

Biofuels

S U M M A R Y

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Environmental concerns and the scarcity of petroleum have, especially over the last forty years, led to an increasing policy focus on alternative fuels. The most common of these petroleum alternatives, ethanol and biodiesel, see widespread and accelerating use world-wide. In the United States, national policies including tax subsidies, import tariffs, and, more recently, mandated use, have led to increased production and use of both biofuels. Increased use of biofuels has, however, come with a variety of consequences and controversies. In particular, the “food versus fuel” debate, fuel efficiency and costs issues, and controversial effects on greenhouse gas emissions have generated a host of arguments both for and against biofuels. This conflict is, as with other alternative energies, fundamentally a green versus green conflict; in this case, however, the conflict is one of green policy versus green outcomes.

Both biodiesel and ethanol are generally derived from common plants, and in the US these are typically soybeans and corn, respectively. Opponents to biofuels argue that increased demand for staple food crops, both directly consumed by humans and used as feed for livestock, has led to an increase in the cost of food worldwide (Mercer-Blackman, Samiei, & Cheng, 2007; World Bank, 2008; Alexander & Hurt, 2007). While producers typically respond to higher prices by increasing production, this comes at a higher marginal cost for farmers, and additional costs to the public in the form of subsidies. This controversy is central in the “food versus fuel” debate, with many arguing that increased utilization of biofuels will reduce available food supplies and increase the cost of both fuel and food.

Ethanol has been used as an additive in nearly every gallon of gasoline for some time, while biodiesel has gained popular use only recently. As combustion of either of these biofuels generates less energy than an equivalent amount of petroleum based fuel, use of any blend will reduce horsepower and torque, resulting in reduced efficiency of the vehicles' miles per gallon. Exacerbating their negative impact on fuel efficiency, both ethanol and biodiesel are, at present, more expensive than petroleum based fuel. These efficiency and cost issues indirectly affect nearly every good by increasing transportation costs.

While numerous studies have demonstrated reductions in tailpipe emissions of greenhouse gasses through use of biofuels, these studies frequently fail to incorporate "carbon debt." Conversion of land to productive farming causes an initial release of carbon dioxide. Carbon debt measures the amount of time that use of biofuels will take to offset that initial release. The carbon debt incurred varies widely, from near zero to more than four hundred years, depending on the type of land converted. This issue complicates the real effects of biofuel use on greenhouse gas emissions, and is rarely accounted for in claims of greenhouse gas reductions, on which most policies are based.

At this point, with federal subsidies, import tariffs, and mandated use, demand for biofuels has been legislatively created and supply has rapidly expanded. The balance of the benefits of biofuel use and the social costs of biofuels is, however, uncertain and extraordinarily difficult to quantify. Significant unresolved issues remain, particularly regarding "food versus fuel" arguments, efficiency issues and social costs driven by both of those issues. In addition, the full greenhouse gas effects of biofuel use are unclear.

The biofuel issue is fundamentally different from the other alternative energy cases as no significant cases of litigation have been brought in opposition to this energy source. This subject does, however, highlight a different issue. In protecting the biofuel industry through tariffs, promotion through tax credits, and mandated use of biofuels, the federal government has, to a great degree, created the market for biofuel. This has imposed a social cost nationally directly through increases in fuel (and

transported goods) prices, and may have indirectly imposed social costs through increased food prices and uncertain environmental impacts. While the legislations which have created the biofuel market were enacted with green intent, the uncertain effect and high cost of biofuels make this issue one of green policy versus green outcomes.

Policy Recommendations:

- National policy decisions must be based on the true impact of biofuels
- Alternative means of achieving the same carbon reductions at a lower cost should be explored; If an equal reduction can be achieved at a lower social cost, pursuing biofuels is irrational

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