



# Explain whether or not biomass is a renewable energy source

Bioenergy, or energy derived from biomass, is a sustainable alternative to fossil fuels because it can be produced from renewable sources, such as plants and waste, that can be continuously replenished. Fossil fuels, such as petroleum, need to be imported from other countries.

Biomass is considered a renewable energy source because its inherent energy comes from the sun and because it can regrow in a relatively short time. Trees take in carbon dioxide from the atmosphere and convert it into biomass and when they die, it is released back into the atmosphere.

Biomass energy is a type of renewable energy and, as opposed to fossil fuels, it can be used directly or after conversion to other forms, releasing the amount of CO<sub>2</sub> that the biomass recently captured from the atmosphere during its growth.

Biomass energy can also be a nonrenewable energy source. Biomass contains energy first derived from the sun: Plants absorb the sun's energy through photosynthesis, and convert carbon dioxide and water into nutrients (carbohydrates). The energy from these organisms can be transformed into usable energy through direct and indirect means.

One of the most promising renewable energy sources for transportation is biomass. Biomass is any organic material that has stored sunlight in the form of chemical energy, such as plants, agricultural crops or residues, municipal wastes, and

Biomass is a versatile renewable energy source. It can be converted into liquid transportation fuels that are equivalent to fossil-based fuels, such as gasoline, jet, and diesel fuel. Bioenergy technologies enable the reuse of carbon from biomass and waste streams into reduced-emissions fuels for cars, trucks, jets and ships; bioproducts; and ...

Biomass pyrolysis produces fuels such as bio-oil, charcoal, methane, and hydrogen. Hydrotreating is used to process bio-oil (produced by fast pyrolysis) with hydrogen under elevated temperatures and pressures in the presence of a catalyst to produce renewable diesel, renewable gasoline, and renewable jet fuel.

Biomass is a semi-renewable energy resource that comes from plants and animals. We categorize this resource as semi-renewable because it has to be carefully managed to ensure we are not using it faster than it can be replenished. Biomass contains stored chemical energy from the sun that is produced by plants through photosynthesis.

Biomass, a renewable source of energy, has been used since the beginning of human culture. Until the



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introduction of coal, crude oil, and natural gas, wood and other forms of biomass were the most important sources of energy available to humans.



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