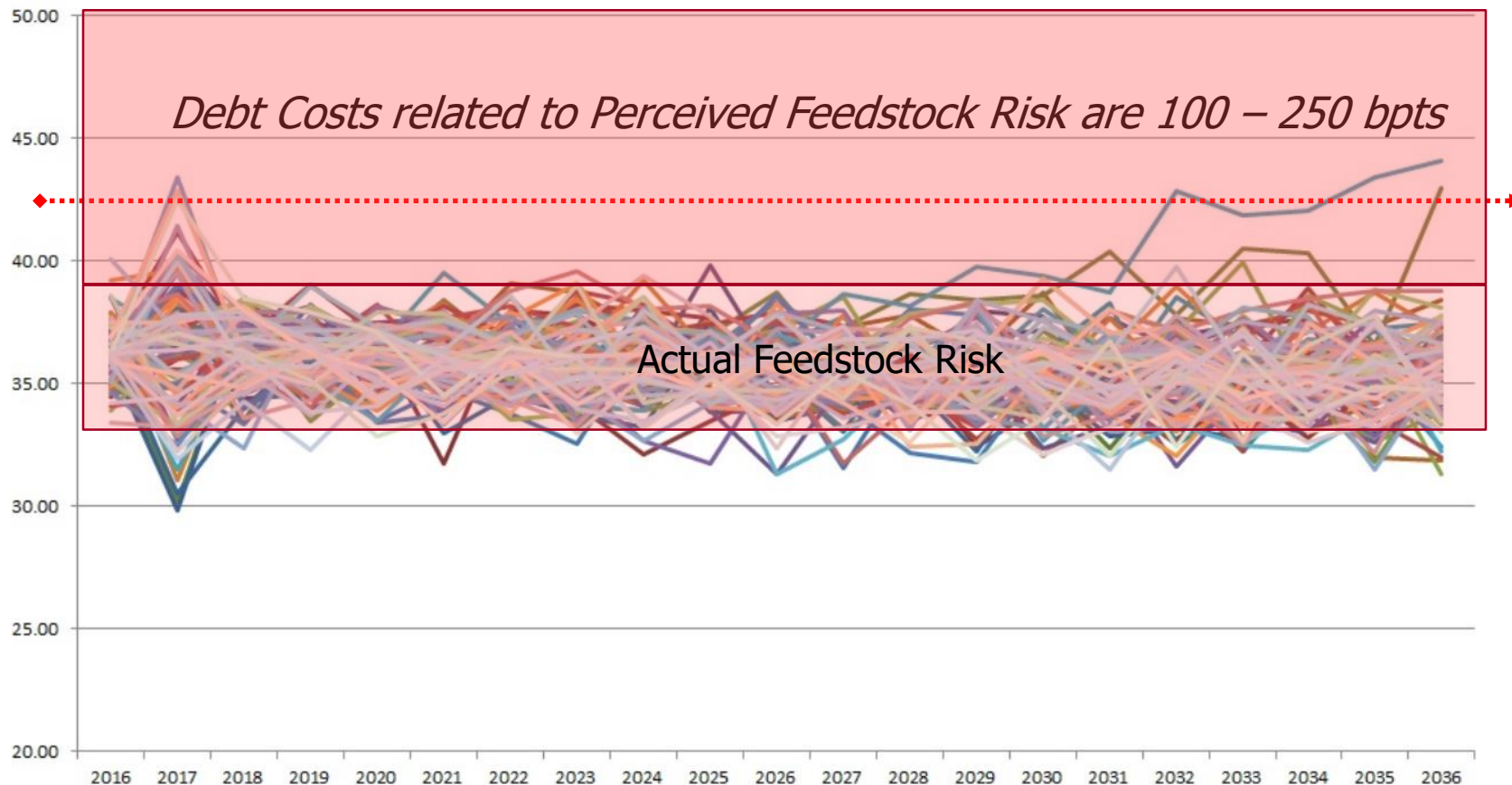
Real vs Perceived Bioenergy Feedstock Risk



