



CAAFI
Biennial General Meeting
June 2022

USDA

Goals

“Increase economic opportunity and improve quality of life”

“Innovation, Partnerships, Infrastructure”

Bioeconomy Roadmap

Biotechnology & Bioenergy Opportunities

Sustainability

Climate Change

US Departments: Agriculture, Energy,

Commerce, Defense-DLA, Transportation-

Federal Aviation Administration, Environmental

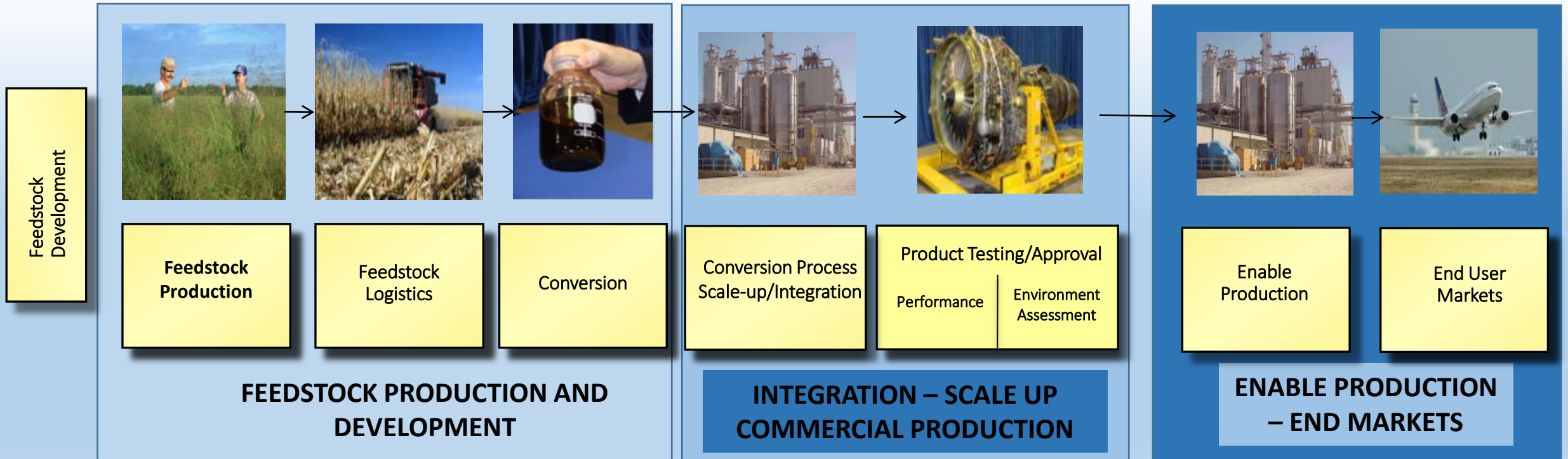
Protection Agency, Interior, State Department

Technological Innovation

Partnerships: Private-Public, National

Laboratories, Academia

USDA BIOECONOMY SUPPLY CHAIN



DATA – POLICY ANALYSES & EVALUATION – OUTREACH

FEEDSTOCKS

Purpose Grown Crops:

Trees

Oil seeds

Grasses

Algae

Forest residue

Construction Debris

Crop residue

Agriculture waste

Municipal solid waste

Wastewater



CONVERSION TECHNOLOGIES

Biological

Biochemical

Thermochemical

Electrochemical

Hybrids



Biofuels

Sustainable Aviation Biofuel

Biodiesel

Renewable Diesel

Renewable Hydrogen

Biogas

Ethanol

Renewable Chemicals & Bioproducts

Pharmaceuticals

Nutraceuticals

Soil amendments

Bioplastics

Pigments

Adhesives

Lubricants



Protein

Food

Feed:

Fish

Dairy

Poultry

Swine

Pets



Technical Strategy

Public – Private Partnership

Risk Mitigation

Scaling

Construction



How it works

Bench

Pilot

Integrated Demonstration Unit

First Commercial Facility

Commercial replication



Challenges

Pre-processing technologies

Feedstock delivery systems

Performance guarantees

Equity



Tools

Loan Guarantees – Credit Enhancement

Grants

Payment programs

Rural Business Cooperative Service – Energy Programs

- 1. Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program (9003)**
- 2. Rural Energy for America Program (REAP 9007)**
- 3. Biorefinery Program Advanced Biofuels (9005)**
- 4. BioPreferred**
- 5. Business and Industry Guaranteed Loan Program (B&I)**



Applications Include:

- Executive Project Summary
- Feasibility Study
- Business Plan
- Technical Report
- Environmental Assessment

9003 Biorefineries

Eligible projects are the development, construction, or retrofitting of a Commercial-Scale Biorefineries using Eligible Technology.

- Advanced biofuel
- Renewable Chemicals
- Biobased products manufacturing



Sustainable Aviation Fuels

- LanzaJet
- ReadiFuels
- Aemetis
- AIC SAFx
- Wellington
- New Energy Blue



- **Technology Providers**

ARA

LanzaTech

InEnTech

RE Energy

Alfa Laval

Haldor Topsoe

NREL, PNNL, INL, SNL, LBL, JBEI

BioMADE



Innovation

- Origin Materials
- Renewable Energy CA



Thank You

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