TIME

Biofuels are low-cost, effective and beneficial

By **DANIEL SCHRAG** January 21, 2023

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To meet our ambitious goals for carbon emissions, biofuels are likely to be a critical part of our energy mix. They have the greatest likelihood of competing with oil on price; they require little new infrastructure; and they offer economic opportunities for developing nations that will incentivize them to participate in the global climate-mitigation effort.

Unlike many other forms of green alternatives to oil, biofuels in some forms can be used in existing pipelines and storage tanks, existing trucks, ships and airplanes, and in some cases existing refineries. That means biofuels are likely to be cost-competitive—or close to cost-competitive—with today's oil prices, and far less expensive than any other proposed solutions.

Yes, there are other possible substitutes, such as hydrogen made from renewable electricity, either directly or through other chemicals like ammonia. These options may have a role in a low-carbon future, but all depend on research and development to demonstrate their viability and bring costs down. The one technology that is already used at significant scale is biofuels.

Some of the critics point to studies from over a decade ago that show corn ethanol—the major biofuel in the U.S.—has marginal climate benefits, and to more recent studies that say corn ethanol has caused environmental problems. Growing corn, they say, harms the soil and water and uses precious farmland that could be devoted to more useful crops, not to mention exploiting new land that is best left uncultivated, such as grasslands and forests.

Early studies that showed slim benefits for corn ethanol are out of date with modern ethanol refineries, many of which use wood and natural gas as fuel instead of older plants that used coal. The plants have better efficiency in the fermentation process and take advantage of reductions in carbon emissions across the energy system. New studies show that the carbon benefits are much larger than the early estimates, so corn-ethanol production has paid off whatever carbon debt came initially from clearing the land, reducing emissions overall year after year.

The development of economically competitive biofuels from woody material—whether crops like switchgrass or just agricultural waste—will be a major breakthrough, as it would increase overall yields and increase the carbon benefit. We need to invest in these solutions if we are serious about addressing climate change.

In many poor countries, particularly in the tropics, a global biofuels industry represents one of the best opportunities for sustained economic growth. With that growth will come new investments in agricultural capacity, which can increase yields and reduce the demand for clearing new land.

To be sure, we must be careful in how we expand biofuels. There is no doubt that protecting existing forests from development is essential. But solving climate change requires difficult choices. If we are serious about displacing jet fuel and diesel fuel, we can't afford to give up on biofuels as they represent our best chance at a low-carbon, low-cost alternative to petroleum-based fuels.