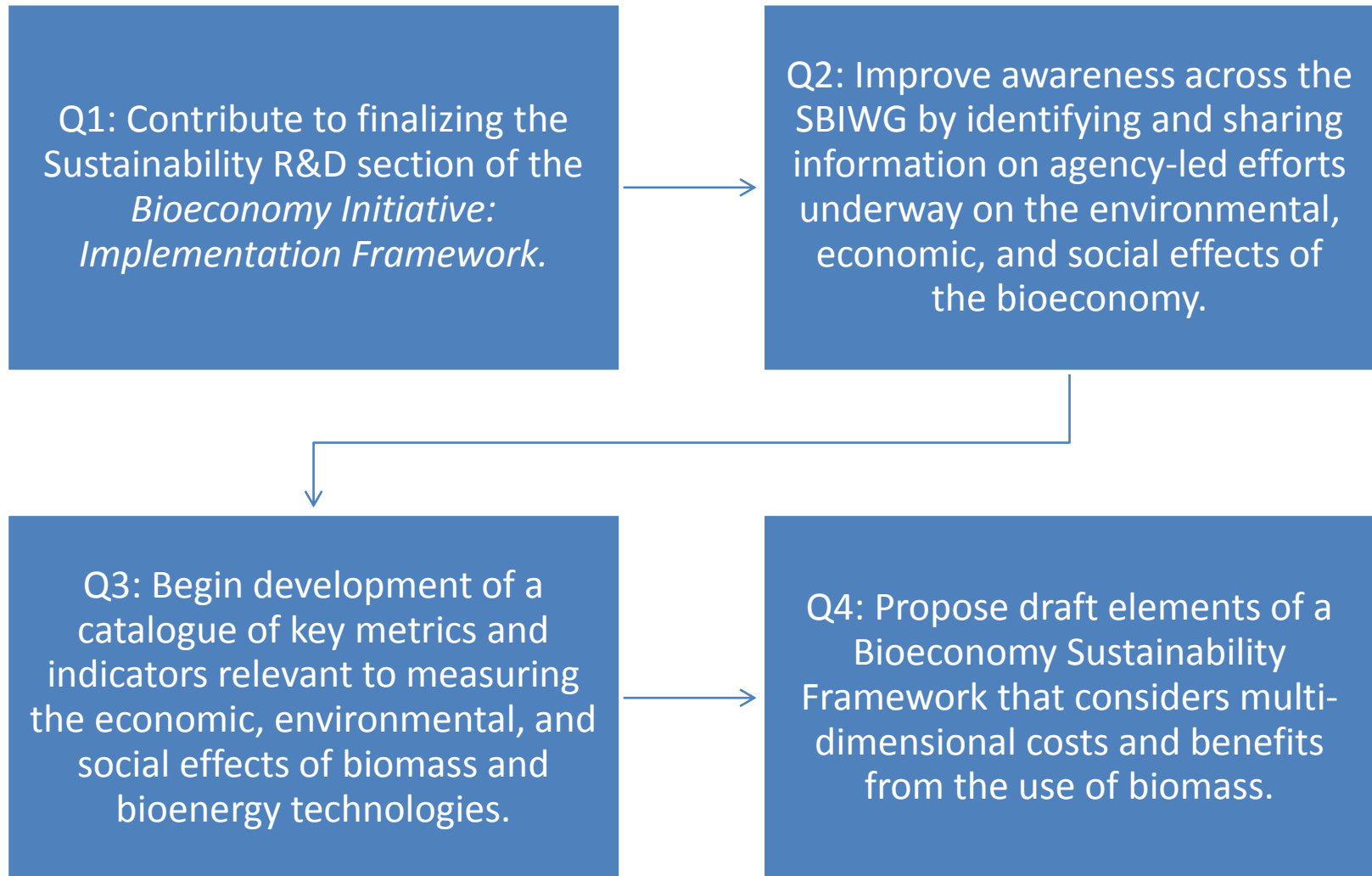


# Sustainable Bioeconomy IWG FY18 Work Plan Status

Biomass R&D Board TAC Meeting

August 22, 2018

# Key Activities/Deliverables Planned in FY18

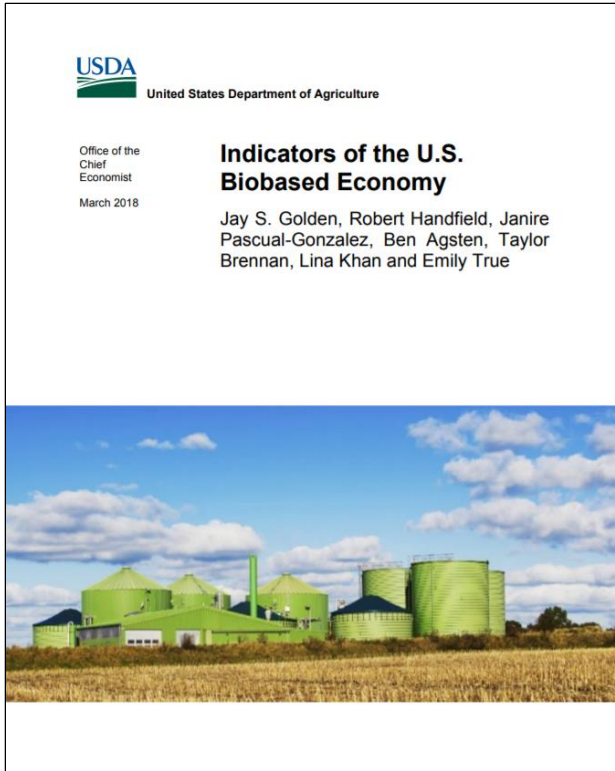
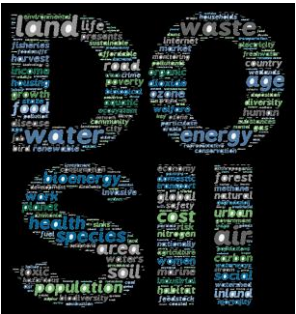
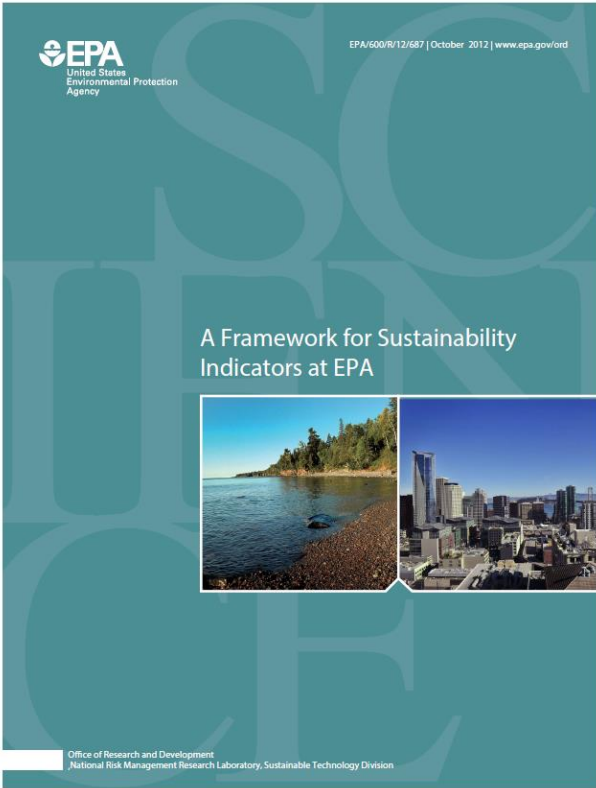


## Ongoing:

- Hold monthly calls to exchange information and coordinate activities
- Maintain communication with other IWGs

# Progress Toward FY18 Deliverables

## Resources Gathered: Federal Reports on Metrics & Indicators



The intent is to streamline and improve diverse stakeholders' access to a variety of resources pertinent to evaluating and monitoring the sustainability of biomass, bioenergy, and the bioeconomy.

# Progress Toward FY18 Deliverables

## Resources Gathered: Journal Articles on Metrics & Indicators

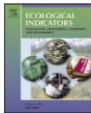
Ecological Indicators 11 (2011) 1277–1289



Contents lists available at ScienceDirect

Ecological Indicators

journal homepage: [www.elsevier.com/locate/ecolind](http://www.elsevier.com/locate/ecolind)



### Indicators to support environmental sustainability of bioenergy systems

Allen C. McBride<sup>a</sup>, Virginia H. Dale<sup>a,\*</sup>, Latha M. Baskaran<sup>a</sup>, Mark E. Downing<sup>a</sup>, Laurence M. Eaton<sup>a</sup>, Rebecca A. Efroymson<sup>a</sup>, Charles T. Garten Jr.<sup>a</sup>, Keith L. Kline<sup>a</sup>, Henriette I. Jager<sup>a</sup>, Patrick J. Mulholland<sup>a</sup>, Esther S. Parish<sup>a</sup>, Peter E. Schweizer<sup>a</sup>, John M. Storey<sup>b</sup>

<sup>a</sup> Center for Bioenergy Sustainability, Environmental Sciences Division, Oak Ridge National Laboratory, 1 Bethel Valley Road, Oak Ridge, TN 37831-6036, USA  
<sup>b</sup> Fuels, Engines and Emissions Research Center, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6472, USA

