Bioenergy Technologies Office

2017 Program Management Review

Analysis and Sustainability Response

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Technology Managers

Arlington, Virginia

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Thank you!

Lead Reviewer and Review Panel

Reviewer	Affiliation
Candace Wheeler (Lead)	General Motors (Retired)
Christopher Galik	North Carolina State University
Troy Hawkins	Eastern Research Group, Inc.
Ruben Lubowski	Environmental Defense Fund
David Simpson	Environmental Protection Agency, Office of Policy
Kate Behrman*	USDA, Agricultural Research Service

*FSL reviewer borrowed for feedstock sustainability projects

Portfolio Strengths

- Effective project management
- Increased communication between labs and external partners
- Expertise developed in program can address specific issues
  - Example: CEMAC
- High quality analysis used by industry and regulators
  - Example: LCA and TEA work
- BT16 study effectively highlighted tools and capabilities
- Leadership in including more social effects and hard-to-quantify impacts
- Integrating science generated by the program into the bioeconomy dialogue at the local and global level

Technology Area Introduction
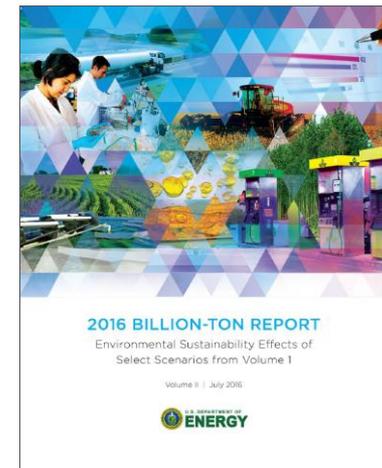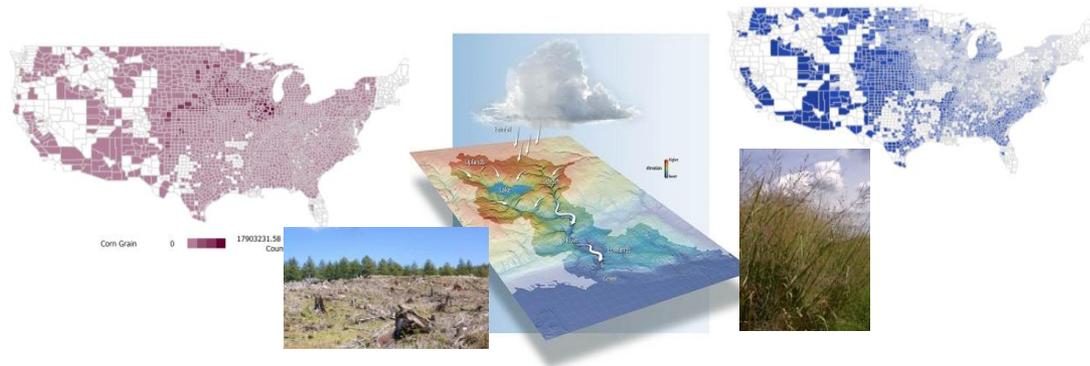
- 27 Projects Reviewed
- $48M FY14-FY17 Funding Reviewed
- 6.8% of Total BETO Portfolio

Mon	Tues	Weds	Thurs
Bioenergy Sustainability	GHG/Lifecycle Analyses	Land-Use Change Modeling	Feedstock Production & Landscape Design (Agricultural)
Environmental Analyses (water, biodiversity, air)	Market and Integrative Scenario Analyses	International Considerations and Collaborations	Feedstock Production & Landscape Design (Forestry)

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Clarify where projects fit relative to other BETO projects and the program's goals.

A principal investigator should know not only how their project fits relative to other BETO projects but how it fits in the bigger picture. A principal investigator should be required to address what problem their work is going to solve as well as how their work is going to matter and make a difference.

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- Continuation of Model and Tool Mapping effort
- Creation of diagrams showing where projects fit into the portfolio
  - how each model fits into the bigger picture
  - linkages between models
  - potential gaps or opportunities for linkages
- Clearer guidance and requirements for projects to explain what problems they are solving and the impact of their work

Overview of Key Models and Tools in the BETO Analysis & Sustainability Portfolio

Resource Assessment

- ForSEAM
- POLYSYS
- BAT

Technology Implementation
(Focused on operation, feasibility, or the technical potential of a technology.)

- Risk Standards and Certification Framework
- Algae Farm Model
- Least Cost Formulation
- BLM
- STEM
- IBSAL
- SCM
- LEAF
- Bioproduct TEAs
- Aviation Biofuels TEAs
- Biofuels TEAs
- Conversion TEAs
- Biorefine
- Blending Model

Pathway Analysis and Techno-Economic Assessments

Technology Effects
(Focused on market, environmental, and socio-economic effects of technology.)

