

Factsheet 16: Controversies – biofuels

Biofuels are gases that replace oil, but are made out of plants, trees, and other living things.

There are three main kinds of biofuels in use now. One is ethanol made from corn (maize). This is a kind of alcohol, and can be used to run a car or other engine in place of petrol (gasoline). This kind is most common in the United States.

A second kind is ethanol made from sugar cane. This too can be used in cars or other engines. It has been encouraged by the government of Brazil, where it has been the main form of fuel for cars for many years.

The third kind is palm oil, which is extracted from palm trees. The main producing country is Indonesia, and most of the oil is exported.

Of course, there are also natural fuels that have been used for heating for a long time, like wood and cow dung. These are usually called 'biomass', to distinguish them from 'biofuels', which can be used as a gas in engines.

Until recently most environmentalists were very enthusiastic about biofuels. Now many have strong doubts. This factsheet puts the arguments on both sides.

Some arguments for

Biofuels replace fossil fuels like oil, coal and gas. Biofuels are endlessly renewable. You grow the corn, you turn it into ethanol, the car burns the ethanol, and that turns the carbon in the corn into carbon dioxide in the air. But then the growing corn absorbs that carbon dioxide into the plant to make more carbon. Then that carbon is harvested, burnt, and returned to the new plants in turn.

The whole process is natural, and no carbon is permanently lost into the air. That is how plants

grow – they take carbon dioxide out of the air and turn it into carbon, the basis of all life.

Moreover, biofuels provide a livelihood for farmers in Brazil, Indonesia, the US and other places.

Against: food and forests

There are several arguments against. The first is that there is only a limited amount of good land in the world. If that land is used for biofuels, then you reduce the amount of food in the world.

Faced with a choice between a thirsty car in Los Angeles and a hungry child in Lagos, the market will always choose the car. This is because the California car owner has more money. Yet the amount of grain needed to fill the tank of a big car can feed a child for a year.

This pushes the price of food grains up globally. Over the last few years prices of grain – wheat, corn and rice – have gone up and down. But the main direction is up. That hurts the poorer people in poor countries hard, because they are already spending much of their income on basic foods.

Some of this price increase is because of biofuels. There are other factors pushing the price of grain up as well. These include speculation, and falling harvests because of climate change. Also, the price of oil has been rising, and oil is used to manufacture fertiliser, and that pushes up the price of fertiliser. So there are many estimates of how much rising prices are driven by biofuels, but no one knows for sure.

The amount of food available can be increased by cutting down forests to make new farmland. But every time that happens much CO₂ goes into the air. This is because forests have a lot of CO₂ in the trees, and in the undergrowth, and even more stored in the soil.



This is particularly a problem with tropical rainforests, because they are so much more dense than temperate forests, and so contain much more CO₂.

Other arguments against

Another argument against is that it takes a lot of fossil fuels like coal, oil and gas to make biofuels. In the US, for instance, fossil fuels are used to heat the corn to make ethanol. They are also needed to harvest the corn, transport it, pressurise the gas, and transport the gas. One estimate is that it takes more CO₂ emissions to make a gallon of ethanol than you get from burning a gallon of gasoline.

Palm oil has even larger problems, because it is so often transported over long distances, like from Indonesia to Europe.

Another objection is that mixing biofuels can fool people. If you put a fuel that is 10% corn ethanol and 90% gasoline into a car, you feel you have done a good green thing. Indeed, the ads tell you it's a green fuel. It is not. It is 90% oil, instead of 100%. You have done a 90% bad thing.

Moreover, the carbon from burning trees and plants goes back into new plants. But at any given time, most of that carbon is still up in the air. This is not an easy point to grasp. Let's take the example of trees. Imagine that you cut down one square mile of forest and burn the trees. The carbon goes up into the air. Gradually, new trees grow up and take that carbon out of the air. But it takes 20 years or more before the trees have grown back to the same height. For much of those 20 years, most of the carbon stays in the air. If you had never cut the tree down, most of it would stay in the trees.

The problem with plants is not as great, because they grow more quickly. But it is still real. And if you simply let the land go back to mixed forest, it would hold a lot more carbon.

New types of biofuels

Some kinds of biofuels that are not subject to these objections. Crops like jatropha that can be grown on the edges of roads or in arid regions. Or the cooking fat that is used in restaurants can be recycled. In the future, we may be able to grow algae in tanks on land and turn it into fuel on a massive scale.

Many environmentalists therefore want to distinguish between bad biofuels (also called 'agrifuels') and good biofuels.

Other environmentalists say that at the moment that confuses things. There is a political argument now in many countries about biofuels. This argument will be resolved in one way or another. In this context, arguments for good biofuels are in practice likely to let all biofuels in.

Planes and ships

There is one more argument for biofuels. This is that ships and planes are the fastest growing forms of transport. Unlike buses, trains and cars, they cannot run on electricity. So they cannot depend on electricity from renewable sources. There is no other way to cross oceans.

So if there is an argument for using biofuels anywhere, it is strongest with ships and planes.

This is part of a series of factsheets on climate change produced by the ITF, www.itfclimatejustice.org