Ecological Indicators 49 (2014) 1–13



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Ecological Indicators

journal homepage: [www.elsevier.com/locate/ecolind](http://www.elsevier.com/locate/ecolind)



### Environmental indicators for sustainable production of algal biofuels

Rebecca A. Efroymson<sup>\*</sup>, Virginia H. Dale

Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831, USA



ARTICLE INFO

ABSTRACT

Article history: For analyzing sustainability of algal biofuels, we identify 16 environmental indicators that fall into six

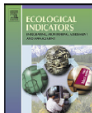
Ecological Indicators 26 (2013) 87–102



Contents lists available at SciVerse ScienceDirect

Ecological Indicators

journal homepage: [www.elsevier.com/locate/ecolind](http://www.elsevier.com/locate/ecolind)



### Indicators for assessing socioeconomic sustainability of bioenergy systems:

A short list of practical measures

Virginia H. Dale<sup>a,c,\*</sup>, Rebecca A. Efroymson<sup>a</sup>, Keith L. Kline<sup>a,c</sup>, Matthew H. Langholtz<sup>a</sup>, Paul N. Leiby<sup>a</sup>, Gbadebo A. Oladosu<sup>a</sup>, Maggie R. Davis<sup>a</sup>, Mark E. Downing<sup>a</sup>, Michael R. Hilliard<sup>b</sup>

<sup>a</sup> Center for Bioenergy Sustainability, Environmental Sciences Division, Oak Ridge National Laboratory, 1 Bethel Valley Road, Oak Ridge, TN 37831-6036, USA

<sup>b</sup> Energy and Transportation Science Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831, USA

<sup>c</sup> Climate Change Science Institute, Oak Ridge National Laboratory, USA

ARTICLE INFO

ABSTRACT

Article history:  
 Received 22 March 2012  
 Received in revised form 10 October 2012  
 Accepted 16 October 2012

Indicators are needed to assess both socioeconomic and environmental sustainability of bioenergy systems. Effective indicators can help to identify and quantify the sustainability attributes of bioenergy options. We identify 16 socioeconomic indicators that fall into the categories of social well-being, energy security, trade, profitability, resource conservation, and social acceptability. The suite of indicators is



GCB Bioenergy (2017) 9, 1005–1023, doi: 10.1111/gcbb.12359

RESEARCH REVIEW

### Socioeconomic indicators for sustainable design and commercial development of algal biofuel systems

REBECCA A. EFROYMSON, VIRGINIA H. DALE and MATTHEW H. LANGHOLTZ  
 Center for BioEnergy Sustainability, Environmental Sciences Division, Oak Ridge National Laboratory, PO Box 2008, Oak Ridge, TN 37831, USA

Abstract

Social and economic indicators can be used to support design of sustainable energy systems. Indicators representing categories of social well-being, energy security, external trade, profitability, resource conservation, and social acceptability have not yet been measured in published sustainability assessments for commercial algal biofuel facilities. We review socioeconomic indicators that have been modeled at the commercial scale or measured at the pilot or laboratory scale, as well as factors that affect them, and discuss additional indicators that should be measured during commercialization to form a more complete picture of socioeconomic sustainability of algal biofuels. Indicators estimated in the scientific literature include the profitability indicators, *return on investment* (ROI) and *net present value* (NPV), and the resource conservation indicator, *fossil energy return on investment* (EROI). These modeled indicators have clear sustainability targets and have been used to design sustainable algal biofuel systems. Factors affecting ROI, NPV, and EROI include infrastructure, process choices, and financial assumptions. The food security indicator, *percent change in food price volatility*, is probably zero where agricultural lands are not used for production of algae-based biofuels; however, food-related coproducts from algae could enhance food security. The energy security indicators *energy security premium* and *fuel price volatility* and external trade indicators *terms of trade* and *trade volume* cannot be projected into the future with accuracy prior to commercialization. Together with environmental sustainability indicators, the use of a suite of socioeconomic indicators in future, life-cycle-based sustainability assessments toward sustainability of algal biofuels

# FY18-19 Path Forward

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- By end of Q4:
  - Propose draft elements of a Bioeconomy Sustainability Framework that considers multi-dimensional costs and benefits from the use of biomass
- Plans for FY19:
  - Create webpage on the Bioenergy KDF that houses and links to resources on sustainability metrics & indicators relevant to the bioeconomy
  - Develop preliminary sustainability framework for the Bioeconomy Initiative. The intent of the framework is to help federal efforts to prioritize the most promising bioeconomy pathways in a way that minimizes negative impacts while enhancing positive effects.