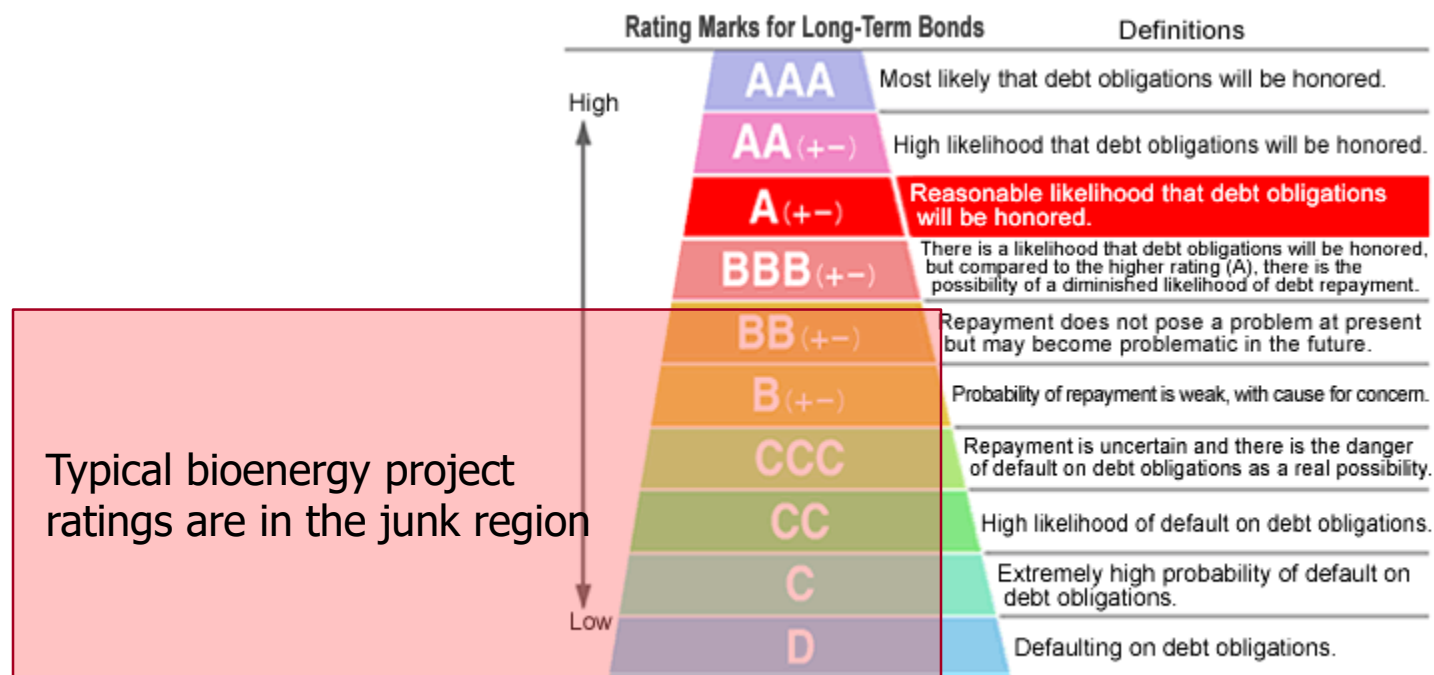
What Happens When Capital Markets are Confused



