BDO Zone Ratings
An economic development tool to attract, de-risk accelerate new SAF manufacturing

Jordan Solomon
President & CEO, Ecostrat
Chairman, BDO Zone Initiative

CAAFI Webinar Feb 1, 2023
A BDO Zone rating is a standards-based assessment of biomass feedstock and infrastructure attributes of a region with respect to development potential of new biofuel, renewable chemical, biogas or bioproduct manufacturing plants.

BDO Zone ratings demonstrate the maturity of local biomass supply chains and infrastructure and whether they are developed enough to support bio-based manufacturing without excessive risk.

The BDO Zone Initiative enables regions to leverage local biomass assets to attract new bio-based manufacturing plants-- and create jobs.

www.bdozone.org
Liquid biofuels demand grows 20% over the next five years

Biofuel demand growth for advanced and emerging economies (left), by country (right) main case, 2021-2027

Greenhouse gas mitigation policies in advanced economies drive almost all growth in renewable diesel and biojet fuel while policies in Brazil, Indonesia and India drive most growth in ethanol and biodiesel.
Biofuel producers face a looming supply crunch...

Oils used for biodiesel, renewable diesel and biojet fuel are under the most pressure with used cooking oil, animal fats and other residues approaching supply limits over the next five years.
... but there remains ample feedstock potential

Biofuel demand shares of global crop production (left) and wastes and residues (right), main case, 2010-2027

- Woody feedstocks (requires technologies that can process woody feedstocks)
- New, compatible feedstocks (e.g. grown on marginal land, or as cover crops)
- Waste and residue potential - (used cooking oil, animal fats and other residue oils)
- Crop potential (expansion of current crops such as corn, sugar and soy oil)
- Existing production

To avoid the crunch, government programmes and industry innovation will need to improve supply chains, seek out new supplies and develop new production techniques to access more available feedstocks.
BDO Zone Ratings Due Diligence

- BDO Zones undergo rigorous and extensive due diligence using a standardized framework of over 100 transparent and validated risk indicators.

The 3 Pillars of BDO Zone Designations

- Feedstock surplus: Data indicating at least a 3x Biomass Availability Multiple of excess sustainable feedstock available to support typical intake of new biofuels, biochemical and biomaterial production plants.
- Committed suppliers: Evidence supporting long-term commitment to supply both quantity and quality by local farmers, forestry companies, food waste generators, haulers and municipalities.
- Sound infrastructure: The OZ must have suitable transportation, logistic, operating and supporting infrastructure to meet the requirements for new facility construction and operations.

- “A” and “AA” BDO Zone Ratings identify optimal zones in each state for new biobased development.
Recognized, Credible, Transparent, Standards-based Ratings Framework

- BDO Zone Ratings are issued within the framework of the US Standards for Biomass Supply Chain Risk.
- 6 years development by US Department of Energy (USDOE)/Idaho National Labs, Ecostrat, and a 65 member, $60B capital market ratings review committee.
- >$6MM funded by USDOE’s Bioenergy Technologies Office (BETO).

Download at
www.ecostrat.com/standards
Bon Wier, TX BDO Zone ‘AA’ Rating

- First ever ‘AA’ rated BDO Zone
- Rated for 2 million gt/y of woody biomass 75 mile radius ex Bon Wier, Texas, USA.
- Strong growth to drain ratio. Strong harvest and delivery infrastructure. Broad access to additional supply beyond Zone.
- BDO Zone Rating supported by USA Biofuels and Citi Bank for $1B capital raise for SAF project.
Bon Wier, TX ‘AA’ BDO Zone Rating supports capital raise
Date of issue: October 2022

The ‘AA’ BDO Zone Rating for Bon Wier, TX supports the siting decision and $1B capital raise for USA BioEnergy’s development of an advanced biorefinery.

“Citi and USA BioEnergy have worked closely together for more than two years to develop an efficient, achievable plan and we look forward to delivering on this vision.”
David Livingstone, Managing Director, Citigroup, BDO Zone Press Release Oct 19 2022

“USA BioEnergy is committed to delivering over 100M gallons of sustainable aviation fuel into LAX annually. Airlines using our sustainable aviation fuel will eliminate over 50M metric tons of greenhouse gas emissions over a 20-year period.”
BDO Zone Investment Coalition

April 22, 2021: $1 Billion announced for deployment into bio-based investment in BDO Zones

The BDO Zone Investment Coalition is a group of leading capital markets with a collective goal of investing $1 billion in BDO Zones to build new biofuel, renewable chemical, biogas manufacturing plants.

