



Biorefineries Fact Sheet

Industrial-scale biorefineries could be the most promising means to the creation of a sustainable bio-based economy

What is a Biorefinery?

According to the National Renewable Energy Laboratory, a biorefinery is a facility that integrates biomass conversion processes and equipment to produce fuels, power, and chemicals from agriculture, forest, and waste feedstock. By producing multiple products, a biorefinery can take advantage of the availability of different biomass streams and process intermediates and maximize the value derived from the feedstock. Visit:

www.nrel.gov/.

The Process and its Uses

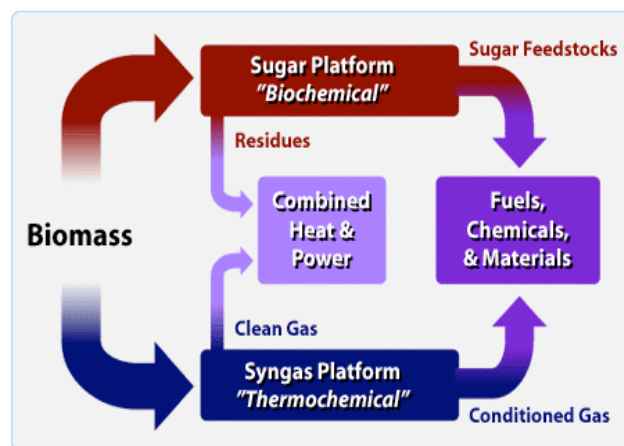
Bioproducts are produced by converting organic materials into chemicals for making products that are typically made from petroleum or other fossil fuels. The biorefinery uses cellulose, hemicellulose, and lignin from agricultural, forestry, and municipal waste sources and uses them as feedstocks for producing a wide range of bio-products. Products include ethanol, hydrogen, carbon char (used as an environmentally sound fertilizer and to remove pollutants from industrial smokestacks), bio-oils, flavorings, industrial glues, and other industrial chemicals. These products are used in agri-business, energy production, transportation, textiles, building products, pharmaceuticals, bio-plastics and paper industries.

The Potential

In April 2005, the Departments of Energy and Agriculture (DOE & USDA respectively) released an important study showing that enough agriculture, forest, and waste energy feedstock can be produced in the U.S. to displace 30% or more of the country's current petroleum consumption. Agriculture land and forestland are the two largest potential biorefinery feedstock sources. The study found over 1.3 billion dry tons per year of sustainable feedstock potential (968 million dry tons per year from agricultural lands and 368 million dry tons from forestlands). This is enough to produce biofuels to meet more than 1/3 of the current demand for transportation fuels while still meeting food, feed, and export demands. View the report at:

http://feedstockreview.ornl.gov/pdf/billion_ton_vision.pdf.

Biorefinery Concept



From The National Renewable Energy Laboratory

Benefits of Biorefineries

- **Contributes to national energy needs** by producing a variety of fuels
- **Cleanly produces its own power**
- Provides opportunity for **economic growth** for both the agricultural and forestry sectors
- **Rural economies benefit** through job creation
- Generates fuels, chemical commodities and bioproducts in an **environmentally sustainable** manner – e.g. reducing greenhouse gas emissions.
- Utilizes local agricultural and municipal wastes thus **reducing disposal problems**
- Creates an **economically competitive production process**



Bioconversion facility at University of Georgia.
Columns-UGA's Faculty/Staff Newspaper (9/13/04.)

Possible Problems and Considerations of Biorefineries

- Raw material cost and supply determines potential scale of the industry
- Soil fertility must be considered in some locations when removing agricultural and forestry feedstock from fields and forests
- Availability and use of local feedstock sources will be affected by local cooperation

What is Southern Alliance for Clean Energy Doing?

- ✓ We are supporting energy legislation and energy policies that promote renewable energy supplies that can increase America's energy security, save consumers money, promote economic development, and reduce pollution.
- ✓ We are working to increase communication and information sharing with farmers, foresters, politicians, community decision makers, and academic researchers on the opportunities available for bioenergy projects, including biorefineries.
- ✓ We are working with these diverse stakeholders to ensure that these industries develop in a sustainable manner.

What Can You Do?

- ✓ **Join Southern Alliance for Clean Energy.** Support our efforts to promote clean energy technologies through the advancement of bioenergy technologies.
- ✓ **Support these new industries** by asking for and buying bio-based products, such as biofuels, bioplastics, and other products refined from biomass materials.
- ✓ **Contact your federal and state legislators** and ask them to support legislative action to develop clean energy sources.

For more information contact Southern Alliance for Clean Energy
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In North & South Carolina: 919-545-2920