

### What is Bioenergy?

Bioenergy is one of many diverse resources available to help meet our demand for energy. It is a form of renewable energy that is derived from recently living organic materials known as biomass, which can be used to produce transportation fuels, heat, electricity, and products.

### Benefits of a robust Bioenergy Industry

Abundant and renewable bioenergy can contribute to a more secure, sustainable, and economically sound future by:

- Supplying domestic clean energy sources
- Reducing U.S. dependence on foreign oil
- Generating U.S. jobs
- Revitalizing rural economies.
- Contribute 1.1 million jobs to the U.S. economy
- Produce up to 50 billion gallons of biofuels
- Yield 50 billion pounds of bio-based chemicals and bioproducts
- Generate 85 billion kilowatt-hours of electricity to power 7 million households

### Main Forms of Biomass Energy

- Wood and Agricultural Products

Logs, chips, bark, and sawdust account for the biggest proportion of biomass vitality, primarily utilized to generate power.

- Bioethanol

Bioethanol is an alcohol-based biofuel is made by fermenting plants and can be utilized in vehicles. In specific, high-performance cars.



### 4 Fast Facts About BIOMASS

U.S. DEPARTMENT OF ENERGY | Office of ENERGY EFFICIENCY & RENEWABLE ENERGY | BIOENERGY TECHNOLOGIES OFFICE

#### 1 Versatility

Biomass can be used to produce renewable fuels, power, and everyday products like plastic.

#### 2 Value for Wastes

There is significant potential to turn wastes such as plant material left over after harvest, sewage sludge, and the organic portion of garbage into bioenergy. Diverting these resources to produce energy and products provides value for otherwise problematic waste streams.

#### 3 Economic Impact

Bio-based activities have already generated more than \$48 billion in revenue and 285,000 jobs. Estimates show that continuing to develop biomass resources could expand these impacts.

#### 4 Abundant

By 2030, the U.S. has the potential to sustainably produce 1 billion tons of biomass annually—that's enough to fill a 35-foot flatbed truck stacked roughly up to the moon!

**BIOMASS**

- Solid Waste & Landfill gas and biogas

1 ton of garbage has as much heat vitality as 500 pounds of coal. But half of this energy comes from non-biomass, like plastics. Sewage and agrarian waste are put into high-temperature digesters, so it decays more rapidly. The gas is then captured and utilized as fuel.

- Biodiesel

Biodiesel is made from vegetable oil, animal fat, and reused oil, biodiesel can supplant ordinary diesel in cars, trucks, and ships. It's usually mixed to decrease contamination from diesel motors.

India's rapid growth in economy and an unprecedented rate of increasing population has generated energy demand from various sectors more focus is being placed on renewable energy sources and zero emissions particularly in light of the challenges posed by climate change and energy security. In November 2022, the Ministry of New and Renewable Energy (MNRE) announced that it would continue with the National Bioenergy Program for energy recovery till 2025–2026 with a budget outlay of INR 858 crore for the first of the two phases. The Program is meant to enable the use of cattle dung, biomass, and urban and industrial biowaste for energy recovery.

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