See all BDO Zone Investment Coalition members: www.bdozone.org/us/support
See all 65 BSCR RC members: ecostrat.com/standards/participants

¹ Made up 16 members of the BSCR Review Committee
The BDO Zone Summit - August 17, 2021

PROGRAM AGENDA

1:00 OPENING REMARKS
How BDO Zones help communities leverage biomass assets to create jobs. Why BDO Zone Designations drive and unlock bio-investment and get new plants built faster.

Jordan Solomon
President & CEO
Ecostrat
Chairman of the BDO Zone Initiative

Mark Riedy
General Counsel & Co-Founder
Alternative Fuels & Chemicals Coalition (AFCC)

Wes Jurey
CEO & Founder
Agricultural Technology Innovation Partnership (ATIP) Foundation

1:10 COMMUNITY PANEL
Real communities speak about opportunities and barriers to attracting bio-based investment and deal flow. Grassroots support for BDO Zone Designations from local communities and EDAs. Moderated by Wes Jurey, ATIP Foundation.

Donna Carnell
President & CEO
Appalachian Community Capital

Sumiha Aroor
Director of Energy & Natural Resources Division
Mississippi Development Authority

Greg Norton
President
Ozona Energy

Mike McArthur
Executive Director
Community Renewable Energy Association

John Laster
General Manager
Ontario Power Generation Utilities

1:40 CAPITAL MARKETS PANEL
Barriers to investing in rural and distressed communities. Why are BDO Zone Designations meaningful for capital markets? How much capital is "investment ready" to stand up bio-based plants across the country? Moderated by Jordan Solomon, Ecostrat.

Justin Goldstein
Vice President, Investment Banking Division
Goldman Sachs

David Livingston
Managing Director
Citigroup

Max Vernier
Head of Bioenergy
Live Oak Bank

Scott Chabin
CEO & Founder
Chabin Energy Partners

2:00 PROJECT PANEL
Why BDO Zone Designations help create efficiencies for project developers. Why they help projects succeed. How they make developers develop more bio-based projects faster. Moderated by Mark Riedy, AFCC.

Nick Andrews
CEO & Founder
USA Bioenergy

Chris Whitworth
Project General Manager
Northwest Advanced Biofuels

Seth Glinther
Executive Director
US Industrial Pellet Association

Patrick Serfass
Executive Director
American Biogas Council

2:20 USDA REMARKS

Dr. Karama Neal
Administrator, Rural Business-Cooperative Service
USDA Rural Development
BDO Ratings supercharge bio-based economic development: BDO ZoneCONNECT connects BDO Zones with hundreds of developers and investors worldwide

‘Bio-Business Development’ Webinars
Viewed by >1000 bio-project developers and investors worldwide
Access to TheDigest’s >5 million unique online bioeconomy sector readers, 140,000 streaming viewers bio-industry stakeholders and 45,000 daily newsletter subscriptions.

‘Rapid Accelerator’ Meetings
Private, hosted discussion groups
Private zoom meetings with 50-100 pre-qualified bio-project developers, investors and strategic partner companies actively looking to build new bio-based plants in BDO Zones.

>> Click here to view Barnwell County, SC BDO ZoneCONNECT <<
In a nutshell, BDO Zone Ratings are powerful economic development tools that…

- **Pre-vet, quantify and signal** key regional biomass feedstock and infrastructure “success” characteristics.
- **Connect BDO Zones** with bio-based project developers and investors around the world.
- **Link BDO Zones with $1B** of private capital to get new plants built.
- **Drive new biobased manufacturing to regions that are able to support it**—and create new markets for biomass producers.
CASE STUDY: BDO Zones to drive new almond biomass-based market development in CA
2-3 BDO Zones in CA for almond shells, tree prunings and husk

• >3M tonnes surplus per year of almond shells, husk and tree prunings.

• Markets for almond shells and tree prunings have decreased in CA: biomass-to-electricity plants closed due to competition from lower cost solar and wind power.

• Almond biomass presents ideal technical specs for many biofuel, renewable chemical and RNG applications: low MC, LCFS qualifying.

• Feedstock cost is currently lower than in US Southeast (dry basis).

• 30,000 direct and indirect jobs in the Central Valley from cellulosic ethanol production alone -- not including SAF and renewable chemical.

• Significant revenue capture benefits for almond growers: biofuel and renewable chemical producers are able to pay more for feedstock than power producers.
Want to know more?

Contact:
Aryn Garswood, Head BDO Zone Initiative, aryn@ecostrat.com
Jordan Solomon, Chairman BDO Zone Initiative, jordan.solomon@ecostrat.com