



**Source:** Biomass R&D Technical Advisory Committee

**Advisory To:** Biomass R&D Board

**Report Date:** June 2017

**Issue:** *Articulating the benefits of accelerated development of a biobased economic engine*

- Action Items:**
- Develop state- and district-level bioeconomy benefit highlights
  - Encourage bioeconomy-focused Farm Bill field hearings (listening sessions)
  - Communicate bioeconomy success stories

**Statement of Need:** The Farm Bill has been an important framework for the agencies coordinating and implementing bioeconomy initiatives. Given the narrow window to provide relevant information to decision makers relating to the Farm Bill and to the appropriation bills for energy and agriculture, there is an urgent need to better communicate the benefits, successes, and future needs of the bioeconomy.

## Context

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The “bioeconomy” is very real at present and is poised for substantial growth. Successes in biofuels, such as ethanol and biodiesel, and in biopower have created mature, efficient, commercially viable technology platforms with substantial economic impact. Biofuels, including corn-based ethanol and biodiesel, currently provide more than 16 billion gallons<sup>1</sup> of clean, U.S.-produced motor fuels annually. Woody biomass and biogas provide about 63,000 megawatt-hours of electricity<sup>2</sup> per year, and the wood pellet industry produces about 12 million tons of product annually<sup>3</sup> with a large export market.

Recent science and technology advances resulted in the commercial production of advanced biobased fuels, chemicals, and products. The rapidly expanding cellulosic ethanol industry provided over 4 million gallons<sup>4</sup> of motor fuels in 2016, and production of gasoline and diesel using next-generation technologies is starting. Production of advanced chemicals and plastics is also expanding<sup>5</sup> rapidly. These advances can potentially expand the bioeconomy by 2030,<sup>6</sup> creating over 1 million *new* U.S. jobs while *increasing* direct economic impacts by \$250 billion/year—and up to \$660 billion/year including indirect impacts.

The significant investments made to date in building the U.S. bioeconomy have created many societal benefits. However, these benefits are so broad that it is difficult to identify specific advantages to state and local constituencies. The current dialogue on a national scale actually obscures the more immediate benefits at the regional, local, and personal levels. There is an urgent need to effectively communicate the benefits, successes, and future research needs of the bioeconomy at the state and district level.

## Key Benefits of Bioeconomy Success

- ✓ Jobs (up to 1 million direct new jobs<sup>7</sup> by ~2030)
- ✓ Economic development (increased direct impact of more than \$250 billion/year by ~2030<sup>8</sup>)
- ✓ National security and energy diversification
- ✓ Rural revitalization and prosperity
- ✓ International competitiveness
- ✓ Environmental sustainability
- ✓ Revitalization of underused assets and infrastructure

## Key Challenges

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- Bioeconomy benefits accrue locally and regionally, while policies and major research investments are crafted nationally. The existing disconnect needs to be bridged.
- Readily available information showcasing these significant bioeconomy impacts does not currently exist at the state-by-state level but is urgently needed.
- Bioeconomy benefits are diverse and spread across a number of industries, markets, and constituencies. There is no single constituency championing the bioeconomy despite this potential.
- Future investments in the bioeconomy must provide a higher value proposition than any other alternative use of funds, particularly in a time of shrinking national budgets.
- Addressing research needs that simultaneously consider state and regional impacts is important.

**Opportunity:** *Most efforts to quantify the benefits of the bioeconomy are at the national aggregate level. The strongest advocates for championing the bioeconomy are at the state and district level.*

**Recommendations:**

- (1) Report key bioeconomy performance and benefit metrics (e.g., jobs, level of investment, etc.) in a quantitative, state-by-state way, using a very user-friendly format.
- (2) Make tailored user-friendly reports/data available to states, industry representatives, private industry, and others best positioned to use the materials to support the bioeconomy.

**Opportunity:** *The Farm Bill is a powerful tool for accelerating bioeconomy growth, although the Energy Title of the Farm Bill is not the only opportunity to advance and grow the bioeconomy.*

**Recommendations:**

- (1) Focus one or more Farm Bill field hearings (listening sessions) specifically on the needs of the bioeconomy.
- (2) Identify Farm Bill sections and titles beyond the Energy Title (IX) where support for the bioeconomy can be complemented or integrated.

**Opportunity:** *There are clear successes in the bioeconomy, but they are not always well-known, publicized, or understood.*

**Recommendations:**

- (1) Assemble a representative set of case studies and specific examples illustrating the reach and benefits of the bioeconomy.
- (2) Build on existing successes (e.g., corn ethanol), highlighting the additional innovations and improvements over time.

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<sup>1</sup> Energy Information Administration (EIA), U.S. *Fuel Ethanol Plant Production Capacity Report* (Washington, DC: EIA, June 20, 2017).

<sup>2</sup> Energy Information Administration (EIA), *Electric Power Monthly* (Washington, DC: EIA, March 2017).

<sup>3</sup> Energy Information Administration (EIA), *Monthly Densified Biomass Fuel Report* (Washington, DC: EIA, March 2017).

<sup>4</sup> "2016 Renewable Fuel Standard Data," Environmental Protection Agency, last modified August 10, 2017.

<sup>5</sup> Mary J. Bidy, Christopher Scarlata, and Christopher Kinchin, *Chemicals from Biomass: A Market Assessment of Bioproducts with Near-Term Potential* (Golden, CO: National Renewable Energy Laboratory, March 2016), NREL/TP-5100-65509.

<sup>6</sup> Biomass R&D Board, *Federal Activities Report on the Bioeconomy* (Biomass R&D Board, February 2016).

<sup>7</sup> Biomass R&D Board, *Federal Activities Report on the Bioeconomy* (Biomass R&D Board, February 2016).

<sup>8</sup> Biomass R&D Board, *Federal Activities Report on the Bioeconomy* (Biomass R&D Board, February 2016).