Lack of Clarity on Feedstock Risk is a Key Barrier to Bio-Economy Development

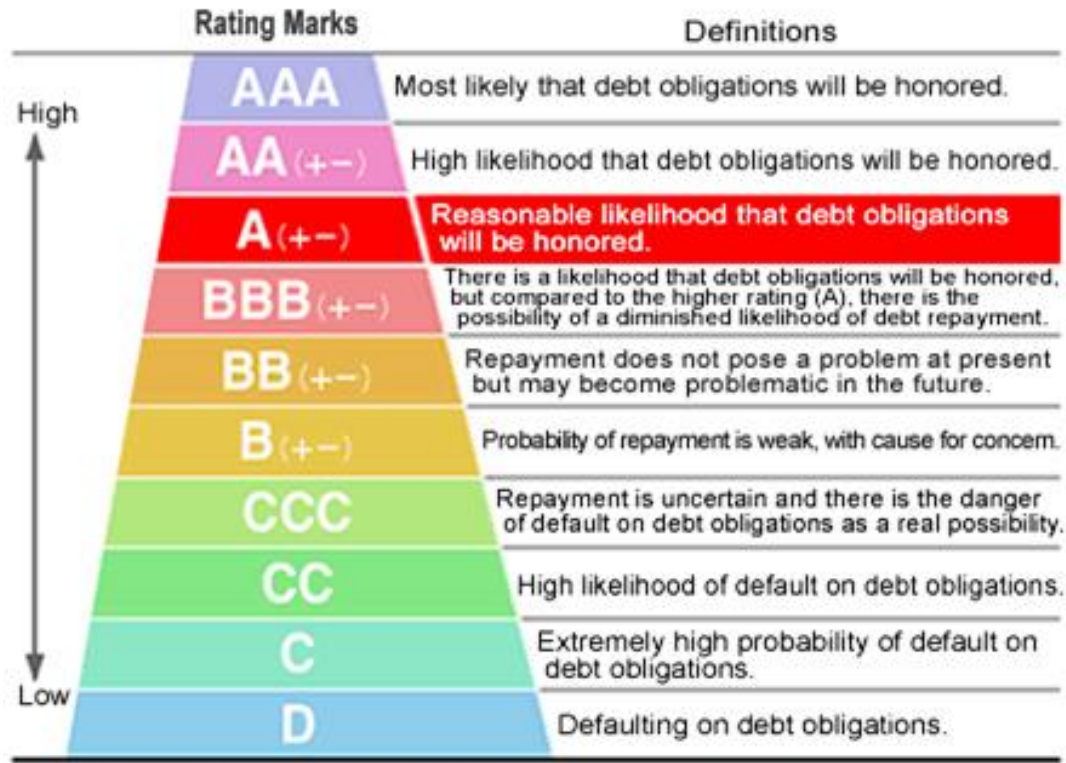


Biomass Projects Ratings Tend to <BBB



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.

We Know Credit Ratings are Important... But What Do They Actually Do?



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 do they do?
- How do they do it? What is the actual process?
- Why does it add value to the capital markets?

The Credit Markets' Risk Rating Systems Create “Signal” out of Noise

STANDARD
& POOR'S

MOODY'S

FitchRatings

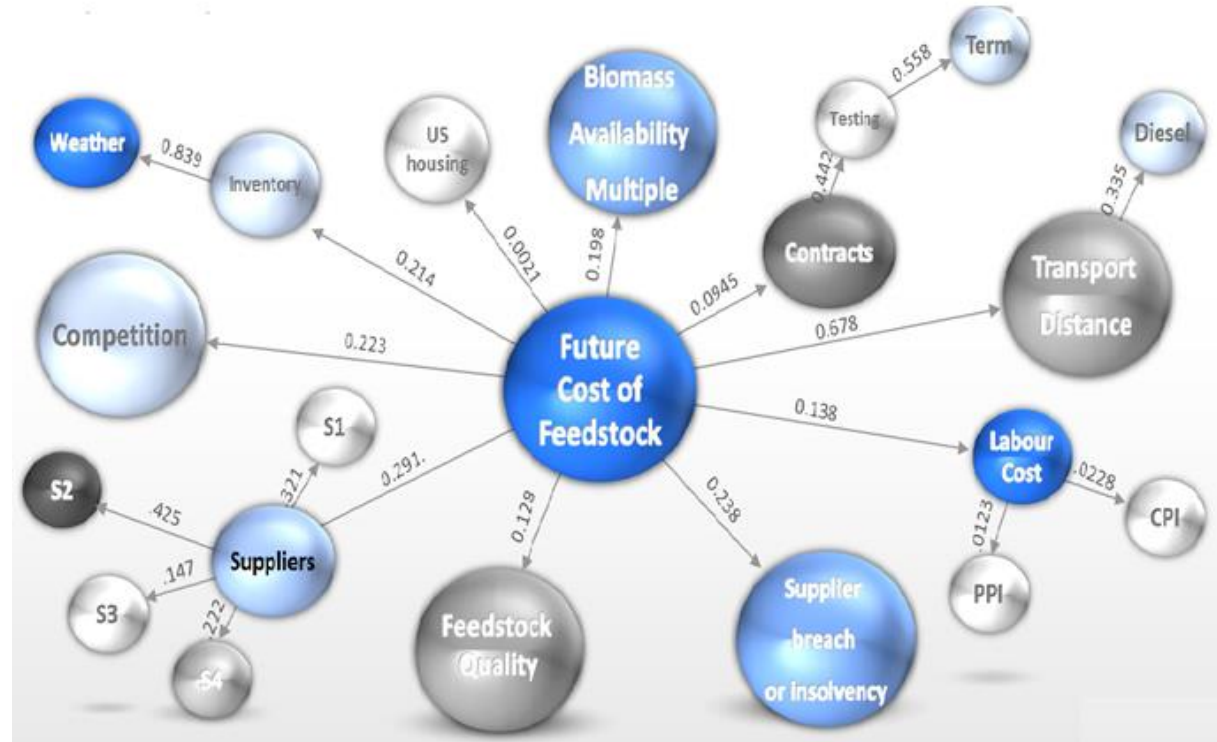
	S&P	Moody's	Fitch	Others NRSROs	Total
Financial institutions	54,000	61,581	61,550	32,207	209,338
Insurance companies	8,200	4,540	1,657	5,391	19,788
Corporate issuers	44,500	30,285	13,385	11,116	99,286
Asset backed securities	117,900	101,546	64,535	18,480	302,461
Government issuers	965,900	841,235	363,897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

