

ANALYSIS OF THE SOCIAL, ECONOMIC, AND ENVIRONMENTAL EFFECTS OF REPLACING PETROLEUM-BASED FUELS WITH BIODIESEL FUELS

Project by
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ABSTRACT

Purpose of the Study:

Biofuels are a category of alternative fuels derived from organic matter. Biodiesel, a lipid oil-based biofuel, is produced from oilseed crops. Biodiesel and ethanol use different feedstock. Ethanol, a grain alcohol, is produced from grain crops. The expansion of biofuels production using food crops as a source of feedstock has caused concern regarding its impact on land, food supplies, and biodiversity. The purpose of this study is to determine the viability of biodiesel as a sustainable alternative transportation fuel.

Procedure:

To determine the sustainability of biodiesel, this project examined the aspects of the social, economic, and environmental responses to biodiesel production and use. Biodiesel was compared and contrasted with ethanol. Most of the information was collected over two years of observations within sustainable biofuel groups, books addressing alternative fuels, and magazines published in relation to the biodiesel market. The information was then organized to address current issues regarding the biofuels industry.

Findings:

Biodiesel was found to be a renewable alternative fuel; it has lower carbon dioxide emissions than regular diesel fuel. Biodiesel made from soybeans are less erosive on soil than corn ethanol. Both biodiesel and ethanol compete for food supplies. Ecologically sensitive areas need extra consideration when determining available areas for feedstock cultivation.

Conclusions:

Biofuels made from food crops are not desirable as a long-term resource for feedstock. Biodiesel should transition from food crops, and utilize feedstock that can be grown on arid soil using little water. Next generation transportation fuels should be implemented to fit each community's environmental, social, and economic needs. Energy conservation is the best immediate solution for emission reductions.