

Economic Impacts of Bioenergy Production and Use



In cooperation with the US
Department of Energy



There are 214 million acres of forestland in the 13 southeastern states. Over the years this resource has been a tremendous economic engine, supplying the US and the world's largest pulp and paper industry. But recently things have changed. Although the US consumption of paper and paperboard has doubled since 1970 and increased by roughly 40% since the late 1980's, there have been no new paper mills constructed in the US since 1989¹. In 2003, eight out of the top 20 pulp and paper companies in the US lost money, with the top two together losing \$1.6 billion². This decline in US production has been driven by increasing global competition and tightening environmental regulations, factors that are not going to change in the near future, if then. Agriculture suffers from similar problems.

The production and use of biomass for energy, chemicals, or other products can have several positive economic impacts for society and especially for rural communities. The impact that gets the most attention is the establishment of jobs, which creates personal income and strengthens the tax base. Jobs are associated with the construction of biomass processing facilities and the operation and maintenance of these processing facilities.



The use of local biomass resources for bioenergy can reduce or eliminate the need to import fossil fuels. The funds retained in communities from local production create jobs and strengthen the local property and income tax base. And if an excess of products are produced locally, than products can be exported to create cash flows back into the communities producing the goods; and additional jobs, income, and taxes are generated. Since biomass resources are primarily agricultural or forestry based, rural communities benefit the most.

State incentives have been very helpful in promoting the industry. For example, the State of Minnesota implemented a 20-cent per gallon incentive for producers of fuel ethanol in Minnesota. A follow-up study by the State Auditor found that the incentive paid back \$14 for every \$1 invested by the State.

The Renewable Fuels Association (RFA)³, the trade association for the **fuel ethanol** industry, estimates the following economic impacts for a 40 million gallon per year fuel ethanol plant:

- Provide a one-time boost of \$142 million to the local economy during construction,
- Expand the local economic base by \$110.2 million each year through the direct spending of \$56 million,
- Create 41 full-time jobs at the plant and a total of 694 jobs throughout the entire economy,
- Boost state and local sales tax receipts by an average of \$1.2 million (varies depending on local rates),

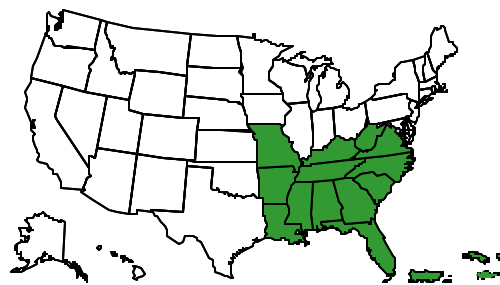
¹ Bowyer, Jim, Jeff Howe, Phil Guillery, and Kathryn Fernholz, 2005, "The US Pulp and Paper Industry: A Key Player in the Coming Bio-Revolution," Published by Dovetail Partners, Inc., July 27, <http://www.dovetailinc.org/DovetailPulpPaper0705.html>

² "Pulp and paper industry in the United States," 2005, Wikipedia, the free encyclopedia, http://en.wikipedia.org/wiki/Pulp_and_paper_industry_in_the_United_States

³ "Homegrown for the Homeland, Ethanol Industry Outlook 2005," Renewable Fuels Association, Washington, DC

- Provide an average 13.3% annual return on investment over 10 years to a farmer who invests \$209,000 in an ethanol production facility.

A study conducted in South Dakota⁴ showed that a 24-million-gallon per year **Biodiesel** facility would create 29 new jobs and associated employment in the community would add another 748 jobs. The same facility, with a \$22 million annual payroll, was estimated to generate \$4.6 million in state and local taxes and \$6.4 million in federal taxes.



Southeast Biomass State and Regional Partnership

There is also considerable potential to create jobs through the use of biomass to produce electricity (**biopower**). For each megawatt (MW) of electricity produced from biomass there is the creation, at minimum, of 4 direct jobs. It would require 2 persons per day per megawatt of electricity produced to procure and harvest forestry harvesting residues under normal forest conditions. If the forest consists of small diameter stands (e.g., thinnings), 4 persons per day per megawatt of electricity produced would be required. Additional jobs would be created for transporting these residues to the biopower plant. Chipping and delivery of the residue would require 1 person for residues within a 15-mile radius and 2 people within a 15 to 50 mile radius⁵.

Other potential economic benefits from the use of biomass for energy or products include:

- Creating new uses and markets for traditional commodity crops,
- Creating opportunities to diversify rural income by growing new crops for biomass markets,
- Eliminating or mitigating disposal costs for biomass-related residues and wastes while adding value to these materials,
- Mitigating land clearing costs for development or reforestation purposes,
- Providing markets and mitigating costs for removal for undergrowth for forest health initiatives (the USDA Forest Service is paying over \$1,000 per acre in some places to remove this undergrowth), and
- Eliminating or mitigating the need for agricultural and forestry related subsidies.

In summary, the production and use of biomass for energy and other purposes can provide significant economic benefits to our society—especially rural areas. As shown in States like Minnesota, if done properly, financial incentives can be good investments for the State.

This series of fact sheets was prepared by the Southeast Biomass State and Regional Partnership (formerly the Southeastern Regional Biomass Energy Program). The Partnership is one of five regional administrations of the U.S. Department of Energy's (DOE) National Biomass State and Regional Partnership. The Partnership was established in 2003, and is managed for DOE by the Southern States Energy Board. The goal of this Partnership is to work cooperatively with the DOE Office of Biomass Programs (OBP) to facilitate the increased use of bioenergy and biobased products through coordinated federal, regional, and state outreach, education and technical assistance programs.

Partnership Project Staff

Kathy Baskin, Project Manager Southern States Energy Board 6325 Amherst Court Norcross, GA 30092 (770) 242-7712 (770) 242-9956 fax baskin@sseb.org	Phillip Badger, Technical Mgr General Bioenergy, Inc. 3115 Northington Court Florence, AL 35630 (256) 740-5634 (256) 740-5635 pbadger@bioenergyupdate.com
--	---

⁴ Leatherman, John and Richard Nelson, 2002, "South Dakota Soybean-Based Biodiesel Macroeconomic Analysis: Estimating the Economic Impact of a Soybean Processing Facility and Biodiesel Production Plant in Brown, Minnehaha and Turner Counties, South Dakota," study conducted for the South Dakota Soybean Research & Promotion Council, Sioux Falls, South Dakota (www.westbioenergy.org/reports/55046/55046final.htm)

⁵ Hubbard, Walter, 2003, Hubbard Forest Industries, Inc, Royalston, MA, personal communication.