- Application of a **rules-based, systematized approach** to quantifying risk is an effective way of reducing risk.
- **Transparent evaluation protocol** allows capital markets to compare “apples to apples”
- Enables massive efficiencies in the capital markets.

So... how do we create capital market signals that support the bio-economy?

But... Rating Protocols are Not Set Up for Biomass Supply Chain Risk

- Biomass Supply Chain Risk can be complex.
- There is a growing need for investors to make sense of the multitude of risks and their interconnectivity—confusion.
- Standard rating agency protocols are not designed to quantify biomass supply chain risk.



The collage features logos for the following organizations:

- U.S. DEPARTMENT OF ENERGY** | Energy Efficiency & Renewable Energy
- BIOENERGY TECHNOLOGIES OFFICE**
- INL** Idaho National Laboratory
- ECOSTRAT**
- FitchRatings**
- STANDARD & POOR'S**
- Moody's**
- KBRA** KROLL BOND RATING AGENCY
- HAMILTONCLARK**
- SternBrothers&Co.**
- Argonne** NATIONAL LABORATORY
- enginuity** worldwide
- POET** biorefining
- KILPATRICK TOWNSEND**
- FAEGRE BAKER DANIELS**
- GEORGIA BIOMASS**
- PIONEER**
- FPI** innovations
- Greenleaf POWER**
- NOVEC Energy Production** (natural gas-to-liquids technology)
- NEW ENERGY RISK**
- ENSYN**
- UNIVERSITY OF TORONTO**
- USDA** Agricultural Research Service
- oas**
- IOWA STATE UNIVERSITY**
- GREENFIELD ETHANOL**
- CONIFEX**
- BEL** BIOETHANOL
- Oregon State University**
- UC DAVIS** UNIVERSITY OF CALIFORNIA
- MICHIGAN STATE UNIVERSITY**
- WISCONSIN** UNIVERSITY OF WISCONSIN-MADISON
- OSU**
- WISCONSIN**
- RAYMOND JAMES®**
- OAK RIDGE** National Laboratory
- South Dakota STATE UNIVERSITY**
- AGCO**
- Genera ENERGY** (Sustaining Sustainable Business Solutions)
- IFC • SYSTEMS™**
- IOGEN CORPORATION**
- TEXAS A&M UNIVERSITY**
- CHEMTEX**
- PASSMORE GROUP Inc.**
- PHOENIX POWER GROUP, INC.** (POWER GROUP, INC. - Quality Service Commitment)
- Curran RENEWABLE ENERGY**
- EWP Renewable Corporation**
- DOW**
- DUPONT**

Industry Stakeholder Group

Recognized Impact on Bio-Project Finance in US by USDOE
and over 100 Industry Stakeholders

New Canadian National Standards for Biomass Supply Chain Risk

Biomass Supply
Chain Risk
Standard
development
funded in 2018



Recognized Impact on Bio-Project Finance in Canada by NRCAN
and over 30 Industry Stakeholders...and growing

So... what's next for Canada?

