



FAA FACTS

May 2022

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Potential Sources of Sustainable Aviation Fuels

Sustainable aviation fuels produced from renewable and waste feedstock can provide the greatest impact in our effort to reduce greenhouse gas emissions from aircraft. Such fuels will be critical to the aviation industry's ability to meet the net-zero emissions goal and they have the potential to slash emissions by up to 100 percent. Here are 10 potential fuel sources being developed for the near future:

From our waste

Used cooking oil and grease – This typically comes from plant or animal fat that has been used for cooking and is no longer usable for further cooking.

Municipal solid waste – Instead of dumping it in a landfill site, this is waste that comes from households and businesses. Examples include: product packaging, grass clippings, furniture, clothing, bottles, food scraps and newspapers.

Recycled construction materials – This uses wood waste from urban construction and demolition sites. The materials are heated in a controlled atmosphere that breaks down the solid blocks of waste into carbon monoxide and hydrogen and converts the mixture into hydrocarbons.

From the soil

Corn husks and grain hulls – After a summer's harvest, corn stalks, rustling leaves, husks, and silks offer few uses beyond low-quality livestock feed, or being plowed back into the soil. Lignin, the polymers that lend strength and rigidity to corn and other plants, can be broken down and reassembled into a high performance, completely sustainable jet fuel.

Wood waste from mills and forests – This jet fuel would come from excess wood, agricultural, and forestry residues from the lumber industry.

Sugar cane and sugar beets – Fermented sugar cane juice could yield more than 2,500 liters of bio-jet fuel per acre of land. In simple terms, this means that a Boeing 747 could fly for 10 hours on bio-jet fuel produced on just 54 acres of land.

Oil from the Camelina and Jatropha seeds – Jatropha is a plant that produces seeds containing inedible lipid oil that can be used to produce fuel. Each seed produces 30 to 40 percent of its mass in oil.

From the water

Seaweeds and algae - These microscopic plants can be grown in salt water, deserts and other inhospitable places. One of the biggest advantages of algae for oil production is the speed at which the feedstock can grow. It has been estimated that algae produces up to 15 times more oil per square kilometer than other biofuel crops.

Salt marsh grasses – These grasses can grow in salt water or in areas affected by sea spray where plants would not normally be able to grow.

From the air

Carbon dioxide (CO₂) – This synthetic alternative uses renewable electricity to produce hydrogen from water and combine with CO₂ from air to develop a sustainable aviation fuel. While a promising future source of fuel, it will depend on large amounts of renewable energy to successfully reduce carbon emissions.

Find more information about the FAA and its sustainability efforts at its [Sustainability Gateway Page](#).