- GREET/CCLUB
- AGE-Bioeconomy
- BioSTAR
- BIO-EST
- SWAT-MARB
- FPEAM
- WATER
- JEDI Biofuels & Biopower
- BioTrans

Environmental & Socio-Economic (air emissions, water, biodiversity, jobs, energy security)

Integrative Scenario Assessment
(Scenario assessment of integrated market systems.)

- GCAM
- BSM
- Companion Market Model
- Bioproducts Transition SD Model
- WESyS
- Competition for the Use of Biomass

Cross-Market

Transition

Data Compilation Tools

- Bioenergy KDF
- BioFuels Atlas
- Bioenergy Feedstock Library
- BT Data Explorer
- AFDC

Full Supply Chain

| Feedstock | Logistics | Conversion | Distribution | End Use |

Supply Chain Elements

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Recommendation #2

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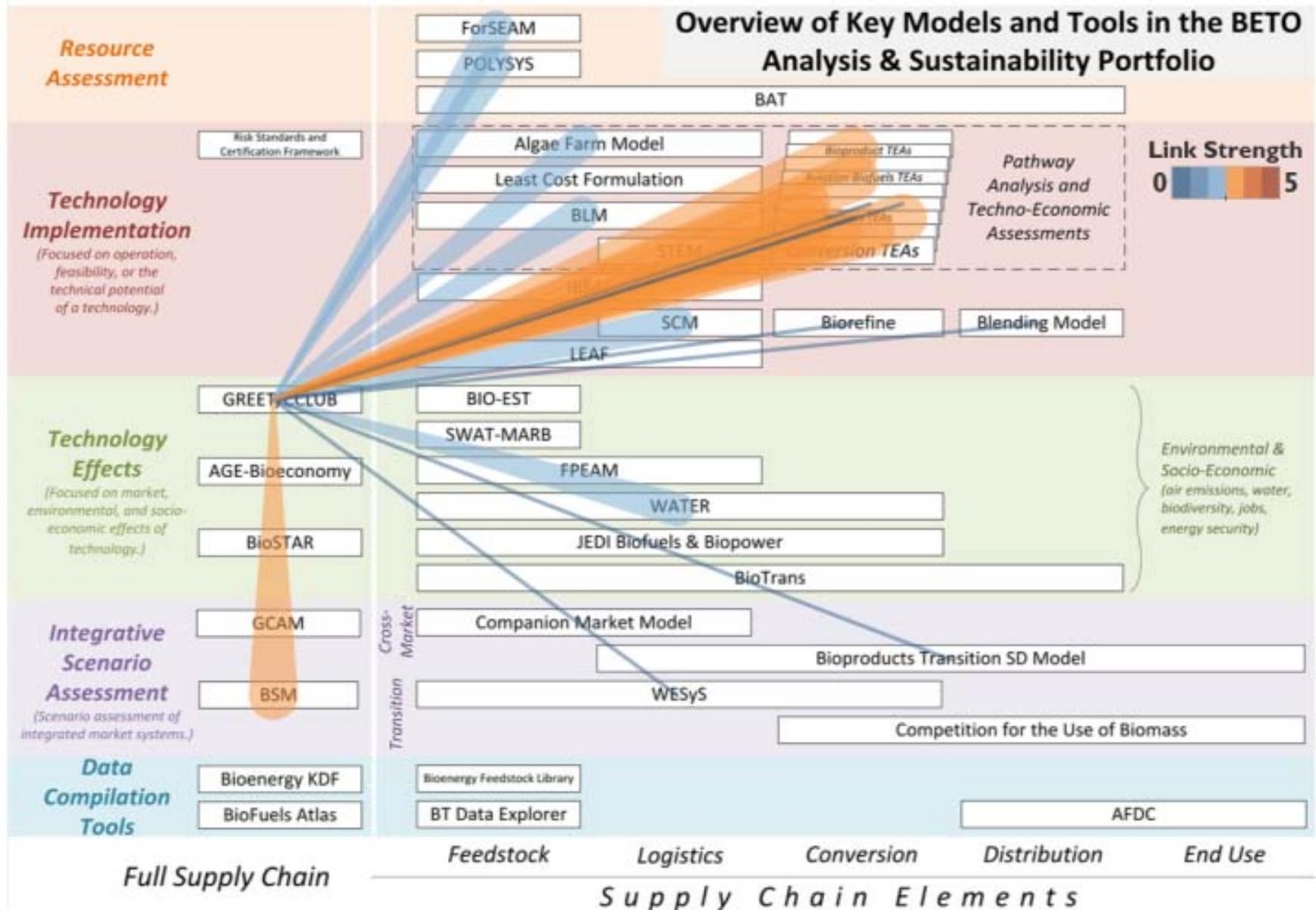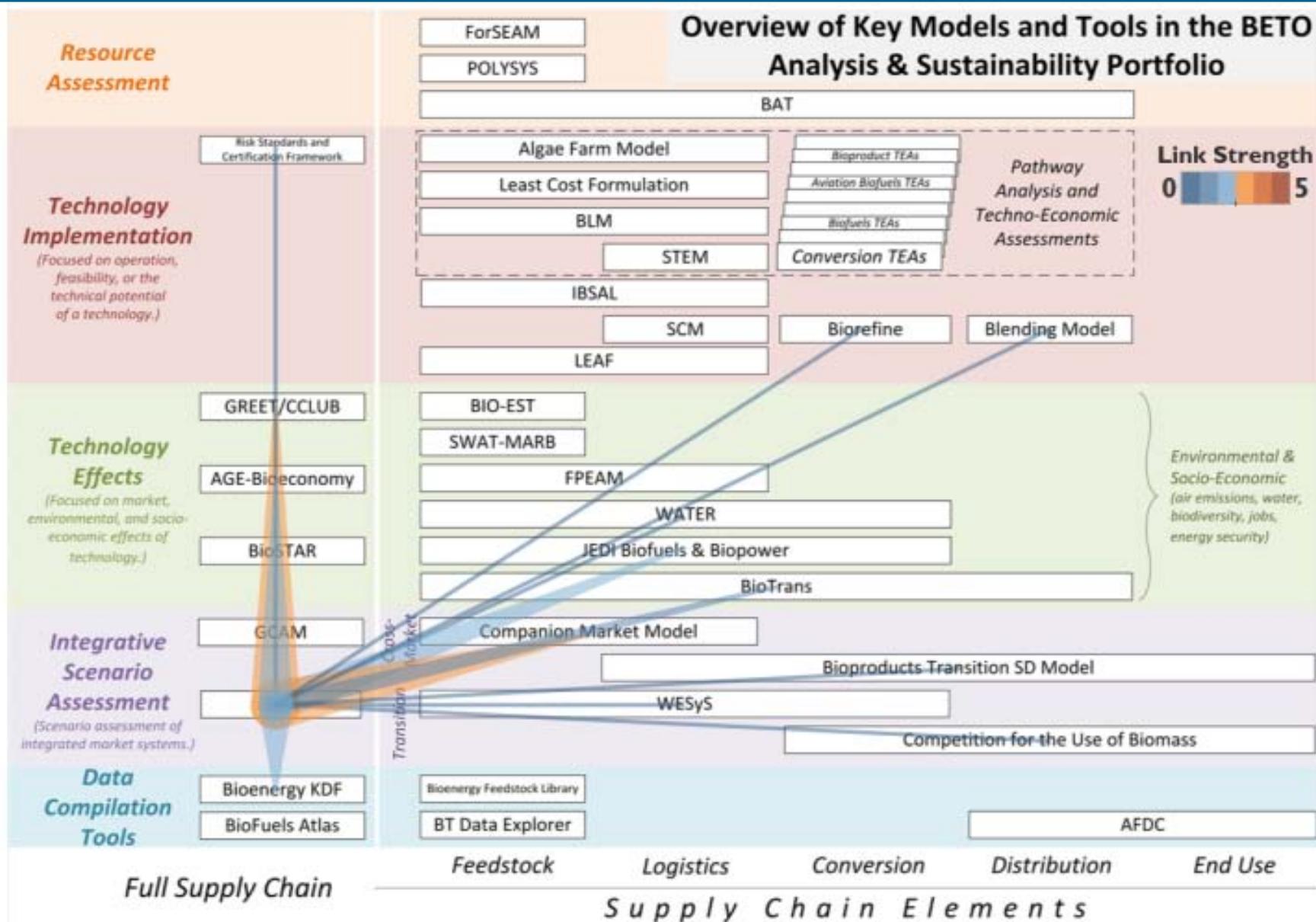
There needs to be a greater focus on integration.

While increased collaboration has helped drive an increase in integration, more could be done in this area resulting in more robust and multifaceted projects. The maturation of some of the models developed as part of the Sustainability and Strategic Analysis program will necessitate a slight shift from further tool development to the application of these tools on critical real world issues, problems, or scenarios.

- Continue to foster new and existing collaborations

- In FY18, greater focus on model and tool application versus development

- Examples of increased integration and application to real-world issues:
  – BSM working groups will bring together other BETO and national lab staff to explore cross-cutting analysis questions

  – GREET: Incorporation of Water Stress Index

There needs to be a clear attempt at consistency and agreement across projects.

There needs to be a clear attempt at consistency and agreement across projects, especially in how sustainability is measured, with a continued push to look not just at the environmental issues of sustainability but the economic and social aspects as well. These three legs of the stool should not be treated separately but together.

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- Analysis and Sustainability Interagency Working Groups
  - Facilitate more consistency across agencies
- Collaborations through IEA Bioenergy
  - Project: Measuring, Governing, and Gaining Support for Sustainable Bioenergy Supply Chains
- Well positioned to continue jobs analysis work in FY18
- NREL project pursuing integrated LCA methodology (environmental, social, economic)