Phase 2: *The Institute of Biomass Supply Chain Risk*

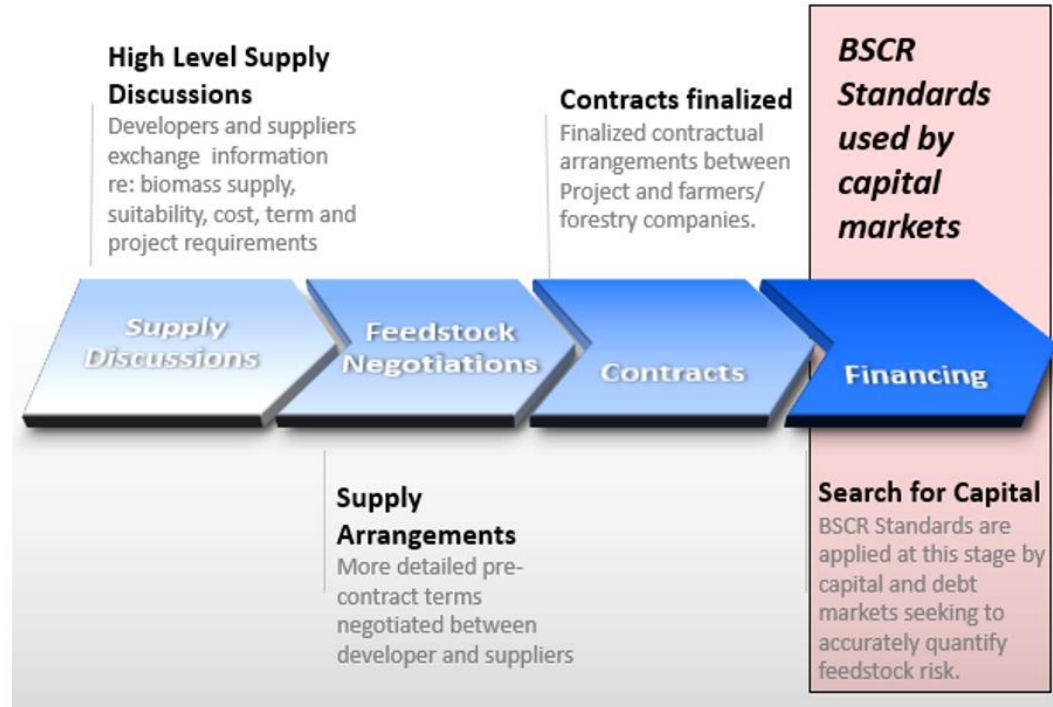
Phase 2 (planned for FY 2019/2020) is the establishment of an administrative body to issue ratings for bio-project supply chains.

The *Institute for Biomass Supply Chain Risk* (IBSCR) will:

- 1. Collaborate with the financial and insurance sectors** to develop new products (feedstock insurance policies, hedging mechanisms) to further de-risk bio-project financing based on the BSCR Standards.
- 2. Train Certified Bodies** (CBs) to apply the BSCR Standards to guide companies through the certification process.
- 3. Issue Supply Chain Risk Ratings** (AA,A-,BB, etc.) to qualifying bio-projects.

Rating of Supply Chains Imposes No Burden on Producers

- IBSCR Risk Rating does not determine feedstock price, contract terms, or any arrangements between project developers and growers, harvesters, or logistics companies.
- All contractual arrangements must be negotiated and finalized before the Rating Protocol can be applied.



How Supply Chain Risk Ratings Drive Bio-Economy Growth

Benefits to bio-economy developers, operators, and capital markets:

- ✓ Remove a Key Barrier to bio-project financing.
- ✓ Create Efficiencies for the capital markets.
- ✓ Decrease bio-project debt costs by 100 – 250 bpts.
- ✓ Enabling platform for further de-risking mechanisms (insurance, hedging).

Benefits to Canadian Bio-Economy:

- ✓ Drive greater investment in renewable energy projects across Canada.
- ✓ Accelerate job creation and economic development, particularly in rural Canada.
- ✓ Attract out-of-country bio-economy deal-flow to Canada.
- ✓ Support the Canadian government's decarbonization goals.
- ✓ Consolidate Canada's position as an innovative leader in the global bio-economy.



More Industry Support is Needed.

- ✓ *Bio-Economy Finance*
- ✓ *Project Developers*
- ✓ *Capital/Debt Markets*

*SIGN THE OPEN LETTER TO THE MINISTER
CONNECT WITH ECOSTRAT TO GET ON-BOARD*

Jordan Solomon
President and CEO
Ecostrat Inc.

www.ecostrat.com

jordan.solomon@ecostrat.com

Tel: 416-968-8884 x 222