Biomass

Biomass is anything that is alive. It is also anything that was alive a short time ago. Trees, crops, garbage, and animal waste are all biomass. Most biomass we use for energy today is biofuel—biomass turned into fuels for cars and trucks. Another important type of biomass is wood. We burn wood to make heat.

Biomass gets its energy from the sun. Plants store the sun's energy in their leaves and roots. When we eat biomass, we use the energy to move and grow. When we burn biomass, we use the energy to make heat. We can also change the energy in biomass into gas and liquid fuels. Biomass provides us with five percent of our energy.



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Biomass Is Renewable

Biomass energy is renewable, which means more biomass can be made in a short time. We can always grow more plants. When loggers cut down trees for wood, more should be planted. Farmers take care of the soil in which their crops grow.

We Use Biomass Every Day

People and animals get their energy from biomass. The energy in everything we eat comes from plants. Bread is made from wheat, a plant. Hamburgers are made from beef, which came from cows that ate grass and grain.

Until about 175 years ago, biomass gave people most of the energy they used. The cave dwellers and settlers burned wood for heat. They burned wood to cook food.

In some areas, wood is still used for most energy needs. People also burn corn cobs and straw. In places without trees, people burn the waste from cows and pigs or food waste.

Electricity

Biomass can be used to make **electricity**. Many towns burn their garbage in **waste-to-energy plants**. Instead of putting the garbage into landfills, they burn it to make electricity. This saves landfill space and gives them energy, too. Biomass provides one percent of our electricity.

Burning biomass produces smoke and can have a bad smell. Many people do not like to burn waste near their towns. Waste-to-energy plants work to scrub the air from the burning waste to reduce **pollution** and smells.



Garbage can be burned to generate electricity.

Biogas

Biomass can be used to make an energy-rich gas called **biogas**. Biogas is like the natural gas we use in our stoves and furnaces.

In India, farmers use all of their garbage, and even animal waste, to make biogas. They put the waste into big tanks without air. The biomass makes biogas as it decomposes. Farmers use the biogas to cook food and light their homes. The waste that is left after the biomass breaks down can be used as fertilizer to grow more crops.



Image courtesy of Ashden Awards for Sustainable Energy

This woman in India has a biogas tank in her backyard. Biogas provides her home with energy for cooking and lighting.

Ethanol and Biodiesel

Biomass can also be turned into a fuel like gasoline. Just as apples can be made into cider, corn, wheat, grasses, soybeans, and vegetable oils can be made into ethanol and biodiesel.

Ethanol is a fuel a lot like gasoline. Ethanol burns cleaner than gasoline. It is also renewable. In many places, gasoline and ethanol are mixed together to make a fuel that any vehicle can use.

Biodiesel is a fuel a lot like diesel fuel, but it is cleaner. It is also renewable. Biodiesel can be mixed with regular diesel. Many large trucks and farm equipment use biodiesel.



This pump dispenses fuel that is 85 percent ethanol and 15 percent gasoline.